RIDGE-MANORVILLE-CALVERTON COMMUNITY WILDFIRE PROTECTION PLAN

June 2016

CENTRAL PINE BARRENS JOINT PLANNING & POLICY COMMISSION

OFFICE OF PARKS · RECREATION · HISTORIC PRESERVATION NEW YORK STATE

SUFFOLK COUNTY PARKS

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FINAL RIDGE-MANORVILLE-CALVERTON COMMUNITY WILDFIRE PROTECTION PLAN

Prepared for

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SWCA Project No. 33507

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The entities listed below participated in the development of and/or have reviewed and are in support of the Ridge-Manorville-Calverton Community Wildfire Protection Plan:

Central Pine Barrens Joint Planning & Policy Commission

Commission members include:
NYS Governor's Representative - Carrie Meek Gallagher, Chairwoman & NYSDEC Region 1 Regional Director
Suffolk County – Steven Bellone, County Executive
Town of Brookhaven – Edward P. Romaine, Town Supervisor
Town of Riverhead – Sean M. Walter, Town Supervisor
Town of Southampton – Jay H. Schneiderman, Town Supervisor

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EXECUTIVE SUMMARY

For millennia fire has been an integral process in the evolution and maintenance of fire-adapted ecosystems like the Central Pine Barrens of Long Island, but with the growth of communities into the wildland urban interface (WUI), fire is increasingly seen as a threat to life and property. In recent years a number of large fires have destroyed homes in this region, raising public awareness for the need to mitigate fire effects and plan for improving the community's resilience to this natural phenomenon.

This document has been developed to address the wildfire threat to communities in the Ridge, Manorville and Calverton hamlets, and it provides recommendations to abate catastrophic wildfire and to minimize its impacts to those communities. The population of Long Island needs to become more aware of the prevalence of fire in these pine barren ecosystems that are fire dependent and understand the risk that wildfire poses to life and property. The importance of public education and outreach in conjunction with recommended physical actions to reduce hazardous fuels are highlighted in this plan. Multi-jurisdictional agencies, organizations, and residents have joined together to develop this plan, the Ridge-Manorville-Calverton Community Wildfire Protection Plan (RMCCWPP).

The purpose of the RMCCWPP is to assist in protecting human life and reducing property loss due to wildfire throughout the planning area. The plan is the result of a community-wide wildland fire protection planning process and the compilation of documents, reports, and data developed by a wide array of contributors. This plan was compiled in 2015–2016 in response to the federal Healthy Forests Restoration Act (HFRA) of 2003.

The RMCCWPP meets the requirements of the HFRA by:

1. Having been developed collaboratively by multiple agencies at the state and local levels in consultation with federal agencies and other interested parties.
2. Prioritizing and identifying fuel reduction treatments and recommending the types and methods of treatments to protect at-risk communities and pertinent infrastructure.
3. Suggesting multi-party mitigation, monitoring, and outreach.
4. Recommending measures and action items that residents and communities can take to reduce the ignitability of structures.
5. Facilitating public information meetings to educate and involve the community to participate in and contribute to the development of the RMCCWPP.

The planning process has served to identify many physical hazards throughout the planning area that could increase the threat of wildfire to communities. The public also has helped to identify community values that it would most like to see protected. By incorporating public and Core Team input into the recommendations, treatments are tailored specifically for the planning area so that they are sensitive to local residents concerns. The RMCCWPP emphasizes the importance of collaboration among multi-jurisdictional agencies in order to develop fuels mitigation treatment programs to address wildfire hazards. The Ridge, Manorville, and Calverton hamlets have a committed team of career and volunteer firefighters, who work arduously to protect the

life and property of the citizens, but without homeowners taking on some of the responsibility of reducing fire hazards in and around their own homes, these resources are severely stretched. A combination of homeowner and community awareness, public education, and agency collaboration and treatments are necessary to fully reduce wildfire risk.

The RMCCWPP does not require the agencies and fire departments that were involved with the preparation of this plan and their respective signatories to this plan to implement any of the recommendations; however, these recommendations may be used as guidelines for the implementation process if funding opportunities become available. It is important to stress that this document is an initial step in educating the public and treating areas of concern, and should serve as a tool to accomplish these tasks. The RMCCWPP should be treated as a *live document* to be updated approximately every 2 years. The plan should be revised to reflect changes, modifications, or new information that may contribute to an updated RMCCWPP. These elements are essential to the success of mitigating wildfire risk throughout the planning area and will be important in maintaining the ideas and priorities of the plan and the communities in the future.

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List of Acronyms

°F	degrees Fahrenheit
ATV	all-terrain vehicle
BAER	Burned Area Emergency Rehabilitation
BNL	Brookhaven National Laboratory
BTU/ft/sec	British Thermal Units per feet, per second
Commission	Central Pine Barrens Joint Planning and Policy Commission
CVAR	Community Value at Risk
CWPP	Community Wildfire Protection Plan
DEC	New York State Department of Environmental Conservation
EAS	Emergency Alert System
FEMA	Federal Emergency Management Agency
FIREMON	Fire Effects Monitoring and Inventory System
FMP	Fire Management Plan
FRES	Suffolk County Department of Fire Rescue and Emergency Services
GIS	geographic information system
GPS	global positioning system
gpm	gallons per minute
HFRA	Healthy Forests Restoration Act
HIZ	Home Ignition Zone
ICC	International Code Council
ICS	Incident Command System
kg/m³	kilograms per cubic meters
m	meter(s)
NEPA	National Environmental Policy Act
NFDRS	National Fire Danger Rating System
NFP	National Fire Plan
NFPA	National Fire Protection Association
NIFC	National Interagency Fire Center
NLCD	National Land Cover Database
NWGC	National Wildfire Coordinating Group
PPE	personal protective equipment
RAW	remote automated weather
RMCCWPP	Ridge-Manorville-Calverton Community Wildfire Protection Plan
SAF	Society of American Foresters
SWCA	SWCA Environmental Consultants
USDA	U.S. Department of Agriculture
USDI	U.S. Department of Interior
VFD	volunteer fire department
WFTF	Central Pine Barrens Wildfire Task Force
WUI	wildland urban interface

The following stakeholders collaborated in the development of this Ridge-Manorville-Calverton Community Wildfire Protection Plan:

- Brookhaven National Laboratory- Environmental Protection Division
- Brookhaven National Laboratory- Laboratory Protection Division
- Central Pine Barrens Joint Planning & Policy Commission
- Manorville Fire Department
- New York State Department of Environmental Conservation Division of Forest Protection
- New York State Department of Environmental Conservation Region 1 Division of Natural Resources
- New York State Parks, Recreation & Historic Preservation - Long Island Region
- Northeastern Forest Fire Protection Compact
- Ridge Fire Department
- Suffolk County Department of Fire, Rescue & Emergency Services
- Suffolk County Department of Parks, Recreation & Conservation
- SWCA Environmental Consultants
- Town of Brookhaven Division of Planning, Environment and Land Management
- Town of Brookhaven Fire Marshal's Office
- Town of Riverhead

1.0 INTRODUCTION

With increasing frequency, the national news media report tragic stories of communities impacted in the latest wave of severe wildfire. In order to mitigate fire impacts, communities in fire-prone environments need to have a plan to prepare for, reduce the risk of, and adapt to wildland fire events. Community Wildfire Protection Plans (CWPPs) help accomplish these goals. A CWPP provides recommendations that are intended to reduce, but not eliminate, the extreme severity or risk of wildland fire.

This CWPP, entitled the Ridge-Manorville-Calverton CWPP (RMCCWPP), is a community-level plan that focuses on portions of the Ridge, Manorville, and Calverton hamlets, located in the Central Pine Barrens region of Long Island. The CWPP evaluates the wildfire threat to communities and infrastructure, and identifies measures that homeowners, land managers, and fire departments can take to reduce the impact of wildfire to life, property, and other community values at risk (CVARs). The plan provides background information, a risk assessment, and recommendations. Section 1 provides an overview of CWPPs and describes the Ridge, Manorville, and Calverton communities' (hereafter referred to as Ridge-Manorville-Calverton) need for a plan; Section 2 provides demographic and background information about the communities; Section 3 gives an overview of the fire environment; Section 4 describes the methodology for the risk assessment and the results in detail; Section 5 provides Action Plans that outline priorities and recommendations for reducing fuels, initiating public education and outreach, reducing structural ignitability, and improving fire response capabilities; and Section 6 provides suggested approaches to monitoring actions. The RMCCWPP does not require the agencies and fire departments that were involved with the preparation of this plan and their respective signatories to this plan to implement any of the recommendations; however, these recommendations may be used as guidelines for the implementation process if funding opportunities become available. The recommendations for fuels reduction projects are general in nature, meaning site-specific planning that addresses location, access, land ownership, topography, soils, and fuels would need to be employed upon implementation. Also, it is important to note that the recommendations are specific to wildland urban interface (WUI) areas and are expected to reduce the loss of life and property.

1.1 OVERVIEW OF COMMUNITY WILDFIRE PROTECTION PLANS

In response to a landmark fire season in 2000, the National Fire Plan (NFP) was established to develop a collaborative approach among various governmental agencies to actively respond to severe wildland fires and ensure sufficient firefighting capacity for the future. The NFP was followed by a report in 2001, entitled *A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: A 10-year Comprehensive Strategy*, which was updated in 2002 to include an implementation plan. This plan was updated once more in 2006, with a similar focus on using a collaborative framework for restoring fire-adapted ecosystems, reducing hazardous fuels, mitigating risks to communities, providing economic benefits, and improving fire prevention and suppression strategies. The 2006 implementation plan also emphasizes information sharing and monitoring of accomplishments and forest conditions, a long-term commitment to maintaining the essential resources for implementation, a landscape-level vision for restoration of fire-adapted ecosystems, the importance of using fire as a management tool, and continued improvements to collaboration efforts (Forests and Rangelands

2006). Progress reports and lessons learned reports for community fire prevention are provided annually.

In 2003 the U.S. Congress recognized widespread declining forest health by passing the Healthy Forests Restoration Act (HFRA), and President Bush signed the act into law (Public Law 108–148, 2003). The HFRA was revised in 2009 to address changes to funding and provide a renewed focus on wildfire mitigation (H.R. 4233 - Healthy Forest Restoration Amendments Act of 2009). The HFRA expedites the development and implementation of hazardous fuels reduction projects on federal land and emphasizes the need for federal agencies to work collaboratively with communities. A key component of the HFRA is the development of CWPPs, which facilitates the collaboration between federal agencies and communities in order to develop hazardous fuels reduction projects and place priority on treatment areas identified by communities in a CWPP. A CWPP also allows communities to establish their own definition of the WUI. In addition, communities with an established CWPP are given priority for funding of hazardous fuels reduction projects carried out in accordance with the HFRA.

In 2014 the final stage of the development of a national cohesive strategy for wildfire was developed, entitled *The National Strategy: The Final Phase in the Development of the National Cohesive Wildland Fire Management Strategy* (Forests and Rangelands 2014). The strategy describes the northeast region as having:

> *…a large number of small, mostly human-caused, wildfires with a low occurrence of large wildfires. But fires present a high risk to life and property when they do occur. The larger fires tend to occur in areas containing more contiguous and undeveloped forested tracts of land. Many wildland fires can be fast moving, but they are often contained within a single day. Most wildfires are human-caused; accidental fires and arson are the primary causes of fires in the region*. (Forests and Rangelands 2014:9–10).

> *A proactive, collaborative approach to identifying risks in the WUI, combined with developing Community Wildfire Protection Plans (CWPPs), reducing hazardous fuels, treating event fuels, and educating the public in the context of managing fuels across a multi-jurisdictional, fragmented landscape will prepare communities for wildfire. Wildland fire managers in the Northeast believe that focusing on preventing unwanted fires and increasing homeowner-shared responsibility will reduce firefighter risk and decrease the need for firefighting responses*. (Forests and Rangelands 2014:11).

The national strategy takes a holistic approach to the future of wildfire management:

To safely and effectively extinguish fire, when needed; use fire where allowable; manage our natural resources; and as a Nation, live with wildland fire.

In order to achieve this vision, the national strategy goals are:

> *Restore and maintain landscapes: Landscapes across all jurisdictions are resilient to fire related disturbances in accordance with management objectives.*

> *Fire-adapted communities: Human populations and infrastructure can withstand a wildfire without loss of life and property.*

> *Wildfire response: All jurisdictions participate in making and implementing safe, effective, efficient risk-based wildfire management decisions.* (Forests and Rangelands 2014:3)

Like the 2014 national strategy, the NFP, state fire plans, the 10-year comprehensive strategy, and the Federal Emergency Management Agency (FEMA) Disaster Mitigation Act of 2000 all mandate community-based planning efforts with full stakeholder participation, coordination, project identification, prioritization, funding review, and multi-agency cooperation.

1.2 NEED FOR CWPP

Although wildfire is a natural process in the fire-adapted Pine Barrens (Central Pine Barrens Joint Planning and Policy Commission [Commission] 2014), like much of the Central Pine Barrens region, the Ridge-Manorville-Calverton hamlets are made up of a rural and urban mix, bringing the community into close proximity with this fire-prone ecosystem. The eastern portion of Long Island, particularly the Central Pine Barrens region in which the RMCCWPP is located, has been identified by the New York Firewise Council as the community area at greatest risk for damage and loss of property due to wildfire in all of New York State. This designation is a result of the fire-prone nature of its vegetation (part of a fire-dependent ecosystem), fire history, demographics, and the large amount of WUI that place these areas at an increased risk of wildfire damage (Commission 2014).

The planning area and elsewhere in Suffolk County that have large natural areas experience relatively high fire frequency with more than 800 brush fires typically occurring on an annual basis, primarily during the spring and summer months. A number of large fires have occurred in the planning area in the last two decades that have demonstrated the potential catastrophic effects of wildfire. In 1995, the Rocky Point and Sunrise fires burned nearly 7,000 acres and caused significant destruction to property, natural and cultural resources, and infrastructure, and resulted in financial burdens to communities in the WUI. The portion of the Rocky Point fire that occurred in 1995 was directly adjacent to the planning area. In 2012 the Crescent Bow fire that occurred within the planning area burned approximately 1,200 acres, again resulting in evacuations and property damage.

Many factors, including both ecological and demographic, have heightened the risk of wildfire in the Central Pine Barrens. Years of fire suppression, a lack of active forest management, periodic short-term drought, and defoliating insect infestations have altered natural plant succession, species composition, and forest structure and ultimately increased the fuel load in the area (Hudson et al. 2004; New York State Department of Environmental Conservation [DEC] 2007). Extensive residential and commercial development in the Compatible Growth Area increases the risk of severe losses from wildfire.

A careful balance is needed in these ecosystems between the exclusion of catastrophic fire that threatens life and property, and the introduction of low intensity fire in the form of prescribed burning that maintains these fire-adapted forests. The Central Pine Barrens is an endangered ecosystem that is an integral part of the natural environment of Long Island and one of only three pine barrens in the world (Brookhaven National Laboratory [BNL] 2014). Fire exclusion could result in conversion of these endangered communities from pine-dominated forests to hardwood oak forests. The forest canopy is becoming increasingly closed and forest openings smaller as

shade-tolerant species grow in dense thickets (DEC 2007). This would result in not only the loss of this endangered forest type, but also the loss of many rare plants and animals that depend on the Central Pine Barrens for habitat. Some species are dependent on fresh fire-created snags and openings (DEC 2007). The Central Pine Barrens also contributes to the scenic, cultural, and environmental diversity of Long Island (BNL 2014). Visitors enjoy vistas and forest openings for wildlife viewing; these are lost as the forest structure becomes denser. Fire exclusion not only encourages succession towards oak woodlands, but also contributes to increased fuel loading that would fuel a catastrophic fire that threatens people and structures, as well as the long-term persistence of this unique habitat.

The Ridge-Manorville-Calverton communities are served by volunteer fire departments (VFDs) and emergency response staff. Although fire services are well developed in the planning area, these VFDs are stretched thin, particularly during high fire danger years, making the communities vulnerable to catastrophic wildfire.

1.3 GOAL OF CWPPS

A CWPP enables local communities to improve their wildfire mitigation capacity and work with government agencies to identify high fire risk areas and prioritize areas for mitigation, fire suppression, and emergency preparedness. The minimum requirements for a CWPP, as stated in the HFRA, are as follows:

1. **Collaboration:** Local and state government representatives, in consultation with federal agencies or other interested groups, must collaboratively develop a CWPP (Society of American Foresters [SAF] 2004).
2. **Prioritized Fuel Reduction:** A CWPP must identify and prioritize areas for hazardous fuels reduction and treatments; furthermore, the plan must recommend the types and methods of treatment that will protect at-risk communities and their essential infrastructures (SAF 2004).
3. **Treatments of Structural Ignitability:** A CWPP must recommend measures that communities and homeowners can take to reduce the ignitability of structures throughout the area addressed by the plan (SAF 2004).

1.4 PLANNING PROCESS

The SAF, in collaboration with the National Association of Counties and the National Association of State Foresters, developed a guide entitled *Preparing a Community Wildfire Protection Plan: A Handbook for Wildland-Urban Interface Communities* (SAF 2004) to provide communities with a clear process to use in developing a CWPP. The guide outlines eight steps for developing a CWPP and has been followed in preparing the RMCCWPP:

Step One: Convene Decision-makers. Form a Core Team made up of representatives from the appropriate local governments, local fire authorities, and state agencies responsible for forest management.

Step Two: Involve Federal Agencies. Identify and engage local federal representatives and contact and involve other land management agencies as appropriate.

Step Three: Engage Interested Parties. Contact and encourage active involvement in plan development from a broad range of interested organizations and stakeholders.

Step Four: Establish a Community Base Map. Work with partners to establish a base map(s) defining the community's WUI and showing inhabited areas at risk, wildland areas that contain critical human infrastructure, and wildland areas at risk for large-scale fire disturbance. (Please see Appendix A for a series of base maps that were used in developing the final risk assessment.)

Step Five: Develop a Community Risk Assessment. Work with partners to develop a community risk assessment that considers fuel hazards; risk of wildfire occurrence; homes, businesses, and essential infrastructure at risk; other CVARs; and local preparedness capability. Rate the level of risk for each factor and incorporate this information into the base map as appropriate.

Step Six: Establish Community Priorities and Recommendations. Use the base map and community risk assessment to facilitate a collaborative community discussion that leads to the identification of local priorities for treating fuels, reducing structural ignitability, and other issues of interest, such as improving fire response capability. Clearly indicate whether priority projects are directly related to the protection of communities and essential infrastructure or to reducing wildfire risks to other community values.

Step Seven: Develop an Action Plan and Assessment Strategy. Consider developing a detailed implementation strategy to accompany the CWPP, as well as a monitoring plan that will ensure its long-term success.

Step Eight: Finalize Community Wildfire Protection Plan. Finalize the CWPP and communicate the results to community and key partners.

1.5 CORE TEAM

The first step in the CWPP process was to bring together a broad group of stakeholders representing both agency and private interests to form a Core Team. The CWPP Core Team was originally assembled in December 2014 and is made up of stakeholders who have jurisdictional responsibility related to wildfire suppression and prevention and/or planning for the planning area. The Core Team contact list can be found in Appendix B. The first Core Team meeting was held on September 18, 2015, a second meeting was held on December 11, 2015, and the final meeting was on March 23, 2016. Average attendance at each Core Team meeting was approximately 15 people.

1.6 PLANNING AREA

The RMCCWPP is a community-level plan. The Ridge, Manorville, and Calverton hamlets were significantly impacted by the 1995 Rocky Point and Sunrise fires and the 2012 Crescent Bow fire and therefore have been selected as the planning area for the RMCCWPP. Ridge is located within the Town of Brookhaven, while portions of Manorville are located within both the Town of Brookhaven and the Town of Riverhead, and Calverton is located within the Town of Riverhead as identified in (Figure 1.1).

Figure 1.1. Project location map.

1.7 BACKGROUND

1.7.1 CENTRAL PINE BARRENS WILDFIRE TASK FORCE

In accordance with New York Environmental Conservation Law Article 57-0121(6)(t), part of the Long Island Pine Barrens Protection Act of 1993, the comprehensive land use plan prepared for the Central Pine Barrens was to include provisions for fire management for unanticipated fires (wildfires), including coordination with local volunteer fire departments. This led to the creation of the Central Pine Barrens Wildfire Task Force (WFTF) in 1995 by the Commission (WFTF 1999:5). The WFTF is one of the Commission's larger councils with 43 members comprising public and private agencies and local fire departments (Commission 2014).

The WFTF was formed in response to the devastating wildfires of 1995. The Rocky Point and Sunrise fires burned a total of 6,850 acres of the Central Pine Barrens area which is located in Suffolk County. The fires were uncharacteristically severe and burned a large area of globally rare dwarf pine plains.

One of the major lessons learned from the 1995 fires was to have a management strategy in place before wildfire occurred again (Hudson et al. 2004). The first responsibility of the WFTF was to develop a Fire Management Plan (FMP) that was finalized in 1999. The FMP encompasses the Core Preservation Area and Compatible Growth Area of the Central Pine Barrens. Since the members of the WFTF represent a range of stakeholders, the FMP was developed to be used by a range of elected officials, volunteers, government personnel, and citizens. The purpose and mission of the WFTF is to undertake fire planning for wildfire suppression response that ensures the safety of emergency response personnel and the public, while considering the ecological concerns of the Core Preservation Area of the Central Pine Barrens region (WFTF 1999).

The goals of the WFTF as outlined in the 1999 FMP are to:

- Goal 1: Develop a FMP for the Core Preservation Area of the Long Island Central Pine Barrens region.
- Goal 2: Develop a standard and acceptable Incident Command System (ICS) for response to wildfire incidents consistent with the Suffolk County ICS Plan.
- Goal 3: Establish a fire information program on the activities of the WFTF to inform and solicit the support of the fire commissioners and fire chiefs for the work of this WFTF.
- Goal 4: Establish an appropriate training program for all Suffolk County volunteer firefighters on WUI fire suppression.
- Goal 5: Provide public education on wildfire awareness, safety, and prevention, as well as WUI wildfire prevention and safety.

The WFTF comprises several committees that meet separately from the WFTF in order to implement the FMP. These subcommittees include:

- Firewise and Wildfire Prevention Subcommittee
- Fire Weather Subcommittee
- Prescribed Fire Subcommittee
- Training Subcommittee
- Water Supply Subcommittee (temporary as of 2014)
- New York Wildfire and Incident Management Academy

Members of the WFTF and its various subcommittees make up a large portion of the CWPP Core Team.

1.8 PUBLIC INVOLVEMENT

Engaging interested parties is critical in the CWPP process; substantive input from the public will ensure that the final document reflects the highest priorities of the local community. A key element in the CWPP process is the meaningful discussions it generates among community members regarding their priorities for local fire protection and forest management (SAF 2004).

The Firewise and Wildfire Prevention Subcommittee of the WFTF has been actively engaging communities throughout the Central Pine Barrens in wildfire prevention education and outreach. In 2002 it created an educational video called "Wildfire Safety and Awareness" covering wildfire history topics, the natural role of fire in the Central Pine Barrens, causes of fire ignitions, the advantages of prescribed burning and information on how to prepare defensible space. The video was a finalist for the 2002 Telly Award, which honors non-network and cable video productions (Hudson et al. 2004). In addition, the public education subcommittee developed and distributed a series of factsheets for fire prevention actions that were distributed at various community events.

The Fire Weather Subcommittee is charged with notifying the public about current fire conditions. Utilizing a local fire weather station owned by the Central Pine Barrens Commission, the subcommittee provides fire weather data to local VFDs, land managers, and the general public. Fire danger signs have been posted throughout the Central Pine Barrens to alert the public about current conditions.

Local media are also engaged in public outreach for wildfire prevention in the area, with local television news stations such as News 12 Long Island covering many wildfire issues, particularly during periods of heightened fire risk. The Long Island Pine Barrens Society, a local non-profit organization, also plays a role in public education and outreach for wildfire prevention; the organization hosts a monthly television show that covers environmental topics, including wildfire risk in the Central Pine Barrens.

Public involvement in the CWPP planning process was encouraged through a range of media. A Facebook page was developed for the CWPP (entitled Ridge-Manorville-Calverton Community Wildfire Protection Plan), and the page has received more than 308 "likes." The page included a description of the planning process and included links to an online community survey and other relevant pages for the communities. The page was also used to announce two public meetings to gather input on the plan. The online survey was also distributed to all Core Team representatives and made available on the Commission website. Paper copies were distributed at both public meetings and to the Core Team. Flyers advertising the meetings were produced and distributed by the Core Team. Informational flyers were also distributed at the public meetings which provided information on the planning process and outreach efforts.

One public outreach session was held on December 10, 2015, at the BNL Community Advisory Council Meeting. This meeting attracts attendants from the Brookhaven, Ridge and Lake Panamoka Civic Groups and as such was chosen as a forum to reach residents who live in the planning area. A number of members of the Core Team attended the meeting and SWCA Environmental Consultants (SWCA) made a presentation to the council regarding the planning process and introduced the concept of a CWPP. SWCA discussed the main themes that came out of assessments in the planning area, particularly the need for defensible space around homes and the potential need for increasing fuel treatments on public lands that are adjacent to residences. Attendees were informed on how to provide input through the survey and through the project's Facebook page. Attendees at the meeting were given the opportunity to review a draft risk assessment map and paper versions of the community survey were distributed.

The Commission produced a press release on December 7, 2015, describing the project and inviting the public to get involved. *Riverhead News-Review* published an article on December 14th and *Newsday* printed a full-page article on the project on December 16th; News 12 Long Island aired a piece on the project on December 15th. The articles highlighted the need for ongoing public involvement in the project and directed residents to the online survey and upcoming public outreach opportunities.

A second community meeting was held on April 21, 2016 at the Ridge Fire Department and was attended by over 40 people. The meeting was held in conjunction with the release of the public review draft of the RMCCWPP. Copies of the news articles are provided in Appendix C.

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2.0 RIDGE-MANORVILLE-CALVERTON COMMUNITY BACKGROUND

2.1 LOCATION AND GEOGRAPHY

2.1.1 LOCATION

The RMCCWPP planning area is located within New York State's Central Pine Barrens region in Suffolk County, Long Island. The Central Pine Barrens was created in 1993 through an Act of the New York State Legislature termed the Long Island Pine Barrens Protection Act (the "Act"). The Act was embodied in Article 57 of the New York State Environmental Conservation Law. The principal goals of the Act are the protection of groundwater, surface water, and future drinking water supplies for 2 million residents and the protection of a threatened landscape containing the greatest diversity of rare, threatened, and endangered species in New York. The Central Pine Barrens is an area comprising 105,400 acres located in central and eastern Suffolk County on Long Island. It consists of parts of the eastern portion of the Town of Brookhaven, the western portion of the Town of Southampton, and the southern portion of the Town of Riverhead (see Figure 1.1). The Central Pine Barrens area is divided into a 48,700-acre Core Preservation Area (in which development is prohibited unless a hardship permit is issued by the Commission) and a 56,700-acre Compatible Growth Area in which development is permitted but must adhere to land use restrictions in the 1995 Central Pine Barrens Comprehensive Land Use Plan.

The planning area contains 9,322 acres (68%) in the Core Preservation Area and 4,378 acres (32%) in the Compatible Growth Area. The planning area consists of the entire Ridge hamlet (8,488 acres), the western portion of the Calverton hamlet (approximately 1,550 acres), the northwestern portion of the Manorville hamlet (approximately 1,160 acres), and the northern half of the Upton hamlet (approximately 2,482 acres), which is BNL, as depicted in Figure 2.1, for a total area of approximately 13,680 acres or 21 square miles. The Ridge and Upton (BNL) hamlets are located within the Town of Brookhaven, while portions of the Manorville hamlet are located within both the Town of Brookhaven and the Town of Riverhead, and Calverton is located within the Town of Riverhead with a portion also in the Town of Brookhaven.

2.1.2 GEOGRAPHY

The elevations within the Central Pine Barrens area range from mean sea level, where this area borders Flanders Bay in the Town of Southampton, to a high of 295 feet at Bald Hill, which is on the Ronkonkoma Moraine just northwest of the Eastern Campus of Suffolk County Community College in the Town of Southampton, south of the Town of Riverhead business district. Generally, elevations are lowest in the areas where recent geologic deposits are found and highest in the moraine areas. Slopes within the area of the Central Pine Barrens where outwash plains and recent deposits can be found are generally even to gently rolling and range from 0% to 15%. The moraine areas are very hilly and uneven, containing slopes that range from 15% to 35% in many areas (Commission 1995)

The Peconic River, Long Island's largest body of flowing fresh water, has its source in Ridge, in a maple swamp west of BNL. Ridge also occupies a very important geographic position with relation to Long Island's aquifer system. Within the boundaries of Ridge lies a triple point,

where three groundwater divides meet. These divides represent the boundaries of the three watersheds that supply fresh water to Long Island Sound, Peconic Bay, and the South Shore. Because Ridge straddles this system of groundwater divides, precipitation that falls within its boundaries is important in recharging Long Island's deep aquifers that are the source of drinking water for Long Island residents. Ridge and other areas that play a similar role in the groundwater system are designated as deep flow recharge areas.

2.1.3 LAND OWNERSHIP

The land ownership within the planning area is depicted in Figure 2.1 and Table 2.1. Approximately 69.2% of the land is publicly owned and 30.7% is privately owned.

Table 2.1. Land Ownership

Landowner	Acres (approx.)	Percentage
Private	4,057	30.7 %
New York State	3,036	22.9 %
Suffolk County	2,711	20.5 %
Federal	2,474	18.7 %
Town	933	7.1%
Total	**31,211**	**100.0%**

Note: Percentage may not sum exactly due to rounding.

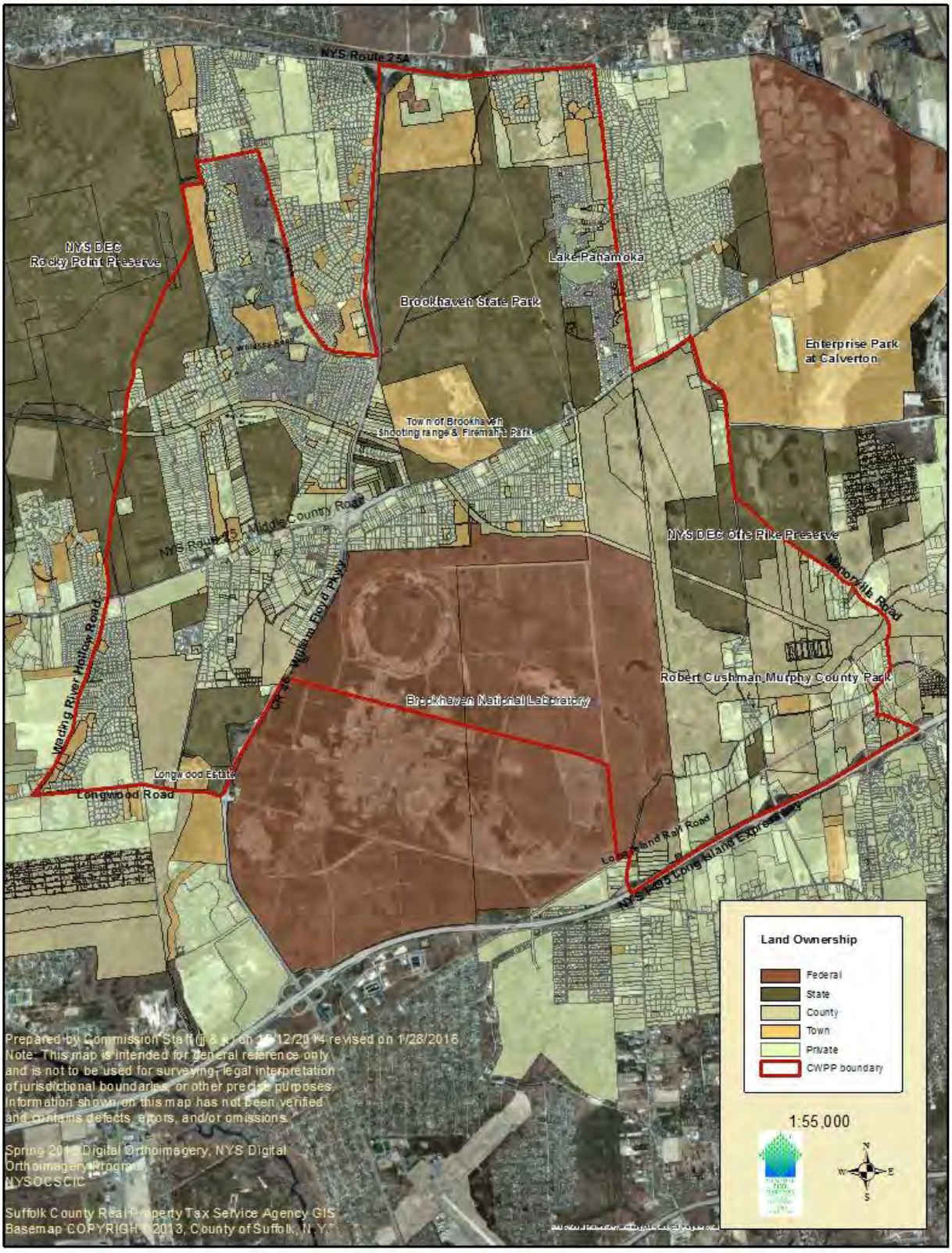

Figure 2.1. Land ownership.

2.2 POPULATION

The following population information is drawn primarily from the 2010 U.S. Census data and the U.S. Census Bureau, 2009–2013 5-Year Community Survey (U.S. Census Bureau 2014).

According to the 2010 Census, the Ridge hamlet had a population of 13,336 people and 5,714 households. The population density was 1,000 individuals per square mile. The 2013 population estimate for the hamlet is 12,882 with a median household income of $55,906.

For the Calverton Hamlet, the 2010 Census indicated a population of 6,510 people and 2,965 households. The population density is 230 individuals per square mile. The 2013 population estimate for the hamlet is 6,401 with a median household income of $48,602. The portion of the Calverton Hamlet that is within the planning area contains an estimated 30 households.

The 2010 Census for the Manorville Hamlet indicated a population of 14,314 people and 5,000 households. The population density was 560 individuals per square mile. The 2013 population estimate for the Hamlet is 14,096 with a median household income of $104,736. The portion of the Manorville Hamlet that is located within the planning area contains an estimated 63 households.

The main transportation corridors in the planning area include the William Floyd Parkway (County Route 46), which runs north-south through the western third of the planning area; Middle Country Road (New York State Route 25), which runs east-west approximately midway through the planning area; New York State Route 25A, which runs east to west along the northernmost boundary of the planning area; and the Long Island Expressway (Interstate Route 495), which runs east-west along the southern boundary of the planning area.

2.3 SUFFOLK COUNTY CLIMATE

Due to its coastal location, the climate of Suffolk County is greatly influenced by the Atlantic Ocean. The climate is categorized as humid continental and mild, with some variations due to changes in topography and distance from coasts. Summer temperature extremes are modified by cooling ocean breezes that form off the south shore of Long Island (Suffolk County Planning Department 1984). Temperatures are highest in July and August and coldest in January and February. The average summer temperature in Suffolk County is 72°F and the average winter temperature is 33°F (Figure 2.2) (Northeast Regional Climate Center 2015). The average annual relative humidity (a measure of the moisture capacity of the air) for the area is 84% and the average precipitation is 48 inches (BNL 2014), with the greatest precipitation occurring in March–April and October–November (Figure 2.3) (Northeast Regional Climate Center 2015). The prevailing wind directions in Suffolk County are northwest and southerly that reflect the dominance of cold arctic air masses in the winter and cooling ocean breezes in the summer (WFTF 1999). The average annual wind velocity in Suffolk County is 17 miles per hour.

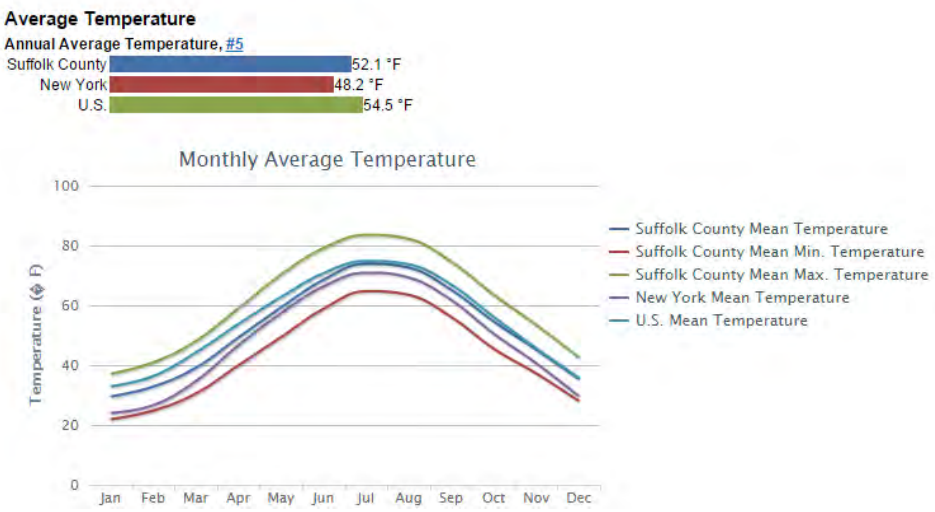

Figure 2.2. Monthly average temperature for Suffolk County (1980–2010) (Source: USA.com 2016).

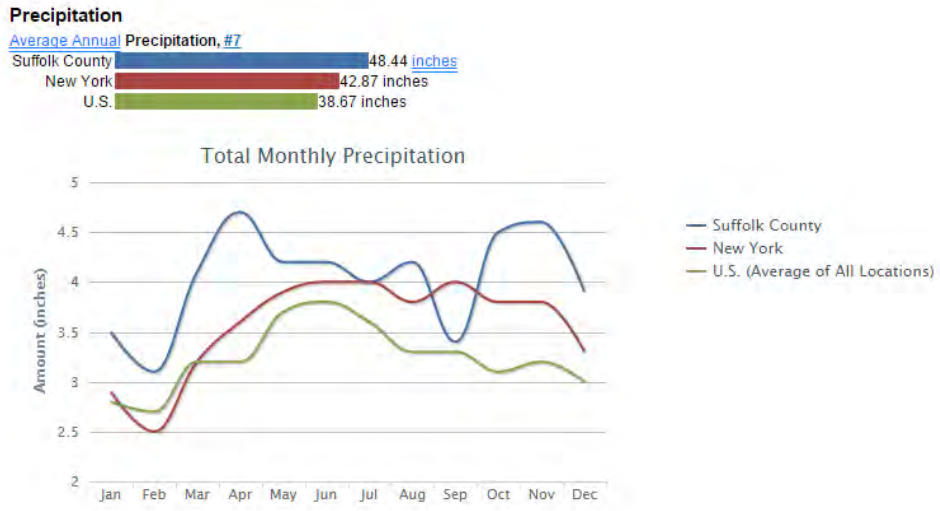

Figure 2.3. Monthly average precipitation totals for Suffolk County (1980–2010) (Source: USA.com 2016).

Due to the configuration of Long Island and the large bodies of water that surround it, the area is prone to unique wind patterns, with switching land and sea breezes throughout the day. A 180 degree switch in wind direction is not uncommon and this uncertainty can make fire suppression particularly dangerous and difficult to manage (WFTF 1999).

Long Island typically experiences two distinct brush fire seasons (WFTF 1999; BNL 2014). The first is the spring season (March through early June) when surface fires are common. The fall season (late summer through mid-October) (BNL 2014) typically sees a large number of surface fires of 10 acres or less, or crown fires that spread through dead and dried leaves prior to leaf

fall. Fires during this period are not as frequent, but have the capacity to become larger and more intense (BNL 2014).

2.3.1 WILDFIRE TASK FORCE: FIRE WEATHER SUBCOMMITTEE

The Wildfire Task Force has a Fire Weather Subcomittee that coordinates the dissemination of fire danger information to local fire departments, emergency managers, and public land managers during the fire season by releasing daily fire danger rating reports to the Suffolk County Fire Rescue and Emergency Services who in turn dispatches this information to the local fire departments and emergency managers throughout Suffolk County. This information is also sent out by email and fax to public land managers and other fire or emergency management personnel that have requested to receive this report.

Fire Danger is a broad scale assessment that assists the fire manager to determine the potential of overall fire behavior within a geographic area, typically 50,000 to 100,000 acres in size, such as the Central Pine Barrens Area. This geographical area is referred to as a Fire Danger Zone. Due to the size, topographical variance, slopes, aspects, and multiple vegetation types in a typical fire danger zone, fire danger predictions are taken as relative indicators of fire behavior. This means actual fires at the scene will behave in ways that are influenced by local conditions that the model cannot predict exactly. It does not predict the possibility of fire occurring there. The ignition of wildfires is almost always by careless or intentional actions of children or adults, and can occur during any of the fire danger ratings.

Data on fire weather is an important tool for both prevention and suppression of wildfires. Each day, fire weather data (temperature, relative humidity, wind speed, wind direction and fuel moisture and fuel temperature, precipitation) is reviewed from the fire weather station owned by the Central Pine Barrens Commission which is located in Eastport, Long Island. This raw weather data is processed by the Weather Information System (WIMS), which is a web-based application that resides on a suite of servers known as FAMWEB that hosts all of the National Fire Applications at the USDA National Information Technology Center (NITC) in Kansas City (National Interagency Fire Center 2011). WIMS processes the weather data using models to calculate certain indicators that relate to potential fire behavior based on the weather data observed. This information is used to determine the fire danger level that is expressed by adjectives that are color coded, low (green), moderate (blue), high (yellow), very high (orange), or extreme (red). These adjectives indicate the potential difficulty to control a fire should an ignition occur and are used by fire and emergency service personnel along with public land managers to determine whether certain actions need to be taken such as increasing staffing levels or patrol requirements, restricting or prohibiting the use of campfires, or other activities on public lands in the interest of public safety.

The fire danger rating is posted on Smokey Bear Fire Danger Signs located within the Central Pine Barrens area to notify the public when special precautions above normal safe guards may be required. There are currently five fire danger signs, three near Suffolk County parks entrances (Southaven County Park, Sears Bellows County Park and Cathedral Pines County Park), one along the east side of CR 31 outside of the Commission's office and one along the east side of William Floyd Parkway just south of the entrance to Brookhaven National Laboratory. In addition, the Commission has been recruiting local fire departments to post the fire danger level along with safety messages on their electronic signs when the fire danger level goes above moderate.

A document entitled "**Standard Operating Procedures for Interagency Fire Awareness Notification for Public Lands" ("SOP")** was prepared by the Subcommittee to ensure that public land management agencies in Suffolk County simultaneously receive uniform, accurate, and timely fire awareness information which affects public lands. The SOP facilitates the coordination of consistent public land management decisions with regard to fire danger and public safety during times of high or extreme fire danger levels.

2.4 VEGETATION

The Central Pine Barrens region is a complex mosaic of pitch pine (*Pinus rigida*) woodlands, pine-oak forest, coastal plain ponds, swamps, marshes, bogs, and streams (WFTF 1999). All major forest plant communities in the Central Pine Barrens have evolved under the influence of periodic wildfire and many plants have developed adaptations to a regime of frequently occurring fires (DEC 2007; BNL 2014). For example, pitch pine seeds germinate and grow best on mineral soil in full sunlight, conditions created when fire burns off surface litter and competing vegetation (BNL 2014). Public land agencies like the DEC have developed a fire management program that seeks to restore fire to its natural role in park ecosystems like the Rocky Point Natural Resource Management Area (DEC 2007).

The breakdown of vegetation types in the CWPP planning area is shown in Table 2.2. This classification uses the Landfire vegetation scheme. This vegetation classification system was chosen because Landfire layers are compatible for use in the fire behavior modeling programs used to generate the risk/hazard assessment. The dominant vegetation types are hardwoods, riparian, exotic tree-shrub, and conifer. The well-drained sandy soils of the Central Pine Barrens cause the vegetation there to be adapted for the retention of water. Pitch pines, for example, have waxes, resins, or volatile compounds in their leaves making them more prone to ignition. Pitch pines are also adapted to fire through their thick insulated bark and ability to sprout from buds in the trunk and root collar (BNL 2014). The fire adaptations of species like pitch pine helps them to perpetuate their presence over other species that would otherwise benefit from the higher nutrient loads associated with decay and litter under reduced fire frequency (BNL 2014). Prolonged fire exclusion would ultimately result in the replacement of pine barrens with oak forests (BNL 2014).

In areas that have undergone frequent burning, the dominant tree species is pitch pine, a fire-adapted and relatively fire-resistant species. The pitch pine woodlands are characterized by wide spacing that facilitates sunlight reaching the understory and supporting dense growth of shrubby scrub oak (*Quercus ilicifolia*) and low-lying heath species such as black huckleberry (*Gaylussacia baccata*), blueberry (*Vaccinium pallidum* and *V. angustifolium*), sheep laurel (*Kalmia latifolia*), and wintergreen (*Gaultheria procumbens*).

In areas that have not recently burned, various species of tree oaks co-dominate and the canopy is relatively closed (Figure 2.4) (WFTF 1999). Scrub oak and heath shrubs decline under more shaded conditions and the herbaceous layer is sparse except where sunlight hits the forest floor. The herbaceous layer is composed of bracken fern (*Pteridium aquilinum*) and Pennsylvania sedge (*Carex pennsylvanica*). In areas of freshwater wetland, species include red maple (*Acer rubrum*), tupelo (*Nyssa sylvatica*), and Atlantic white cedar (*Chamaecyparis thyoides*).

Table 2.2. Vegetation Types throughout the CWPP Planning Area

LANDFIRE Vegetation Type	Acreage	% of Total
Agriculture	19.8	0.1%
Barren	73.4	0.5%
Conifer	686.8	5.0%
Conifer-hardwood	238.2	1.7%
Developed	1,490.9	10.9%
Developed: high intensity	20.7	0.2%
Developed: low intensity	799.3	5.8%
Developed: medium intensity	368.1	2.7%
Developed: roads	1411.5	10.3%
Exotic tree-shrub	869.6	6.4%
Grassland	105.2	0.8%
Hardwood	5,414.2	39.6%
Open water	118.1	0.9%
Riparian	2,072.3	15.1%
Total	**13,688.1**	**100.0%**

Source: LANDFIRE 2015.

Figure 2.4. Oak pine woodlands neighboring Brookhaven National Laboratory property.

2.5 HISTORIC CONDITIONS AND PRESENT CHANGES IN FIRE-ADAPTED ECOSYSTEMS

It is well accepted that the forests of the Central Pine Barrens burned frequently since they were established after the end of the last ice age 12,500 years ago (Botkin and Williams 2013). Pitch pine-scrub oak barrens are characterized by excessively drained soils and plant composition that includes several species that are highly flammable and/or have adaptations to survive or regenerate after fire (University of Massachusetts 2015). Pitch pine and some oaks have the necessary adaptations to be adapted to the frequent fire regime and poor soils (Botkin and Williams 2103). Some assert that Pine Barren species alter their environment to favor their own perpetuation (Noble and Slatyer 1977; BNL 2014). Due to their volatile foliage, these species promote ignition and removal of available litter, prohibiting the decomposition of litter and formation of organic soils that would facilitate growth of less tolerant species (BNL 2014). Fire suppression actions destabilize this feedback loop, allowing succession from pine to oak dominated forests.

Historic fire occurrence in the area has been determined through analysis of fossil pitch pine pollen and charcoal layers preserved in sediment cores from Deep Pond on the northern edge of the Central Pine Barrens (WFTF 1999). Although the exact numbers of fires are difficult to determine, evidence suggests at least eight major fires burned in the area prior to European settlement, with more numerous smaller and lighter fires also evident (Backman 1984). Lightning starts or Native American burning may have caused these fires (Commission 1995); historic records from early explorers report regular fires in the area (Morton 1632; Wood 1634).

After European settlement, large fires were common place in the area, with large fires noted in 1839, 1845, 1848, 1862, 1930, 1960, and 1995. Many of the earlier fires may have been a result of sparks from the Long Island railroads, with arson also cited as a frequent cause (Commission 1995). Windisch in 1994 provided a preliminary wildfire history of the Central Pine Barrens in which the author accounts for and maps 130 fires, with an additional 145 fires documented from records, that were not located on a map. Most fires were smaller in size as a result of the advent of aggressive fire suppression since the early 1900s (Windisch 1994).

In 1995, two unusually large and severe wildfires, known as the Rocky Point and Sunrise fires, burned a total of 6,850 acres of the Central Pine Barrens in late August and early September. Extreme drought combined with high fuel loads resulting from 65 years of fire suppression resulted in extreme fire behavior, uncharacteristic of this forest type.

On April 9, 2012, two separate brush fires were reported in Ridge and Manorville. Several hours later the two fires combined to form the Crescent Bow fire. The National Weather Service had issued several red flag warnings in the area due to high winds and prolonged dry weather. The fire consumed 1,067 acres and resulted in the destruction of two private homes and one commercial structure. In addition, three firefighters were hospitalized, one for burns and the others for smoke inhalation. One hundred and twelve fire departments from Nassau and Suffolk County responded to the incident, with aid from the Air National Guard. The New York Governor declared a state of emergency in Suffolk County.

The aggressive suppression of wildfire for many decades has meant that natural plant community succession, species composition, and forest structure have been altered. In the scrub oak woodlands, pitch pine-oak forest, and oak-pine forests, the forest canopy is becoming increasingly closed and forest openings smaller as shade-tolerant species grow in dense thickets (DEC 2007). Lack of fire has changed habitat that is critical to certain wildlife species (DEC 2007). Wildlife that are dependent upon shade intolerant herbaceous and shrub species and those species that depend upon fire created snags are impacted by a lack of fire. Remaining even aged stands of shrubs and trees as a result of fire suppression cause intense competition for limited sunlight, water, and nutrients, as well as poor forest health. This increases the potential for insect and pathogen infestations that cause tree die-off and in turn increase the risk for fire (DEC 2007).

Some in-roads have been made in recent years to rectify the impacts of the suppression era. Many agencies have been specifically mandated to reduce the amount of forest and shrubland fuels around homes and buildings, and to restore ecosystems to a more natural, fire tolerance balance (DEC 2007). Fuel treatments have been occurring on public lands that are focused on the protection of adjacent properties, and the Commission with public agency partners has been actively engaging in fuel treatment projects that serve to protect WUI communities.

2.5.1 NON-NATIVE AND INVASIVE SPECIES

The Central Pine Barrens region provides habitats for unique and rare plants and animals. Ecosystem types located within this area include coastal plain ponds, swamps, marshes, bogs, streams, pitch pine-oak forest, pitch pine-oak heath woodland, coastal oak forest, grasslands, and dwarf pine plains (Reynolds et al. 2008). Efforts have been ongoing by the Commission and other entities to preserve the integrity of the Central Pine Barrens against non-native invasive plants (Reynolds et al. 2008). Non-native species of concern include Japanese barberry (*Berberis thunbergii*), multiflora rose (*Rosa multiflora*), garlic mustard (*Alliaria petiolata*), mile-a-minute vine (*Persicaria perfoliata*), oriental bittersweet (*Celastrus orbiculatus*), black swallowwort (*Cynanchum louiseae*), floating water primrose (*Ludwigia hexapetala*), autumn olive (*Elaeagnus umbellate*), kudzu (*Pueraria lobata*), and mugwort (*Artemisia vulgaris*) (New York Invasive Species Information 2015).

2.6 HISTORY AND LAND USE

2.6.1 RIDGE

The first settlement in Ridge was made by Stephen Randall in 1728 who owned a farm on Whiskey Road, just west of what is today known as Leisure Village. Ridge was originally known as Randallville after Stephen Randall and all the Randalls that settled and lived there for years. His family and descendants farmed a 4,000-acre plot of ground referred to as "the Ridge" based on the geographical terrain. Randallville's name was changed to Ridge by its residents for postal delivery. Throughout the 1800s, cordwood was cut from the lands in this area, which was hauled to the Long Island Sound where it was transported to New York City and then transported by way of barge up the Hudson River to be burned in brickyards (*Newsday* 1998). The Ridge school was built in 1872, south of Middle Country Road, opposite the New York State Game Farm. All of the children in this area went to this school, which also served as a church on Sundays until a new school was built in 1952 on a tract of land donated by the New York State Game Farm (Bayles 1989).

In 1691, an immense tract of land was purchased from the Native Americans by Colonel William Smith, which extended from Middle Country Road to the ocean that was known as the Manor of St. George. The northern part of this land was called Longwood and the Smith family built its homestead in 1790 where it lived for generations. The northern part of this land was first called Long Swap because this area had so many ponds and swamps. The area was used as pasture land for cattle, farming, and woodcutting for cordwood (Longwood Alliance 1993). The last member of the Smith family, Elbert C. Smith, gave 50 acres of land to the Longwood Junior High School and 6 acres to the Middle Island Presbyterian Church and the site for the Lutheran Church on Smith Road. After his death, the remaining 800 acres owned by the Smiths was sold to developers in 1968 (Bayles 1989). In 1973, Wilbur Breslin, a developer purchased the Longwood Estate and 35 surrounding acres and ended up donating the estate to the Town of Brookhaven in 1974, which is now listed on the New York State Registry of Historic Places (Town of Brookhaven 2016).

The original Ridge school was moved to the Smith Estate in the 1980s to be retained for historical purposes as an example of a one-room school house (Bayles 1989; Johnson 2006). In the mid-island area of Coram, Middle Island, and Ridge, early settlers cleared for farms and built homes. The Native Americans prior to these early settlements in the 1700s used these areas as hunting grounds (Bayles 1989).

Ridge hamlet is located within the Longwood School District that received its name from the Longwood Estate owned by the Smith family. Ridge Elementary School is located on Ridge Road and is the only school within the Longwood School District that is located within the planning area. The Shoreham Wading River High School and the Albert Prodell Middle School, which are within the Shoreham Wading River School District, are located in the northern portion of the planning area, north of Brookhaven State Park.

Located east of Brookhaven State Park is the Lake Panamoka community. Lake Panamoka, which was originally called Long Pond, was used for hunting and fishing by the Native Americans for many years. Many arrowheads are found at the lake that range in age from thousands of years old to the 1700s. The lake was the summer residence for the Native Americans. Many Native American relics have been found in ponds located in wooded areas that surround the lake (Longwood Alliance 1993). A Boy Scout camp for Queens County named Camp Newcombe was located there in the 1920s and the ranger's house is still present. In the 1930s a developer built log homes and the name was changed from Long Pond to Lake Panamoka (not a Native American name) (Johnson 2006). The original homes were small summer cottages on ⅛- to ¼-acre lots, which eventually became a year-round community (Longwood Alliance 1993).

2.6.2 CALVERTON

Originally Calverton was called Baiting Hollow Station after the railroad that came into the area in 1844 and as Hulse's Turnout, which indicated the point travelers turned north to the Hulse's place in Wading River. In 1868, the area was named as Calverton for Bernard J. Calvert, the hamlet's first postmaster. Calverton was a small farming community with swampy wetlands that were ideal for cranberry bogs similar to the northern portion of Manorville that was also part of the land purchased by George W. Davis. The last cranberry bog closed in the 1970s and today is the site of Swan Pond Lake Golf Course (*Newsday* 1998).

In 1926 was a much noted incident known as the Great Pickle Works wreck that occurred when the Shelter Island express pulled out of Manorville and hit a faulty switch and plunged into Golden's Pickle Works, where six people died, including the engineer from drowning in water (*Newsday* 1998).

In 1956, the U.S. Navy acquired 4,000 acres in Calverton (located east of the planning area), which became known as the Naval Weapons Industrial Reserve Plant that was leased to the Grumman Aircraft Engineering Company that spent several decades designing, assembling, and flight testing aircraft there for the Navy. In addition, Grumman was involved with developing and testing the Lunar Excursion Module or LEM. Grumman merged with Northrop Corporation in 1994 and began downsizing and shut down this facility in 1996 that once employed 3,000 people. In 1996, the Federal Bureau of Investigation and National Transportation Safety Board used a hangar on this site to rebuild the wreckage recovered from the crash of TWA flight 800 (Lapham 1990). In September 1998, the U.S. government transferred 3,200 acres of woodland acquired by the Navy in 1960 to serve as a buffer zone around the plant to New York State, which became the Otis Pike Preserve. In addition, the Navy transferred 150 acres to the Calverton National Cemetery that was opened in 1979 on other buffer land owned by the Navy (*New York Times* 1997). The Navy transferred 2,900 acres of land that housed the Grumman plant in 1998 to the Town of Riverhead Community Development Agency on the condition that it would be used for economic redevelopment to replace thousands of well-paid jobs and tax base lost by the Grumman closure (Commission 2005).

2.6.3 MANORVILLE

Manorville was mainly a farming community for many years that some early residents referred to as Punk's Hole after a kettle hole in the area that still exists about 1,000 feet south of Hot Water Street, just east of its intersection with Halsey Manor Road. Punk's Hole is named after Captain Punk who hid there with his men from the British.

Manorville was part of the huge tract known as the Manor of St. George that was granted to William Smith in a royal patent of 1693 that was later sold in 1721 to a group of colonists from Southold. (Eastport-South Manor Central School District 2016). When the railroad came through this area, the train station was also given the name of St. George's Manor, however, the first station agent, Seth Raynor, did not like this since he was an ardent patriot during the Revolutionary War and decided to paint out the words "St. George" on the sign for the station leaving the name as "Manor." In 1845, the post office opened and a petition was made to the Post Office Department for the name Manor; however, since that name was already taken for another place, the department gave the name Manorville to this area (Manorville Taxpayers Association 1993).

Manorville was a prime area for harvesting cordwood and served as a fuel stop for the railroad's early wood-burning locomotives. Passengers could travel to the city now in a few hours instead of two or three days. While the train engines were being tended with wood and water, passengers ate at the local hotels known as Little Delmonico and the Maples. Stagecoaches would come to the Manorville train station for mail and passengers (Manorville Taxpayers Association 1993).

Manorville was mainly forested during the early years, and the cutting and shipping of cordwood was an important industry for this area, which was shipped by railroad to New York City. It was

estimated at least 2,500 cords of wood a year were shipped from Manorville (Manorville Taxpayers Association 1993).

In the late 1870s, approximately 3,250 acres of land was purchased by George W. Davis from Massachusetts in north Manorville and 52 acres of marsh area were planted with cranberries that became an important industry in the area, which were sold under the name of Blue Diamond. Approximately 25,000 bushels of cranberries were harvested annually and shipped by railroad to New York City. The last of the cranberry marshes ceased to exist in the 1970s. Land was also cleared and planted with various produce such as potatoes, lima beans, corn, strawberries, and cabbage (Manorville Taxpayers Association 1993).

Various industries over the years have provided local jobs to the residents of Manorville, which included large employers such as Brookhaven National Laboratory and Grumman, both of which have land in Manorville. Active farmlands remain in this area; however, a significant amount of farmland has been sold to developers (Manorville Taxpayers Association 1993).

Since Manorville is such a large area, there were four schools organized around 1813: North Manor, East Manor, West Manor, and South Manor. East Manor consolidated with Eastport in the early 1970s, and West Manor and South Manor were merged in 1990. North Manor was in the Town of Riverhead and was eventually closed. West Manor, East Manor, and South Manor built new schools in 1929 for grades 1 through 8. The present South Manor School District has two schools sites, one on South Street and the other on Dayton Avenue; both are not in the planning area. The South Manor school district subsequently merged with the Eastport school district to form the Eastport-South Manor School District. The Manor Historical Society resides in the West Manor School building that is an example of a two-room schoolhouse, which is being restored and retained for historical purpose.

2.6.4 BROOKHAVEN NATIONAL LABORATORY

BNL is a 5,321-acre multi-purpose research institution that is located in the southeastern portion of the planning area and is funded primarily by the U.S. Department of Energy's Office of Science and operated and managed by Brookhaven Science Associates. It served as an army training camp for inductees during World War I and II and later as a convalescent and rehabilitation hospital in 1944. At the close of World War II, it was declared surplus and converted to a research center for peaceful uses of atomic energy in 1947. BNL continues to operate cutting-edge, large-scale facilities for studies in physics, chemistry, biology, medicine, applied science, and a wide range of advanced technologies. BNL's almost 3,000 scientists, engineers, and support staff are joined each year by more than 4,000 visiting researchers from around the world (BNL 2016).

2.7 LAND USE

Within the planning area in the northeastern portion of the Ridge hamlet, there is a high density affordable housing area, Ridge Haven Village and Strathmore Village, as well as large, high density planned retirement communities that include the Leisure Village Planned Retirement Community (1,500 condominiums), Leisure Knolls (700 homes), and Leisure Glen (646 single-family and semi-attached dwellings) (Leisure Living Realty, Inc. 2016) with the remainder of the hamlet area consisting of mainly single-family residential subdivisions adjacent to or surrounded

by large open space areas owned by the State, County, or town with the federally owned BNL facility in the southeast portion of the project area.

The Lake Panamoka residential community is located just east of Brookhaven State Park. Commercial shopping areas and other businesses in the planning area are mainly located along New York State Route 25. The portions of the Manorville and Calverton hamlets that are located within the planning area primarily contain large open space areas owned by Suffolk County and the State with few single-family residences or subdivisions (63 households in Manorville and 30 households in Calverton) that are adjacent to or surrounded by these large open space areas, with the BNL facility located to the west of these areas.

The planning area, as well as the overall Central Pine Barrens area, offers a wide range of recreational opportunities, such as hiking, canoeing, wildlife watching, birding, horseback riding, swimming, hunting, fishing, outfitting, nature study, and photography. There are extensive trails throughout this area, including a portion of the Paumanok Path, a 130-mile trail that traverses through the planning area from the Rocky Point Preserve to Montauk Point, passing through pristine woodlands and rare coastal plan ponds. Aside from the natural beauty and extensive ecological resources in this area, there are significant historic resources of value as well (Hiking Long Island 2016; Long Island Greenbelt Trail Conference 2016).

Within the planning area are large areas of dedicated open space known as Brookhaven State Park, the Town of Brookhaven Shooting Range and Firemans Park, Robert Cushman Murphy County Park, the Ridge Conservation Area (Middle Island Game Farm), the Otis Pike Preserve, the Calverton Ponds Preserve, and the Upton Ecological and Research Reserve.

Upton Ecological and Research Reserve

On November 9, 2000, 530 acres located in the eastern portion of BNL were dedicated as protected habitat by the U.S. Department of Energy as the Upton Ecological and Research Reserve, an ecologically unique pine barrens ecosystem that is home to more than 220 species of plants and 162 species of mammals, birds, reptiles, and amphibians. This reserve is managed to preserve its natural state through an interagency agreement between BNL and the U.S. Fish and Wildlife Service. The reserve protects and preserves a unique ecosystem that provides suitable habitat for approximately 27 state endangered, threatened, or species of special concern that have been identified to date at BNL, including the federally threatened northern long-eared bat (*Myotis septentionalis*), the state endangered eastern tiger salamander (*Ambystoma tigrinum*) and state threatened banded sunfish (*Enneacanthus obesus*), swamp darter (*Etheostoma fusiforme*), and stiff goldenrod (*Oligoneuron rigidum*). Other wildlife species of interest that inhabit this area include wild turkey (*Meleagris gallopavo*), red fox (*Vulpes vulpes*), eastern box turtle (*Terrapene carolina carolina*), and red-tailed hawk (*Buteo jamaicensis*) (BNL 2016).

Brookhaven State Park

Brookhaven State Park was established in 1971 and comprises 1,638 acres. It is located in the northeastern portion of the planning area in Ridge and was once part of the property that comprised BNL and the former military installation called Camp Upton. This was surplus land given to the State by the federal government for development into a park facility. The park has 25 miles of multi-use trails and contains various oak-pine habitats with scattered wetland areas and coastal plain ponds within its boundaries (New York State Office of Parks, Recreation and

Historic Preservation 2016).

Long Island Shooting Range and Firemans Park

South and adjacent to Brookhaven State Park is the Town of Brookhaven Long Island Shooting Range that offers trap and skeet and other types of firearm activities and archery. Adjacent to and east of the shooting range is Brookhaven Town Firemans Memorial Park, where volunteer firemen hold tournaments and training, and the Brookhaven Volunteer Firefighter Museum, a non-profit educational facility and museum whose purpose is to enhance the public's knowledge of the history of volunteer firefighting by preserving artifacts of firefighting.

Robert Cushman Murphy County Park

Originally known as Peconic River Park, this is Suffolk County's first natural park and its largest parkland encompassing nearly 3,000 acres. It flanks the Peconic River and three of its tributary systems. A diversity of wildlife species can be seen, including white-tailed deer (*Odocoileus virginianus*), red-tailed hawk, and a variety of reptiles and amphibians. The last active cranberry bog ended its operation in 1974. Shallow coastal plain ponds of global significance are found in this park, in the Peconic River headwaters area and elsewhere. These ponds have gently sloping shorelines and are groundwater-fed; the water levels fluctuate seasonally and annually with the height of the groundwater table. The fluctuating water levels result in an intermittently exposed shoreline, the regionally rare coastal plain pond shore community which supports a distinctive assemblage of plants. During dry periods more pond shore substrate is exposed, and whole assemblages of globally rare plants, mostly annuals, are abundant on the pond shores. A chain of ponds follow one after another north to south within the park and planning area (USFWS 1997). Hunting in this area is managed by the DEC (Suffolk County 1997).

Otis Pike Preserve

The Otis Pike Preserve was formerly part of the Navy Cooperative Area and comprises 4,000 acres of wetland and upland open space area that offers numerous recreational opportunities, such as hiking, bird watching, horseback riding, dog training, hunting, fishing, and trapping, and has non-motorized boat access to the ponds. This area is located a few miles east of Randall Pond and extends eastward beyond the planning area (DEC 2016).

Ridge Conservation Area

The Ridge Conservation Area is a 184-acre parcel that is managed by the New York State Department of Environmental Conservation (DEC). The land, acquired by DEC in 1914, was known as the Middle Island State Game Farm and was used for agricultural purposes and to raise bobwhite quail and ringneck pheasants. The property is now primarily used for the maintenance and storage of DEC equipment. The onsite Ridge Hunter Check Station serves as a check point for hunters using DEC property under a daily access permit, and to check game taken on these properties. There are three marked trails onsite for use by the public for hiking and recreation activities, including three fishing piers, however biking and horseback riding are not permitted. Randall Pond, a groundwater-fed freshwater pond is located onsite that has water levels which fluctuate throughout the year due to changes in the water table, creating a dynamic aquatic community in and around the pond known as a Coastal Plain Pond shore. (DEC 2016).

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3.0 FIRE ENVIRONMENT

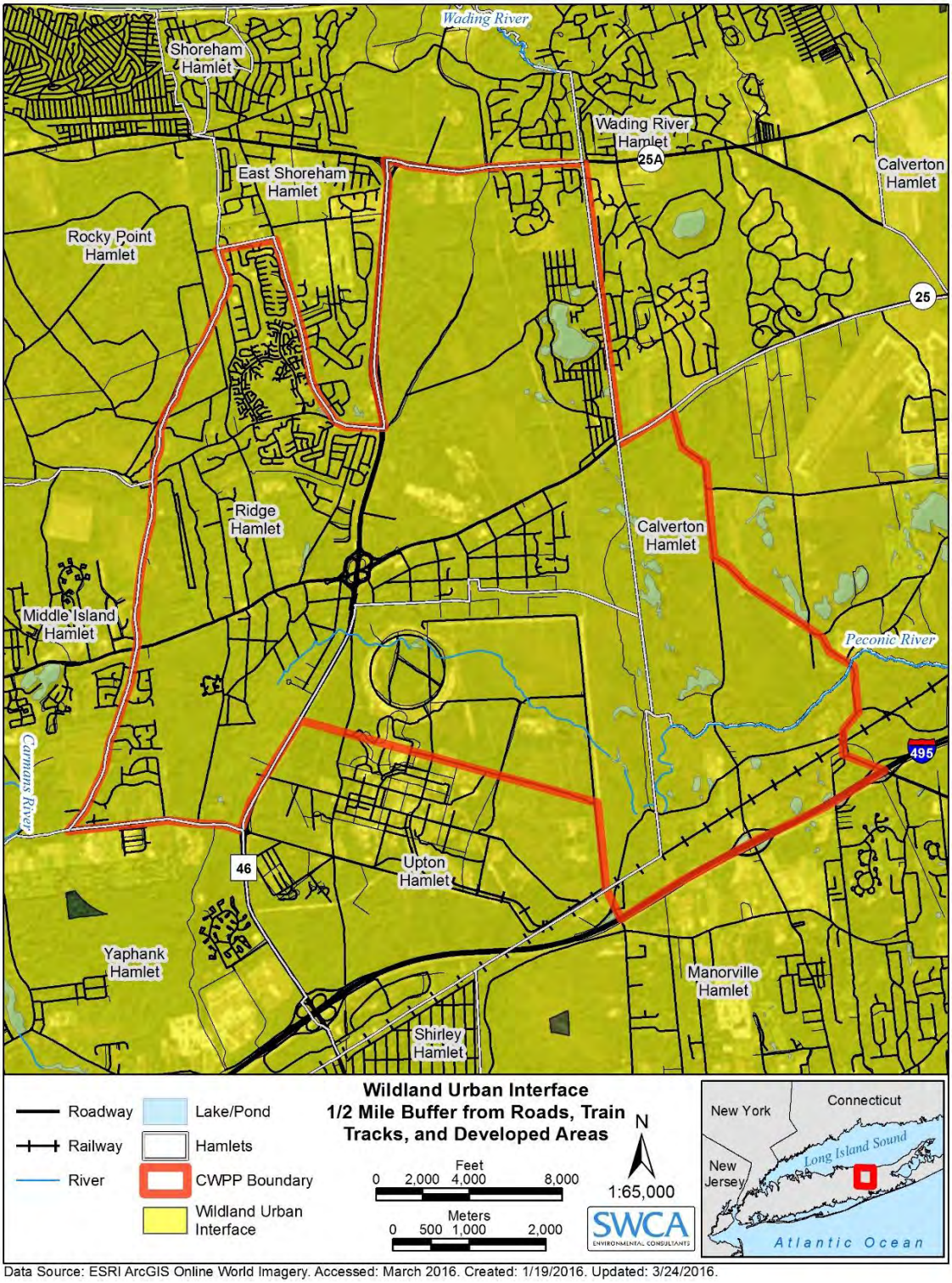
3.1 WILDLAND URBAN INTERFACE

The WUI is composed of both interface and intermix communities and is defined as areas where human habitation and development meet or intermix with wildland fuels (U.S. Department of the Interior [USDI] and U.S. Department of Agriculture [USDA] 2001:752–753). Interface areas include housing developments that meet or are in the vicinity of continuous vegetation and consist of less than 50% vegetation. Intermix areas are those areas where structures are scattered throughout a wildland area of greater than 50% continuous vegetation and fuels and meet or exceed a minimum of one house per 40 acres. Depending on the surrounding fuel conditions, topography, and present structures, wildland areas of up to 1.5 miles from structures may be included in the WUI (Stewart et al. 2007).

The WUI creates an environment in which fire can move readily between structural and vegetative fuels, increasing the potential for wildland fire ignitions and the corresponding potential loss of life and property. Human encroachment upon wildland ecosystems within recent decades is increasing the extent of the WUI in Suffolk County and is therefore having a significant influence on wildland fire management practices. Combined with the collective effects of aggressive suppression policies, resource management practices, land use patterns, climate change, and insect and disease infestations, the expansion of the WUI into areas with high fire risk has created an urgent need to modify fire management practices and policies and to understand and manage fire risk effectively in the WUI (Pyne 2001; Stephens and Ruth 2005). Mitigation techniques for fuels and fire management can be strategically planned and implemented in WUI areas; for example, the development of defensible space around homes. The WFTF is tasked with providing wildfire safety recommendations regarding existing and future development within the WUI (WFTF 1999). The Commission has been working with town staff on revisions to the Central Pine Barrens Comprehensive Land Use Plan to potentially incorporate the International Code Council (ICC) WUI Code as standards or guidelines for new development in the planning area (WFTF 2015)

A CWPP offers the opportunity for collaboration of land managers to establish a definition and a boundary for the local WUI; to better understand the unique resources, fuels, topography, and climatic and structural characteristics of the area; and to prioritize and plan fuels treatments to mitigate for fire risks. At least 50% of all funds appropriated for projects under the HFRA must be used within the WUI area.

The Core Team decided to delineate the WUI as an area 0.5 mile from the edge of an at-risk community. At-risk communities are defined as all communities on the edge of urban areas. In addition a 0.5-mile buffer is also delineated either side of all major roads. This would act as a fuel break from ignitions on the highways, as well as protection so that roads may serve as escape routes for the public in the event of a wildfire (Figure 3.1). Due to the urban nature of much of the planning area, this delineation resulted in the entire planning area falling into the WUI. This is to be expected since this planning area was chosen because of the concern for these communities that abut public lands. This WUI delineation is in line with the DEC definition of WUI for the Rocky Point property, which is broken down as a 0.25-mile inner buffer around the community, extending out to 1.5 miles where needed to encompass defensible space features.



Data Source: ESRI ArcGIS Online World Imagery. Accessed: March 2016. Created: 1/19/2016. Updated: 3/24/2016.

Figure 3.1. WUI map of the planning area- note the WUI comprises the whole CWPP area.

3.2 FIRE HISTORY

Many habitats in the northeast belong to fire groupings and regimes that are characterized by "long" (100–300 years) return intervals or "very long" (more than 300 years) return intervals between fires (Heinselman 1981; Barbour and Billings 1988; BNL 2014). In the Central Pine Barrens fire frequency was much shorter (every 25–50 years), and historically wildfires are thought to have burned freely over long durations and covering thousands of acres, from the Hempstead Plains in Nassau County to the Central Pine Barrens of Southampton (Olsvig et al. 1979; WFTF 1999; BNL 2014). Prior to European settlement, most fires are believed to be related to Native American burning for land management and hunting (BNL 2014). The Long Island railroad was also linked to increased fire frequency in the mid nineteenth century (Kurczewski and Boyle 2000).

With the exception of the 1995 and 2012 fires, large conflagrations rarely occur as the Central Pine Barrens area has been reduced in acreage from its original 250,000 acres and also due to urban expansion, discontinuity of the fuel layer due to road networks and fuel breaks, and increased fire suppression and wildfire prevention activities. As a result, although the area experiences many fire starts, most fires are detected early and do not gain significant size as they are aggressively suppressed. Aggressive suppression activities, however, have meant that the potential for large and catastrophic wildfire does remain due to increased fuel loads and the increased potential for ignition.

Rocky Point Fire, 1995

On August 21, 1995, following one of the driest summers for 71 years, the Rocky Point fire ignited tinder dry pine and scrub oak forests at DEC's Rocky Point Natural Resource Management Area. The fire, which was thought to originate from human activity, burned approximately 1,800 acres.

Sunrise Fire, 1995

Three days following the Rocky Point fire, the Sunrise fire ignited and burned land on both sides of Sunrise Highway. Both the Rocky Point and Sunrise fires were extinguished by August 27th, due to the large and aggressive suppression response by over 2,500 personnel from nearly every fire department on Long Island, along with county, state, and federal personnel. Both fires burned a combined 6,850 acres, numerous homes and businesses suffered damage and 400 people were forced to evacuate their homes. The fire erupted during the peak of the tourist season, resulting in a considerable blow to the economy for the region.

Crescent Bow Fire, 2012

On April 9, 2012, several brushfires combined to ignite over 1,200 acres of woodland around Manorville and Ridge. The fire intensity was great enough to cause the closure of parts of the Long Island Expressway and by 5 p.m. parts of Riverhead were placed on mandatory evacuation. The fire was fought by firefighters from 112 departments using 30 brush trucks, 20 tankers, and 100 engines. Airdrops of water were made by the New York State Police helicopter.

Most fire suppression experts believe that the threat of massive damage to human lives, private property, and natural resources is increasing throughout North America (National Fire Protection

Association [NFPA] 1987). Wildland fires have become a major concern in recent decades for a number of reasons: 1) human activity patterns have changed the landscapes over the past three decades, 2) natural resources are now highly valued and protected against widespread wildfire, 3) national wildland firefighting budgets are shrinking, 4) more people are escaping the cities into the wildlands, 5) many rural areas are dependent on VFDs that have insufficient funds and resources to fight large conflagrations, and 6) climatic conditions such as drought can be like a match to volatile fuels.

3.2.1 IGNITION SOURCES

Only a few fires are ignited by lightning on Long Island because lightning is usually accompanied with rain. The majority of fires in the Central Pine Barrens area are ignited by people either accidentally or on purpose, with arson being a primary cause (WFTF 1999). Some accidental starts result from discarded cigarettes, vehicles, machinery use and open burning. Available fire history information does not always provide fire cause, so the exact number of human versus naturally ignited fires is unavailable. Most of these fires are detected early and suppressed before they gain acreage; however, given the right conditions, these fires may grow large and become difficult to suppress.

The WFTF is tasked with developing fire prevention, fire safety, and public information programs regarding fire in the Central Pine Barrens. Recommendations for developing these programs were a key component of the 1999 FMP (WFTF 1999), as were information provided to fire departments and homeowners on the development of effective defensible space.

Recent Fire History

Wildfires can occur throughout the year and are typically suppressed before they gain any acreage (Figure 3.2). The majority of fires occur in early spring and late summer. The DEC and fire department reported fires that fall within the CWPP planning area total 124 (Figure 3.3).

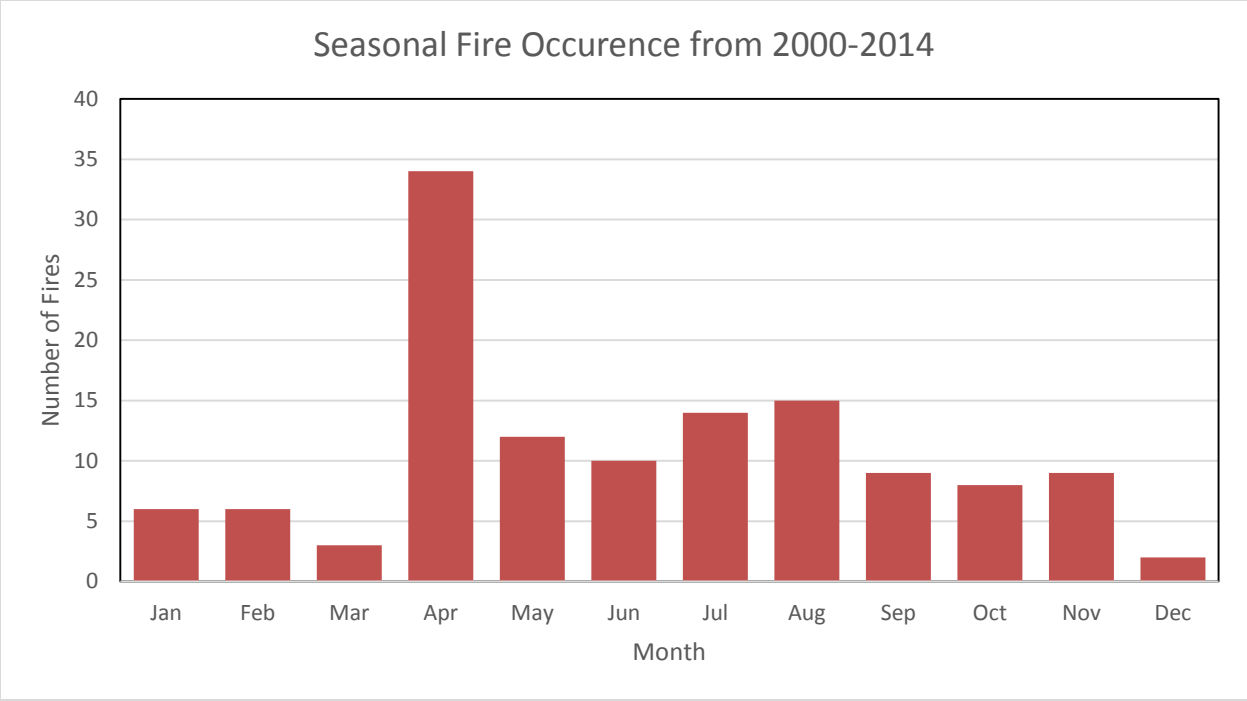


Figure 3.2. Fire occurrence in the CWPP planning area by month of ignition.

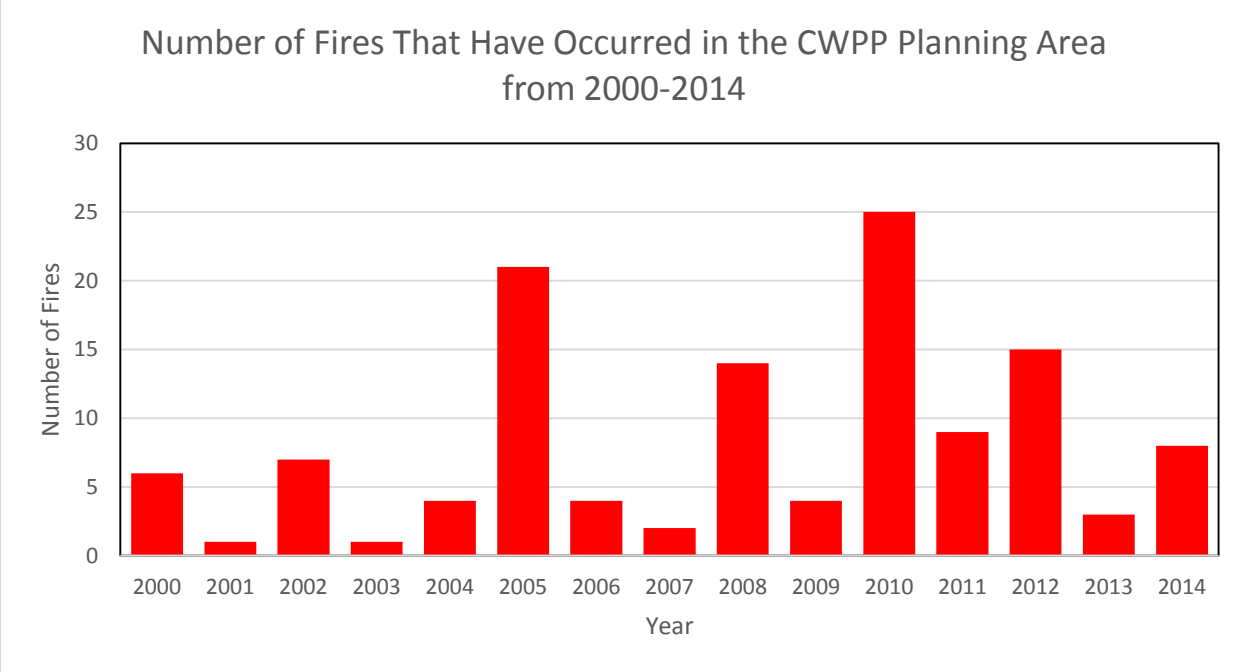


Figure 3.3. Number of wildfires per year, 2000–2014 within the CWPP planning area.

From the documented period, 69% of reported fires were 0.1 acre or less in size. Only 17% exceeded 1 acre and only two of the 124 fires exceeded 20 acres; these were a 24-acre fire that occurred on April 29, 2004, as a result of human caused ignition and the Crescent Bow fire on April 9, 2012, which burned 1,200 acres.

From Figure 3.3 it is clear that peak fire years occurred in 2005, 2008, 2010, and 2012. Using the Eastport, New York remote automated weather (RAW) station on Long Island (data from 2005–2015), the lowest precipitation years were 2007, 2012, 2013, and 2015 (Figure 3.4). Average temperature over this time span remains relatively constant, with the exception of 2010, which saw warmer temperatures.

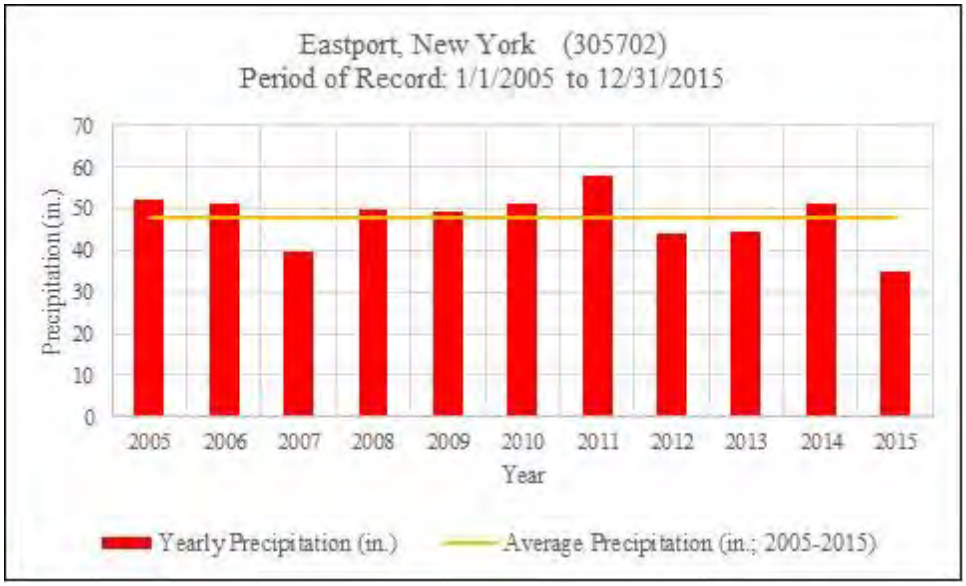


Figure 3.4. Annual precipitation totals from Eastport RAW station from 2005–2015.

3.3. CHALLENGES FOR FUTURE RESTORATION EFFORTS

In the past few years, fires nationwide have grown to record sizes and are burning earlier, longer, hotter, and more intensely than they have in the past (Westerling et al. 2006). According to the National Interagency Fire Center (NIFC), occurrence of catastrophic wildfires has greatly increased over the last 20 years. The threat of wildfire in the eastern United States is often overlooked with much of the focus being on expansive conflagrations in the West. Aggressive fire suppression has resulted in a decline in areas burned in the east in recent years making many residents of fire-prone areas complacent regarding fire risk. Westerling et al. (2006) claim that a study of large (>1,000 acres) wildfires throughout the United States for the period 1970 to 2003 saw a pronounced increase in frequency of fire since the mid-1980s (1987–2003 fires were four times more frequent than the 1970–1986 average). The length of the fire season was also observed to increase by 78 days, comparing 1970–1986 to 1987–2003. Within just the last 10 years, a record number of acreages have burned and numbers are continually getting larger (NIFC 2016). In 2015 10,125,149 acres were burned across the country, the highest total acres burned in 56 years of record (NIFC 2016).

Advanced computer models are now making national-scale simulations of ecosystems, providing predictions of how fire regimes will change in the twenty-first century (Neilson et al. 2004). Summer months are predicted to be hotter and longer contributing to increased fire risk (Neilson et al. 2004). Under greater climatic extremes widely predicted throughout the United States, fire behavior is expected to become more erratic, with larger flame lengths, increased torching and crowning, and more rapid runs and blowups associated with extremely dry conditions (Brown et al. 2004).

Although fire suppression is still aggressively practiced, fire management techniques are continually adapting and improving. Due to extensive human developments (homes and farms) and values (residential and commercial structures, historic and natural values) throughout the WUI, suppression will always have to be a priority. However, combining mechanical treatments with prescribed fire could help re-establish natural fire regimes and reduce the potential for catastrophic wildfires on public lands.

3.4 FIRE MANAGEMENT POLICY

The primary responsibility for WUI fire prevention and protection lies with property owners and state and local governments. Property owners must comply with existing state statutes and local regulations. These primary responsibilities should be carried out in partnership with the federal government and private sector areas. The current Federal Fire Policy states that protection priorities are 1) life, 2) property, and 3) natural resources. These priorities often limit flexibility in the decision-making process, especially when a wildland fire occurs within the WUI.

3.4.1 STATUTORY RESPONSIBILITY OF FIRE DISTRICTS

As stated in the 1999 FMP (WFTF 1999:63–64):

> *Fire Districts are political subdivisions governed under Article 11 Subsections 170 through 189 of the Town Law of New York State. Each District is governed by a Board of Commissioners, which is made up of five members elected by the voting public. They have sole responsibility for administration of the fire district and for ensuring the health and safety of the public. Each district ensures its duties are met by the formation and maintenance of a volunteer fire department.*
>
> *When activated for response to an incident, the fire chief or his designee has sole responsibility for extinguishing the fire as per Article 11 Subsection 176(a) of the Town Lawn of New York State. It is very clear in the law that the Chief of the fire department in the fire district where the incident occurs is in charge. It is not clear however who has prime responsibility for a fire that crosses fire district boundaries. The WFTF recommends the use of the Suffolk County Incident Command System Plan for coordinating responsibilities for a fire that crossed fire district boundaries.*
>
> *The Fire Chief is the individual responsible, as per Town Law Section 176 (a), for ensuring extinguishing a fire on town, County, and State Land (i.e. public lands), beside those owned by private entities.*

Outside agencies will often play a support role to the local fire department in the event of a wildfire occurrence. The 1999 FMP describes the role these agencies play in the wildfire response (WFTF 1999:64).

3.4.2 Fire Management Planning in the Central Pine Barrens

There are a number of existing documents relating to fire management in the Central Pine Barrens that the reader is referred to, including the Central Pine Barrens FMP (WFTF 1999), Brookhaven National Laboratory FMP (BNL 2014) and the Rocky Point FMP (DEC 2007). These documents provide more detailed information regarding operational procedures relating to wildfire. This CWPP is meant to supplement and not replace these existing plans.

Central Pine Barrens Fire Management Plan (1999)

The Central Pine Barrens FMP (WFTF 1999) provides detailed information regarding operational fire management in the Central Pine Barrens area. The FMP was developed by the WFTF. The WFTF is composed of representatives from federal, state, county, local, public, and private agencies, departments, and councils with a vested interest in wildfire management within the Central Pine Barrens (WFTF 1999). The FMP is designed to be applicable for all the representative parties and usable for a wide range of elected officials, volunteers, government personnel, and citizens. The FMP includes a description of the Central Pine Barrens; discussion of the fire environment, including existing vegetation, fuels, weather, and the WUI; protocols for incident response, mobilization, and resource deployment; a determination of the wildfire suppression techniques appropriate for use in the Central Pine Barrens; fire prevention education programs; fuel reduction techniques, including prescribed burning; and a standard system of recordkeeping for fire incidents.

Brookhaven National Laboratory Fire Management Plan (2014)

The FMP for BNL is written to comply with U.S. Department of Energy Integrated Safety Management Policy, Federal Wildland Fire Management Policy and Program Review, and Wildland and Prescribed Fire Management Policy and Implementation Procedures Reference Guide (BNL 2014). The BNL Fire Department is the lead for all fire suppression at the BNL site, with technical resource advisory provided by the BNL Natural Resource Manager. The BNL FMP provides guidance on the conditions present in the current forest habitat on site, ways to improve upon means for detecting and reacting to fires, and methods for preventing wildland fires from occurring. The goal of the FMP is to 1) safeguard the research mission, life, and property by reducing the risk of widespread fire through the reduction of available fuels, and 2) improve habitat for native flora and fauna (BNL 2014).

Rocky Point Fire Management Plan (2007)

The Rocky Point FMP was written to implement DEC fire practices in the Rocky Point Natural Resource Management Area (DEC 2007). The document sets forth guidance for the management of wildland and prescribed fire, protection of life and property, restoration and maintenance of fire-dependent ecosystems, and reduction of hazardous fuels (DEC 2007). The reduction of hazardous fuels adjacent to six communities (Middle Island, Miller Place, Ridge, Rocky Point, Shoreham, and Sound Beach) that abut the Rocky Point Natural Resource Management Area is the central focus of the fire management program. The FMP describes the use of prescribed burning and mechanical fuel reduction to restore and maintain ecosystems and target fuel loading

in the WUI. The area of focus includes the six communities named above and a 1.5-mile-wide belt around them.

The goals and objectives of the Rocky Point FMP fit well with those of the RMCCWPP as seen below:

- Ensure firefighter and public safety;
- Implement a fire program that allows fire to take a greater role in shaping the Rocky Point Natural Resource Management Area;
- Reduce the risk of wildland fire to communities and developed areas in the WUI;
- Allow fire to be used as a tool for specific resource management projects;
- Use the adaptive management process to effectively incorporate scientific knowledge and monitoring and evaluation results;
- Educate, inform, consult, and collaborate with stakeholders; and
- Conduct a fire management program based on existing standard operating procedures and in compliance with state regulations.

3.5 FIRE RESPONSE CAPABILITIES

Fire protection within the CWPP area is provided by a combination of several VFDs (Manorville, Ridge, Wading River, Middle Island, Rocky Point) and one career fire department (BNL). Fire district boundaries are depicted on Map 7 in Appendix A.

In addition to providing structural fire response, each individual fire department also has specialized wildfire firefighting equipment, including heavy duty military style brush trucks, water tanker trucks, Class A foam, and personal protective equipment (PPE).

Members of the local fire protection districts are required to undergo rigorous training for structural fire response but not wildfire response. The Ridge and Manorville Fire Departments do provide access to wildfire training from a variety of training sources, including the New York Wildfire and Incident Management Academy (which is held within the CWPP area annually). Through this training personnel complete National Wildfire Coordinating Group (NWCG) Wildland Fire Qualifications to become "red carded," meaning they have also completed a qualifying fitness test. Only a small minority of members of the local fire departments hold these NWCG qualifications.

In order to aid communication between departments and emergency services, each fire department utilizes fire communications channels and systems that are available universally across the CWPP area, and they each employ a National Incident Management System ICS in their formal command and control functions.

All fire departments within Suffolk County (including all of the CWPP planning area) are participants in both the Suffolk County Mutual Aid Agreement, as well as the New York State Fire Mobilization Pre-plan. These mutual aid agreements give them access to resources from 109 fire departments in Suffolk County and 1,800 fire departments in New York State.

All fire departments are alerted for alarms through the Suffolk County Department of Fire Rescue and Emergency Services (FRES). FRES maintains a Secondary Public Safety Answering Point that receives Enhanced 911 calls through the Suffolk County 911 system. Fire department alerting includes tone activation of portable pagers, remote siren activation, faxes, and text messages to responders. In addition, FRES maintains and deploys a Mobile Command Post with robust radio communication interoperability, as well as a cache of 150 radios to support any large scale operation.

3.5.1 EVACUATION

Evacuations within the CWPP area can be accomplished through a request from the Incident Commander. Notifications to the public will be carried out using a mass notification system maintained by Suffolk County (CodeRed), media outlets, and door to door visits.

Evacuation shelters for the evacuees will be established by the Red Cross based on the location of the incident. The Red Cross maintains a shelter inventory of 141 buildings across Suffolk County that can be used for evacuation centers.

The Suffolk County Office of Emergency Management (a Division of FRES) will assist with the coordination and support of a large-scale operation involving multiple jurisdictions or agencies following a Unified Command organizational structure. Support is provided in the form of planning for multiple operational periods, an abundance of resources, crew rotations, and any other needs requested through the Incident Command Post.

3.5.2 FIRE MARSHAL'S OFFICE

The general responsibilities of the Suffolk County Fire Marshal's Office include inspections and enforcement activities for building codes, fire investigations, public education, and technical response assistance to the fire and emergency management system agencies within Suffolk County. The Fire Marshal's Office supports the Suffolk County Office of Emergency Management (OEM) during emergency situations by staffing required positions within Suffolk County's Emergency Operations Center.

More information on the roles and responsibilities of the Fire Marshal's Office can be found here:

http://www.suffolkcountyny.gov/Departments/FireRescueandEmergencyServices/FireMarshalsOffice.aspx

3.5.3 RIDGE FIRE DEPARTMENT

The largest portion of the planning area is served by the Ridge Fire Department. There are more than 100 members in the Ridge Fire Department. This VFD is very involved in the local community, not only providing emergency response, but also providing fire prevention education through local schools, churches, scouting organizations, and fire-prevention open houses. The Ridge Fire District comprises three fire stations, strategically located around the district:

- Headquarters – 20 Francis Mooney Drive, Ridge
- Station 1 – 525 Lockwood Drive, Ridge

- Station 2 – 46 Panamoka Trail, Ridge

More information on the Ridge Fire Department can be found here: http://www.ridgefd.org/.

Information on their available firefighting apparatuses is provided in Appendix D.

3.5.4 MANORVILLE FIRE DEPARTMENT

The Manorville Fire Department serves a portion of the CWPP planning area on its eastern side. The Manorville Fire Department is a VFD, with more than 70 members, that operates out of three stations that protect a primarily rural area of Manorville and Calverton.

- Headquarters – 16 Silas Carter Road
- Station 1 – 170 Cranford Boulevard, Mastic
- Station 2 – 40 Halsey Manor Road, Manorville

More information on the Manorville Fire Department can be found here:
https://www.facebook.com/Manorville-Fire-Department-1464309257120223/

Information on their available firefighting apparatuses is provided in Appendix D.

3.5.5 BROOKHAVEN NATIONAL LABORATORY FIRE DEPARTMENT

The BNL Fire Department is a supplied and staffed department capable of handling initial response to all emergencies on site (BNL 2014). The department maintains fully qualified personnel able to meet the objectives of its 2014 FMP. Personnel are provided access to all necessary training often taking advantage of training programs offered locally through the annual New York Wildfire and Incident Management Academy held at BNL and the Suffolk County Fire Academy.

Information on their available firefighting apparatuses is provided in Appendix D.

3.5.6 SUFFOLK COUNTY OFFICE OF EMERGENCY MANAGEMENT

The OEM coordinates Suffolk County's response to natural and human-made disasters. The Emergency Manager works closely with the Sheriff's Department and the Fire Marshal, as well as the local fire districts. These individuals also play a key role in assessing wildfire risk and hazard and identifying communities and homeowners to target for assistance. The OEM also works with federal agencies to identify priority areas for joint public and private coordinated fuels treatments.

More information on the roles and responsibilities of the OEM can be found here:

http://www.suffolkcountyny.gov/Departments/FireRescueandEmergencyServices/OfficeofEmergencyManagement.aspx

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4.0 RISK ASSESSMENT

4.1 PURPOSE

The purpose of developing the risk assessment model described here is to create a unique tool for evaluating the risk of wildland fires to communities within the WUI areas of the planning area. Although many definitions exist for hazard and risk, for the purpose of this document these definitions follow those used by the firefighting community. *Hazard* is a fuel complex defined by kind, arrangement, volume, condition, and location that forms a special threat of ignition and resistance to control. *Risk* is defined as the chance of a fire starting as determined by the presence and activity of causative agents (NWCG 1998). The risk assessment is twofold and combines a geographic information system (GIS) model of hazard based on fire behavior and fuels modeling technology (Composite Risk/Hazard Assessment) and a field assessment of community hazards and values at risk (Community Risk/Hazard Assessment).

From these assessments, land use managers, fire officials, planners, and others can begin to prepare strategies and methods for reducing the threat of wildfire, as well as work with community members to educate them about methods for reducing the damaging consequences of fire. The fuels reduction treatments can be implemented on both private and public land, so community members have the opportunity to actively apply the treatments on their properties, as well as recommend treatments on public land that they use or care about.

4.2 FIRE BEHAVIOR MODEL

4.2.1 OVERVIEW

The wildland fire environment consists of three factors that influence the spread of wildfire: fuels, topography, and weather. Understanding how these factors interact to produce a range of fire behavior is fundamental to determining treatment strategies and priorities in the WUI. In the wildland environment, vegetation is synonymous with fuels. When sufficient fuels for continued combustion are present, the level of risk for those residing in the WUI is heightened. Fire spreads in three ways: 1) surface fire spread—the flaming front remains on the ground surface (in grasses, shrubs, small trees, etc.) and resistance to control is comparatively low; 2) crown fire—the surface fire "ladders" up into the upper levels of the forest canopy and spreads through the tops (or crowns) independent of or along with the surface fire, and when sustained is often beyond the capabilities of suppression resources; and 3) spotting—embers are lifted and carried with the wind ahead of the main fire and ignite in receptive fuels; if embers are plentiful and/or long range (>0.5 mile), resistance to control can be very high. Spotting is often the greatest concern to communities in the path of a wildland fire. In areas where homes are situated close to timber fuels and/or denser shrubs and trees, potential spotting from woody fuels to adjacent fuels should be acknowledged.

Treating fuels in the WUI can lessen the risk of intense or extreme fire behavior. Studies and observations of fires burning in areas where fuel treatments have occurred have shown that the fire either remains on or drops to the surface, thus avoiding destructive crown fire. Also, treating fuels decreases spotting potential and increases the ability to detect and suppress any spot fires that do occur. Fuels mitigation efforts therefore should be focused specifically where these critical conditions could develop in or near communities at risk.

4.2.2 FIRE BEHAVIOR MODEL COMPONENTS

For this plan, an assessment of fire behavior has been carried out using well-established fire behavior models: FARSITE, FlamMap, BehavePlus, and FireFamily Plus, as well as ArcGIS Desktop Spatial Analyst tools. Data used in the Composite Risk/Hazard Assessment is largely obtained from LANDFIRE.

LANDFIRE

LANDFIRE is a national remote sensing project that provides land managers a data source for all inputs needed for FARSITE, FlamMap, and other fire behavior models. The database is managed by the USFS and the USDI and is widely used throughout the United States for land management planning. More information can be obtained from http://www.landfire.gov.

FARSITE

FARSITE is a computer model based on Rothermel's spread equations (Rothermel 1983); the model also incorporates crown fire models. FARSITE uses spatial data on fuels, canopy cover, crown bulk density, canopy base height, canopy height, aspect, slope, elevation, wind, and weather to model fire behavior across a landscape. In essence, FARSITE is a spatial and temporal fire behavior model. FARSITE is used to generate fuel moisture and landscape files as inputs for FlamMap. Information on fire behavior models can be obtained from http://www.fire.org.

FlamMap

Like FARSITE, FlamMap uses a spatial component for its inputs but only provides fire behavior predictions for a single set of weather inputs. In essence, FlamMap gives fire behavior predictions across a landscape for a snapshot of time; however, FlamMap does not predict fire spread across the landscape. FlamMap has been used for the RMCCWPP to predict fire behavior across the landscape under extreme (worst case) weather scenarios.

BehavePlus

Also using Rothermel's (1983) equations, BehavePlus is a multifaceted fire behavior model and has been used to determine fuel moisture in this process.

4.2.3 FIRE BEHAVIOR MODEL INPUTS

Fuels

The fuels in the planning area are classified using Scott and Burgan's (2005) Standard Fire Behavior Fuel Model classification system. This classification system is based on the Rothermel surface fire spread equations, and each vegetation and litter type is broken down into 40 fuel models.

The general classification of fuels is by fire-carrying fuel type (Scott and Burgan 2005):

(NB) Nonburnable
(GR) Grass
(GS) Grass-Shrub
(SH) Shrub
(TU) Timber-Understory
(TL) Timber Litter
(SB) Slash-Blowdown

Table 4.1 provides a description of each fuel type.

Table 4.1. Fuel Model Classification for RMCCWPP Planning Area

1.	**Nearly pure grass and/or forb type (Grass)**
i.	**GR1:** Grass is short, patchy, and possibly heavily grazed. Spread rate is moderate (5–20 chains/hour); flame length low (1–4 feet); fine fuel load 0.40 (ton/acre).
ii.	**GR2:** Moderately coarse continuous grass, average depth about 1 foot. Spread rate high (20–50 chains/hour); flame length moderate (4–8 feet); fine fuel load 1.10 (tons/acre).
iii.	**GR3:** Very coarse grass, average depth about 2 feet. Spread rate high (20–50 chains/hour), flame length moderate (4–8 feet)
iv.	**GR5:** Dense coarse grass, average depth 1-2 feet. Spread rate very high (50–150 chains/hour); flame length moderate (4-8 feet).
2.	**Mixture of grass and shrub, up to about 50% shrub cover (Grass-Shrub)**
i.	**GS1:** Shrubs are about 1 foot high, low grass load. Spread rate moderate (5–20 chains/hour); flame length low (1–4 feet); fine fuel load 1.35 (tons/acre).
ii.	**GS2:** Shrubs are 1–3 feet high, moderate grass load. Spread rate high (20–50 chains/hour); flame length moderate (4–8 feet); fine fuel load 2.1 (tons/acre).
3.	**Shrubs cover at least 50% of the site; grass sparse to nonexistent (Shrub)**
i.	**SH1:** Low shrub fuel load, fuelbed depth about 1 foot; some grass may be present. Spread rate very low (0–2 chains/hour); flame length very low (0–1 foot); fine fuel load 1.7 (tons/acre).
ii.	**SH2:** Moderate fuel load (higher than SH1), depth about 1 foot, no grass fuels present. Spread rate low (2–5 chains/hour); flame length low (1–4 feet); fine fuel load 5.2 (tons/acre).
iii.	**SH3:** Moderate shrub load, possibly with pine overstory or herbaceous fuel. Fuel bed depth 2–3 feet. Spread rate low (2–5 chains/hour), flame length low (1–4 feet).
iv.	**SH4:** Low to moderate shrub and litter load, possibly with pine overstory. Fuel bed depth about 3 feet. Spread rate high (20–50 chains/hour); flame length moderate (4–8 feet).
v.	**SH6:** Dense shrubs, little to no herb fuels. Fuel bed depth about 2 feet. Spread rate high (20–50 chains/hour).
4.	**Grass or shrubs mixed with litter from forest canopy (Timber-Understory)**
i.	**TU1:** Fuelbed is low load of grass and/or shrub with litter. Spread rate low (2–5 chains/hour); flame length low (1–4 feet); fine fuel load 1.3 (tons/acre).
ii.	**TU2:** Fuel bed is moderate litter load with shrub component. Spread rate moderate (5–20 chains/hour), flame length is low (1–4 feet).
iii.	**TU3:** Moderate load litter fuel bed with grass and shrub components. Spread rate high (20–50 chains/hour); flame length moderate (4–8 feet).
5.	**Dead and downed woody fuel (litter) beneath a forest canopy (Timber Litter)**
i.	**TL2:** Low load, compact. Spread rate very low (0–2 chains/hour); flame length very low (0–1 foot).
ii.	**TL3:** Moderate load. Spread rate very slow (0–2 chains/hour); flame length low (1–4 foot); fine fuel load 0.5 (ton/acre).
iii.	**TL5:** High load conifer litter; light slash or mortality fuel. Spread rate is low (2–5 chains/hour); flame length low (1–4 feet).
iv.	**TL6:** Moderate load, less compact. Spread rate moderate (5–20 chains/hour); flame length low (1–4 feet).
v.	**TL9:** Very high load fluffy dead and downed fuel littler. Spread rate moderate (5-20 chains/hour); flame length moderate (4–8 feet).
6.	**Insufficient wildland fuel to carry wildland fire under any condition (Nonburnable)**
i.	**NB1:** Urban or suburban development; insufficient wildland fuel to carry wildland fire.
ii.	**NB3:** Agricultural field, maintained in nonburnable condition.
iii.	**NB8:** Open water.
iv.	**NB9:** Bare ground.

Notes: Based on Scott and Burgan's (2005) 40 Fuel Model System.
For more information refer to Scott and Burgan (2005).

Map 1 in Appendix A illustrates the fuels classification throughout the planning area. The original LANDFIRE fuel data set for the planning area did not accurately represent the fuels that are found on the ground. To refine the fuel layer a higher resolution land cover dataset (10 meters [m]) created by the Nature Conservancy for the Central Pine Barrens area was aggregated to the LANDFIRE's 30-m resolution layer, and land cover values were crosswalked to Scott and Burgan's 40 fire behavior fuel models (see Table 4.2 for crosswalk and Figure 4.1 for revised fuel map). This process enabled the separation of the pitch pine fuels from tree oak fuels across the landscape.

Secondly, two additional LANDFIRE data layers were modified for pitch pine fuels in order to more closely approximate values from the literature and to get fire behavior outputs that according to fire managers more closely resemble behavior that is observed in the field. Canopy base heights for pitch pine areas were lowered from 10 to 4 m based on literature sources and Google streetview. Inaccurate canopy base height values are a noted issue for LANDFIRE data (LANDFIRE 2016, Skowronski et al. 2011, Clark 2010). In addition, canopy bulk density values were increased from 0.01 kilograms per cubic meter (kg/m³) to 0.2 kg/m³ to simulate more severe fire behavior in these areas (Clark 2010).

Table 4.2. Nature Conservancy Land Cover and Scott and Burgan Fuel Model Crosswalk

Land Cover Name	Value	FBFM40 Name	FBFM40 Value
Water	1	NB8	98
Barren/Sparsely Veg./Sand	2	NB9	99
Urban/Developed	4	NB1	91
Grass Landscape/Lawns	5	NB1	91
Roads	6	NB1	91
Coppice Tree Oak	8	TU2	162
Pitch Pine	10	SH8	148
Other Pine Plantation	12	TL8	188
Tree Oaks	14	TU2	162
Scrub Oaks	15	SH6	146
Low Evergreen Shrub	18	SH6	146
Herbaceous	19	GR1	101
Forested Wetland	20	TL6	186
Freshwater Wetland	21	TL2	182

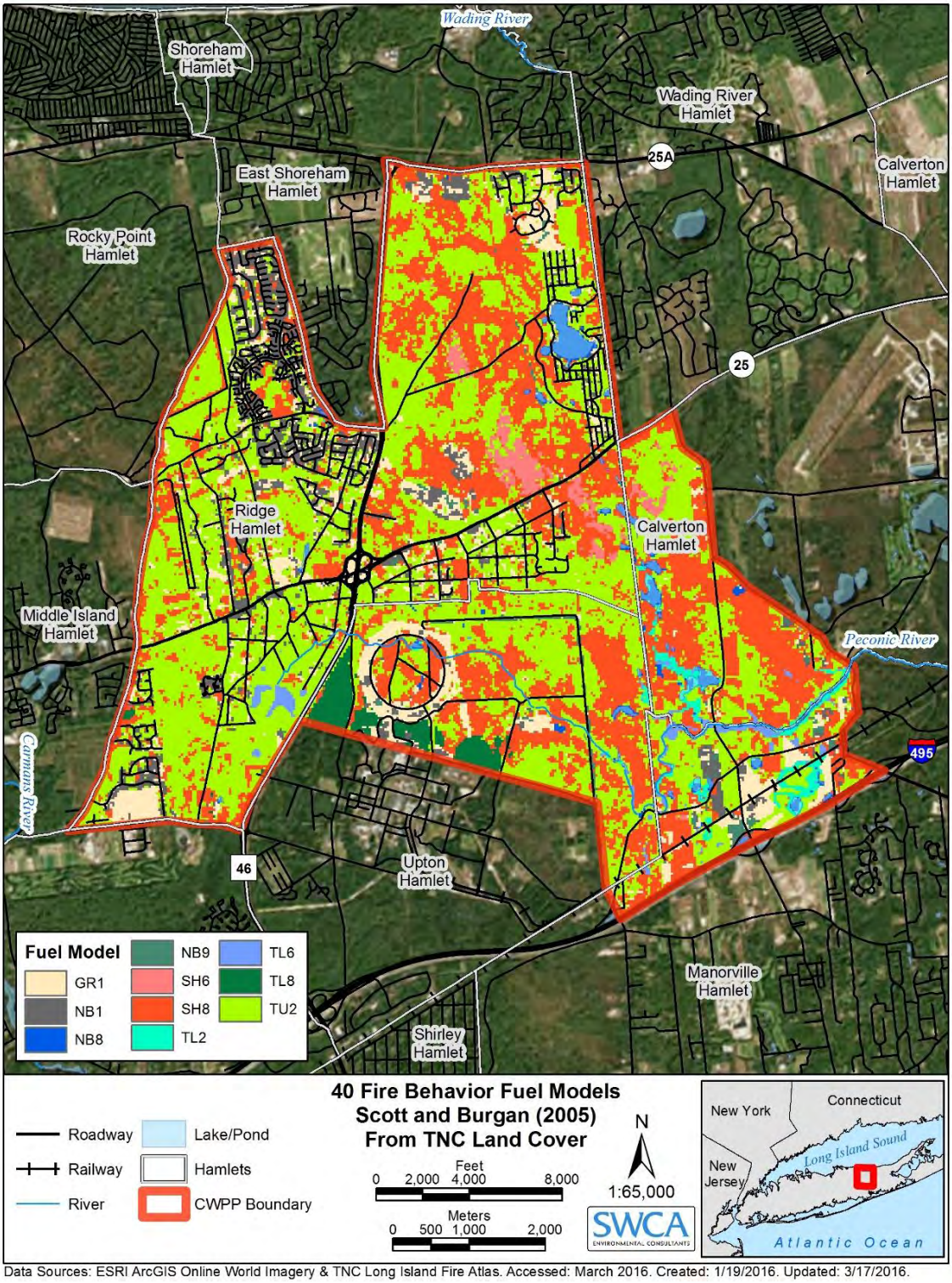


Figure 4.1. Nature Conservancy land cover and Scott and Burgan fuel model crosswalk.

Grassland Fuels

Grassland communities comprise approximately 0.5% of lands within the CWPP boundary (National Land Cover Database [NLCD] 2011). These herbaceous grasslands are characterized as Scott and Burgan GR1. Fire spread in these fuels is dependent on the continuity of the fine herbaceous layer, the degree of curing and the height of the grass. Fire spreads as a surface burn and moves rapidly through the grassland fuel type.

Hardwood Forest

Hardwood forests make up approximately 21.4% of lands within the CWPP boundary (NLCD 2011). Depending on the degree of dead and downed material, Scott and Burgan FM TU2 represent the majority of this forest type. Stands consist of a mixture of hardwood and scattered pines with minimal understory vegetation and a thin bed of loose leaf litter and twigs. Slow burning surface fires with low flame lengths are typical of this fuel type; an occasional flare up may result from heavy pockets of fuel or dead and downed material. Rates of spread are increased under high wind conditions.

Examples of this stand type include closed canopy oak-hickory forest, beech forest, and black locust (*Robinia pseudoacacia*) stands. The shrub layer that is typical of pine-oak forest is absent in this stand type.

Pine-Oak Forest

The pine-oak forest type is the most common type in the Central Pine Barrens area and comprises approximate 31.7% of the CWPP planning area (NLCD 2011). The forest type consists of pine-oak forest with a dense understory of flammable scrub oak, blueberry, and huckleberry. Scott and Burgan SH8 is representative of this forest type, with some SH6 in areas with a more open canopy. The dense shrub layer that characterizes this forest type provides a heavy fuel layer year round.

The surface fuels in the pine-oak forest type are composed of leaf litter and dead twigs that readily transmit fire throughout much of the year. The shrub layer transmits fire spread into the tree canopies leading to crown fire. In areas of pitch pine, crowning and spotting are common due to the presence of volatile resins in the leaves during the growing season. The abundance of standing dead shrub fuels intensifies the fire risk. This fuel type typically burns with rates of spread, flame lengths, and intensity that exceed the capabilities of hand crews.

The remaining 46.3% of lands are made up primarily of developed land, with small areas of grassland, riparian vegetation, barren lands, exotic trees/landscaping and open water.

Topography

Topography is important in determining fire behavior. Steepness of slope, aspect (direction the slope faces), elevation, and landscape features can all affect fuels, local weather (by channeling winds and affecting local temperatures), and rate of spread of wildfire. The topography of the Central Pine Barrens varies with elevations ranging from sea level to 295 feet at Bald Hill which is east of and outside of the planning area. (WFTF 1999). Slopes are generally even to gently rolling, ranging from 0% to 15% (WFTF 1999). Within the moraine areas slopes can range from 15% to 35%.

Weather

Of the three fire behavior components, weather is the most likely to fluctuate. Accurately predicting fire weather remains a challenge for forecasters, particularly during drought conditions. As summer winds and rising temperatures dry fuels, conditions can deteriorate rapidly, creating an environment that is susceptible to wildland fire. Fine fuels (grass and leaf litter) can cure rapidly, making them highly flammable in as little as 1 hour following light precipitation. Low live fuel moistures of shrubs and trees can significantly contribute to fire behavior in the form of crowning and torching. With a high wind, grass fires can spread rapidly, engulfing communities, often with limited warning for evacuation. The creation of defensible space is of vital importance in protecting communities from this type of fire. For instance, a carefully constructed fuel break placed in an appropriate location could protect homes or possibly an entire community from fire. This type of defensible space can also provide safer conditions for firefighters, improving their ability to suppress fire and protect life and property.

One of the critical inputs for FlamMap is fuel moisture files. For this purpose weather data have been obtained from FAMWEB (NWCG 2012), a fire weather database maintained by the NWCG. A RAW station was selected (Eastport - Station 305702) and data were downloaded from the website.

Using an additional fire program (FireFamily Plus) with the RAW station data, weather files that included prevailing wind direction and 20-foot wind speed were created. Fuel moisture files were then developed for downed (1-hour, 10-hour, and-100 hour) and live herbaceous and live woody fuels. These files represent weather inputs in FlamMap; 95 to 100 percentile weather is used to predict the most extreme scenarios for fire behavior.

4.2.4 Fire Behavior Model Outputs

The following is a discussion of the fire behavior outputs from FlamMap.

Flame Length

Map 2 in Appendix A illustrates the flame length classifications for the planning area. Flame lengths are determined by fuels, weather, and topography. Flame length is a particularly important component of the risk assessment because it relates to potential crown fire (particularly important in timber areas) and suppression tactics. Direct attack by hand lines is usually limited to flame lengths less than 4 feet. In excess of 4 feet, indirect suppression is the dominant tactic. Suppression using engines and heavy equipment will move from direct to indirect with flame lengths in excess of 8 feet.

Flame lengths across the planning area are split primarily between the two extremes: low (0–4 feet) and extreme (>11 feet). The greatest flame lengths tend to be associated with the pine dominated areas of the planning area and are found both in open space areas and close to residences.

Fireline Intensity

Map 3 in Appendix A illustrates the predicted fireline intensity throughout the planning area. Fireline intensity describes the rate of energy released by the flaming front and is measured in British Thermal Units per foot, per second (BTU/ft/sec). This is a good measure of intensity, and suppression activities are planned according to it. The expected fireline intensity throughout the

planning area is similar in pattern to predicted flame length, as fireline intensity is a function of flame length. The pattern for fireline intensity is similar to flame length in that intensities are primarily low or extreme and the extreme areas tend to be associated with areas dominated by pine forest.

Rate of Spread

Map 4 in Appendix A illustrates the rate of spread classifications for the planning area. The rates of spread are a little more diverse than flame length and fireline intensity with rates in the low, moderate, high, and extreme categories. Low to moderate rates of spread are found in the areas classified as hardwood forest. The highest rates of spread are predicted in the pine-oak dominated areas and more open grassland/shrub vegetation. Agricultural and urban areas are clearly delineated in this model by their low-moderate rate of spread; however, these fuel types can also pose a severe hazard during certain times of the year and are often areas of ignition through human activity in urban areas.

Crown Fire Potential

Map 5 in Appendix A illustrates the predicted crown fire potential throughout the planning area. Crown fire can be defined as passive or active. Passive crown fire is where individual trees torch from the ground, but solid flame is not maintained in the crowns. Active crown fire is a fire in which the entire surface/canopy fuel complex becomes involved and fire can spread from crown to crown, independent of surface fire (Scott and Reinhardt 2001). Crown fire activity in the planning area is confined to shrub and timber fuels; surface fire activity occurs in the grassland fuels.

Fire Occurrence/Density of Starts

Map 6 in Appendix A illustrates the fire occurrence density for the planning area. Fire occurrence density has been determined by performing a density analysis on fire start locations with ArcGIS Desktop Spatial Analyst. These locations have been provided by Suffolk County and the DEC and when combined the points show the location of fire starts within the planning area from 2000 to 2014. The density analysis has been performed over a 5-mile search radius. The density of previous fire starts is used to determine the risk of ignition of a fire. Map 6 in Appendix A reveals a definite pattern of fires close to populated areas, at intersections and along all highways. High fire density is observed throughout the central core of the planning area with the greatest density occurring at the intersection of County Route 46 and New York State Route 25 (Williams Floyd Parkway and Middle Country Road) and on the western fringe of the planning area, located around Rocky Point Preserve.

The fire occurrence maps are used to provide information on areas where human- and lightning-ignited fires are prevalent and hence could be more prone to fire in the future.

4.2.5 GIS Overlay Process

All data used in the risk assessment have been processed using ESRI ArcGIS Desktop and the ESRI Spatial Analyst Extension. Information on these programs can be found at http://www.esri.com. Data have been gathered from all relevant agencies, and the most current data have been used.

All fire parameter datasets have been converted to a raster format (a common GIS data format comprising a grid of cells or pixels, with each pixel containing a single value). The cell size for the data is 30 × 30 m (98 × 98 feet). Each of the original cell values have been reclassified with a new value between 1 and 4, based on the significance of the data (1 = lowest, 4 = highest). Prior to running the models on the reclassified datasets, each of the input parameters have been weighted; that is, they are assigned a percentage value reflecting that parameter's importance in the model. The parameters are then placed into a Weighted Overlay Model, which "stacks" each geographically aligned dataset and evaluates an output value derived from each cell value of the overlaid dataset in combination with the weighted assessment. The resulting dataset contains only values 1 through 4 (1 = low, 2 = medium, 3 = high, 4 = extreme) to denote fire risk. This ranking shows the relative fire risk of each cell based on the input parameters. Figure 4.2 illustrates the individual datasets and the relative weights assigned within the modeling framework.

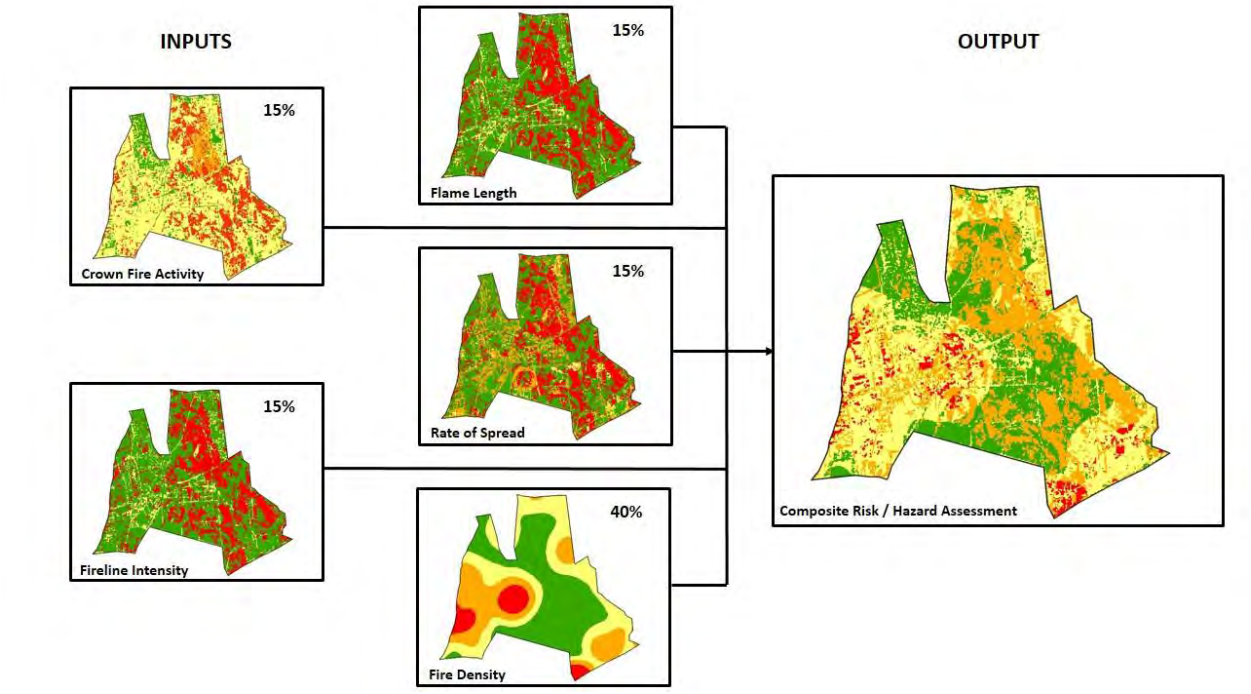


Figure 4.2. Composite Risk/Hazard Assessment overlay.

4.3 COMPOSITE RISK/HAZARD ASSESSMENT

Figure 4.3 is the risk assessment for the planning area; it combines all the fire behavior parameters described above. The risk assessment classifies the planning area into low, moderate, high, and extreme risk categories.

The risk assessment depicts risk in the planning area as extremely diverse. The most extreme risk (shown in red) is associated with areas of high fire density in the most southerly tip of the planning area, the western edge and areas of Rocky Point and the intersection of County Route 46 and New York State Route 25. Areas of high severity are associated with the pine-dominated fuels that are found in Brookhaven State Park, Rocky Point, BNL, and Robert Cushman Murphy County Park.

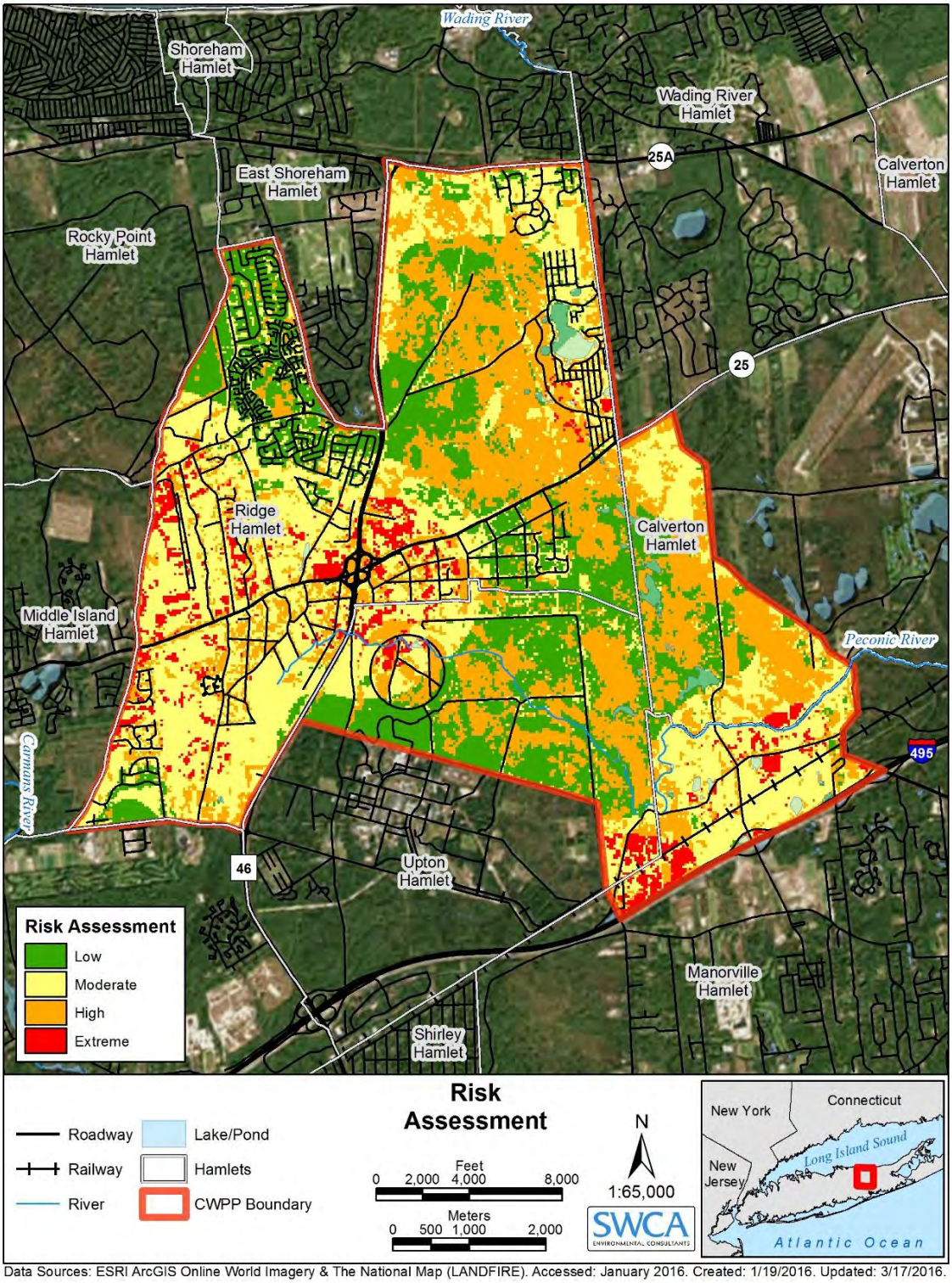


Figure 4.3. Composite Risk/Hazard Assessment map.

4.4 COMMUNITY RISK/HAZARD ASSESSMENTS

As part of the planning process, the Core Team identified several areas within the planning area boundary that are considered at the greatest risk from wildfire. In order to properly assess the hazards in and around these communities, a series of field days were implemented to carry out community assessments.

The assessments were conducted in September and December 2015 with assistance from fire agency staff. The community assessment was carried out using the NFPA Wildland Fire Risk and Hazard Severity Form 1144 (Appendix E). This form is based on the NFPA Standard for Reducing Structure Ignition Hazards from Wildland Fire 2013 Edition, which was in turn developed by the Technical Committee on Forest and Rural Fire Protection and originally issued by the Standards Council on June 4, 2007. The NFPA standard focuses on individual structure hazards and requires a spatial approach to assessing and mitigating wildfire hazards around existing structures. It also includes ignition-resistant requirements for new construction and is used by planners and developers in areas that are threatened by wildfire and is commonly applied in the development of Firewise Communities (for more information, see www.firewise.org).

Subdivisions with similar geography and fire risk parameters were grouped together into planning areas. Each individual planning area is represented in Figure 4.4, described in Section 4.5 and summarized in Table 4.3. Each area was rated based on conditions within the community and immediately surrounding structures, including access, adjacent vegetation (fuels), defensible space, adjacent topography, roof and building characteristics, available fire protection, and placement of utilities. Where a range of conditions was less easily parsed out, a range of values was assigned on a single assessment form. Each score was given a corresponding adjective rating of low, moderate, high, or extreme. An example of the assessment form used in this plan can be found in Appendix E. The purpose of the community WUI assessment and subsequent hazard ratings is to identify fire hazard and risks and prioritize areas requiring mitigation and more detailed planning. These assessments should not be seen as tactical pre-suppression or triage plans. The community assessment helps to drive the recommendations for mitigation of structural ignitability, community preparedness, and public education. The assessment also helps to prioritize areas for fuels treatment based on the hazard rating.

The hazard ratings from the community assessment and the GIS hazard/risk assessment are provided in Table 4.3. This table also includes a summary of the positive and negative attributes of a community as they relate to wildfire risk.

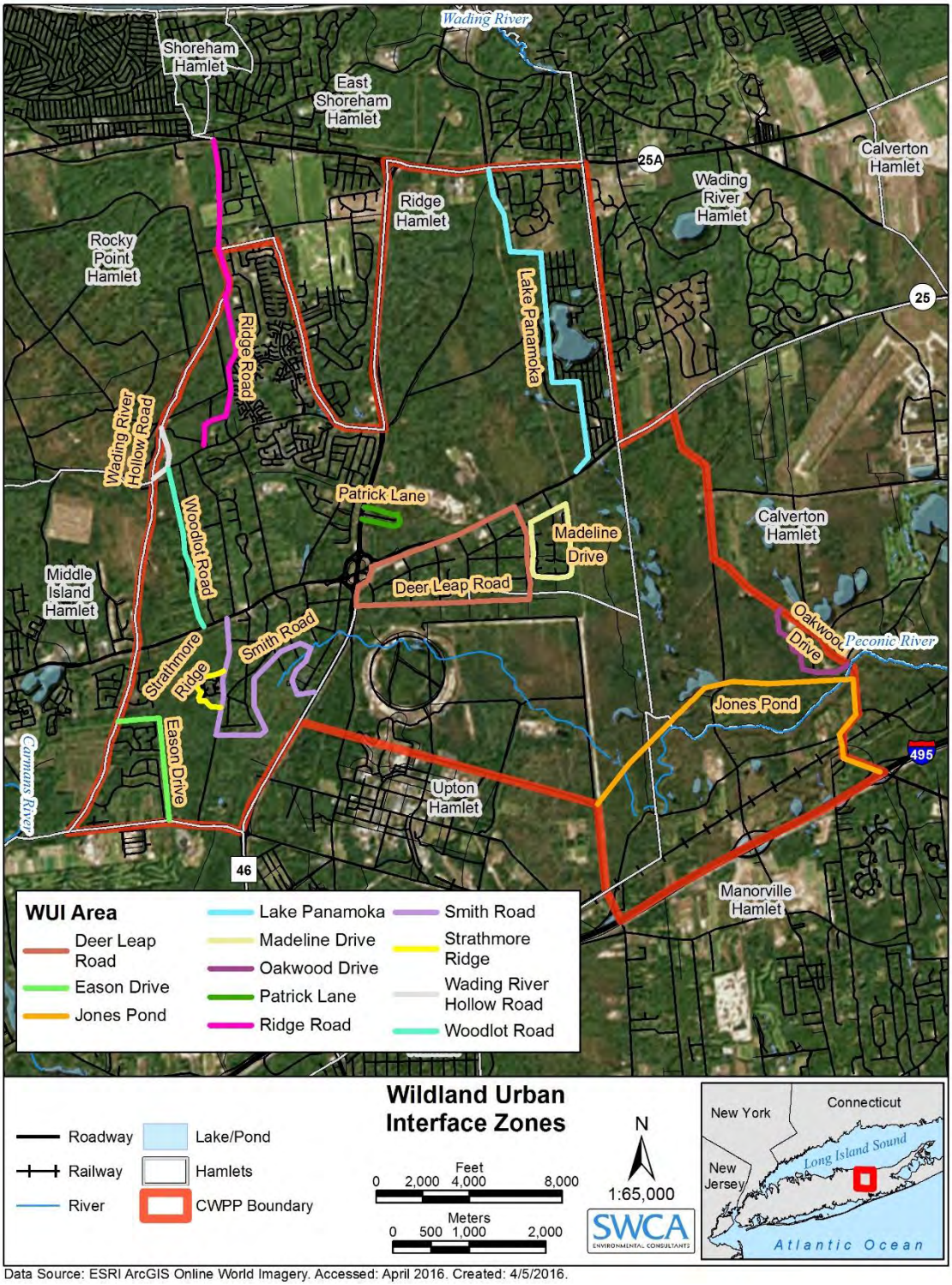


Figure 4.4. WUI interface areas

Table 4.3. Community Risk Assessment Summary

Community and Hamlet	NFPA 1144 Risk Rating	GIS Risk Rating	Positive	Negative
Strathmore Ridge Ridge Hamlet	76 (High)	High	• Good access via a number of routes • Good proximity to emergency responders • Well maintained, surfaced roads • Good turn-around space • Good water supply via hydrants • Irrigated lawns and landscaping • Path all around edge of community could help slow ground fire	• Location adjacent to public lands with higher risk of ignitions • High tree density in immediate vicinity of homes • Heavy fuel loading on public land adjacent to homes as a result of thick underbrush and continuity of tree crowns • Insufficient defensible space—many homes have less than 30-foot clearance around each structure • Building construction includes wood siding, wooden decks, and fences that can act as fuses from vegetation to homes • Adjacency of some residential structures • Poor maintenance of soffits and vents • Deep ravine proximal to homes on south side—thick heavy fuels • Dumping of wood and slash in wooded areas adjacent to homes
Smith Road Interface Ridge Hamlet	91 (High)	High–extreme	• Good proximity to emergency responders • Well maintained, surfaced roads • Good turn-around space • Good water supply via hydrants • Irrigated lawns and landscaping	• Lots of wood shake sided homes • Thick shrub component to fuels • Heavy loading of vines—ladder fuels • Some bad roofs • Location adjacent to public lands with higher risk of ignitions • High tree density in immediate vicinity of homes • Heavy fuel loading on public land adjacent to homes as a result of thick underbrush and continuity of tree crowns • Insufficient defensible space— many homes have less than 30-foot clearance around each structure • Building construction includes wood siding, wooden decks, and fences that can act as fuses from vegetation to homes • Many dead end spurs— confusing road layouts

Community and Hamlet	NFPA 1144 Risk Rating	GIS Risk Rating	Positive	Negative
Eason Drive Ridge Hamlet	85 (High)	Moderate–high	• Good access via a number of routes • Good proximity to emergency responders • Well maintained, surfaced roads • Good turn-around space • Good water supply via hydrants • Minimal slope • Irrigated lawns and landscaping • Good roofing construction. • Well maintained internally in subdivision, greatest threat is homes in the WUI	• High tree density in immediate vicinity of homes • Heavy fuel loading on public land adjacent to homes as a result of thick underbrush and continuity of tree crowns • Insufficient defensible space— many homes have less than 30-foot clearance around each structure • Building construction includes wood siding, wooden decks, and fences that can act as fuses from vegetation to homes • Steep slopes by some homes with little to no set back
Deer Leap Road Interface Area Ridge Hamlet	73 (High)	Moderate	• Good access via a number of routes • Good proximity to emergency responders • Well maintained, surfaced roads • Good turn-around space • Good water supply via hydrants • Minimal slope • Irrigated lawns and landscaping • Good roofing construction	• Their location adjacent to public lands with higher risk of ignitions • High tree density in immediate vicinity of homes • Heavy fuel loading on public land adjacent to homes as a result of thick underbrush and continuity of tree crowns • Insufficient defensible space— many homes have less than 30-foot clearance around each structure • Building construction includes wood siding, wooden decks, and fences that can act as fuses from vegetation to homes • Adjacency of some residential structures
Madeline Road Interface Area Ridge Hamlet	48 (Moderate)	Low–moderate	• Larger lot sizes and reduced adjacency issues between structures • Moderate defensible space surrounding homes ~30- to 70-foot clearance • Newer construction • Good access via a number of routes • Good proximity to emergency responders • Well maintained, surfaced roads • Good turn-around space • Good water supply via hydrants • Minimal slope • Irrigated lawns and landscaping • Good roofing construction	• Location adjacent to public lands with higher risk of ignitions • High tree density in immediate vicinity of homes • Heavy fuel loading on public land adjacent to homes as a result of thick underbrush and continuity of tree crowns

Community and Hamlet	NFPA 1144 Risk Rating	GIS Risk Rating	Positive	Negative
Jones Pond Calverton/Manorville Hamlet	67 (Moderate)	Moderate–high	• Sporadic housing • Large lot size, limited adjacency issues • Good proximity to emergency responders • Well maintained, surfaced roads • Sufficient turn-around space • Minimal slope • Moderate to good defensible space	• Some areas of heavy downed fuels • High tree density in adjacent open areas • Thick underbrush and continuity of tree crowns could generate rapid fire spread • Building construction includes wood siding, wooden decks, and fences that can act as fuses from vegetation to homes • Water supply only via fire wells for drafting, no public hydrants • Values at risk: businesses
Oakwood Drive Calverton Hamlet	70 (High)	Moderate–high	• Good proximity to emergency responders • Well maintained, surfaced roads • Sufficient turn-around space • Good water supply via hydrants • Minimal slope • Irrigated lawns and landscaping • Good roofing construction	• High tree density in immediate vicinity of homes • Heavy fuel loading on public land adjacent to homes thick underbrush and continuity of tree crowns could generate rapid fire spread • Insufficient defensible space— many homes have less than 30-foot clearance around each structure, some have less than 10-foot clearance • Dead-end road; however, a turn-around is present • Building construction includes wood siding, wooden decks and fences that can act as fuses from vegetation to homes • Water supply only via fire wells for drafting, no public hydrants
Ridge Road Interface Ridge Hamlet	65 (Moderate)	Moderate–high	• Good access via Ridge Road and a number of routes • Good proximity to emergency responders • Well maintained, surfaced roads • Good turn-around space • Good water supply via hydrants • Minimal slope • Irrigated lawns and landscaping • Good roofing construction	• Location adjacent to public lands with higher risk of ignitions • History of high fire occurrence • High tree density in immediate vicinity of homes • Heavy fuel loading on public land adjacent to homes as a result of thick underbrush and continuity of tree crowns • Insufficient defensible space— many homes have less than 30-foot clearance around each structure, with some homes having less than 10 feet of clearance • Building construction includes wood siding, wooden decks, and fences that can act as fuses from vegetation to homes • Adjacency of some residential structures

Community and Hamlet	NFPA 1144 Risk Rating	GIS Risk Rating	Positive	Negative
Wading River Hollow Road Interface- north of Whiskey Road and west of Ridge Road Ridge Hamlet	73 (High)	High–extreme	• Good access via Ridge Road and a number of routes • Good proximity to emergency responders • Well maintained, surfaced roads • Good turn-around space • Good water supply via hydrants • Minimal slope • Irrigated lawns and landscaping	• Their location adjacent to public lands with higher risk of ignitions • History of high fire occurrence • High tree density in immediate vicinity of homes • Heavy fuel loading on public land adjacent to homes as a result of thick underbrush and continuity of tree crowns • Insufficient defensible space— many homes have less than 30-foot clearance around each structure, with some homes having vegetation in contact with the home • Building construction includes wood siding, wooden decks, and fences that can act as fuses from vegetation to homes • Narrow driveways with vegetation covering or close to the driveway that would impede emergency responders • Adjacency of some residential structures
Woodlot Road Interface Ridge Hamlet	75 (High)	High–extreme	• Good access via Middle Country Road and a number of routes • Good proximity to emergency responders • Well maintained, surfaced roads • Good turn-around space • Good water supply via hydrants • Minimal slope • Irrigated lawns and landscaping	• Location adjacent to public lands with higher risk of ignitions • History of high fire occurrence • High tree density in immediate vicinity of homes • Heavy fuel loading on public land adjacent to homes as a result of thick underbrush and continuity of tree crowns • Insufficient defensible space— many homes have less than 30-foot clearance around each structure, with some homes having vegetation in contact with the home • Building construction includes wood siding, wooden decks and fences that can act as fuses from vegetation to homes • Narrow driveways with vegetation covering or close to the driveway that would impede emergency responders • Slower road due to more windy nature • Many homes with horses— evacuation concerns • Adjacency of some residential structures
Lake Panamoka Interface Area Ridge Hamlet	74 (High)	High–extreme	• Good proximity to emergency responders • Well maintained, surfaced roads • Sufficient turn-around space • Good water supply via hydrants	• High tree density in immediate vicinity of homes • Heavy fuel loading on public land adjacent to homes with westerly exposure, thick underbrush and continuity of tree crowns

Community and Hamlet	NFPA 1144 Risk Rating	GIS Risk Rating	Positive	Negative
			• Minimal slope • Irrigated lawns and landscaping and close proximity to lake for drafting if necessary • Good roofing construction	could generate rapid fire spread • Insufficient defensible space— many homes have less than 30-foot clearance around each structure, some have less than 10-foot clearance • Building construction includes wood siding, wooden decks, and fences that can act as fuses from vegetation to homes • Adjacency of some residential structures
Patrick Lane Interface Ridge Hamlet	70 (High)	High	• Good proximity to emergency responders • Well maintained, surfaced roads • Sufficient turn-around space • Good water supply via hydrants • Minimal slope • Irrigated lawns and landscaping • Good roofing construction	• High tree density in immediate vicinity of homes • Heavy fuel loading on public land adjacent to homes thick underbrush and continuity of tree crowns could generate rapid fire spread • Insufficient defensible space— many homes have less than 30-foot clearance around each structure, some have less than 10-foot clearance • Dead-end road; however, a turn-around is present • Building construction includes wood siding, wooden decks, and fences that can act as fuses from vegetation to homes

4.5 COMMUNITY HAZARD/RISK DESCRIPTIONS

The following is a breakdown of wildfire risk and hazard for public lands and WUI communities (summarized in Table 4.3 above). The intent of this section is to provide more detailed information in order to aid prioritization of recommendations. Specific recommendations are included for each WUI area. More general recommendations with implementation plans are provided in Chapter 5.

4.5.1 PUBLIC LANDS

During the public meetings many residents raised concerns about the thick vegetation, both standing and downed that is common on public lands throughout the Central Pine Barrens. This had been recognized in this plan and as a result treatments on public lands are proposed across the planning area.

Rocky Point Natural Resource Management Area

Rocky Point makes up a portion of the western side of the CWPP planning area. It was the location of the 1995 fires and due to its location immediately west of residential areas it was identified as an area at high risk for future wildfire.

As described in Section 3.3.2, the DEC manages Rocky Point and developed an FMP in 2007 that described the fire management program for the lands. Much of the description below is taken from the 2007 FMP.

Rocky Point is forest intersected by road and trail corridors. The property is adjacent to communities, private lands, and public lands managed by other agencies. Because of this mosaic of land uses and designations, land management practices and activities are complex, including fire management actions, which vary for different areas of the property.

Rocky Point has a history of a high incidence of arson caused fires. The 2007 FMP reports that there had been 60 arson fires reported since 1987, but the actual number is thought to have been higher. Plants within the Rocky Point Natural Resource Management Area exist within a cycle of burning and growth.

In Rocky Point, fire has been largely suppressed since the 1920s, and in some areas fire has been suppressed since the mid nineteenth century. Some vegetation types have short fire-return intervals (the frequency that fire would naturally burn through the vegetation); for example, the pitch pine scrub oak woodlands of the Central Pine Barrens have had decades long fire suppression, and some vegetation may have missed several naturally occurring fires. Therefore, the vegetation (fuel) accumulates and forest density reaches dangerous levels (DEC 2007).

The rating for the Rocky Point area shown in Figure 4.2 ranges from low to extreme. The extreme areas are associated with pine-dominated vegetation. These areas also have a history of high fire density and are proximal to residences along Woodlot Road. Residents of Woodlot Road who attended the CWPP public meeting voiced concerns over the heavy densities of both standing and downed trees on DEC property, resulting in heavy fuel loading. Because of the fuel hazards and increased risk of ignitions on public lands, these areas are therefore recommended as

a focus for fuel reduction treatments. More details are provided in the community description for Woodlot Road on page 78.

Brookhaven State Park

Brookhaven State Park is 1,638 acres, all of which is encompassed into the CWPP project boundary. The park runs along the east side of William Floyd Parkway north of Whiskey Road and between New York State Routes 25 and 25A.

The park contains oak-pine habitats and scattered wetlands, as well as coastal plain ponds. The park has a series of recreational trails that are valued by local residents and have been identified for protection during outreach efforts. The park also has a main transmission line that runs through from north to south. Protection of the utility line right-of-way is a priority project under the CWPP. Located at the southern end of Brookhaven State Park is Fireman's Memorial Park and the Brookhaven Volunteer Firefighters Museum (founded in 1991) that houses historic firefighting artifacts and antiques.

Brookhaven State Park has been identified in Figure 4.2 as having some areas of low risk but vast areas of high to extreme risk for wildfire. The park and museum are priority areas for protection due to the varied community values at risk that have been identified and the high risk areas of pine-dominated vegetation. Specific treatment areas should be located along the western interface with residents in the Lake Panamoka subdivision. Any existing fuel breaks should be maintained to ensure sufficient clearance to mitigate fire behavior.

Brookhaven National Laboratory and Upton Ecological and Research Reserve

BNL is a 5,265 acre site located in the southern portion of the CWPP planning area. Approximately 3,450 acres of the BNL property is considered undeveloped woodland, 530 acres of which comprise the Upton Ecological and Research Reserve. Adjacent to the BNL property are residential areas, often nestled into wooded acres. The majority of the wooded area of the BNL property is unmaintained and contains significant amounts of combustible surface litter (BNL 2014).

At BNL fire has been aggressively suppressed for at least 75 years and as a result there has been a large buildup of fuels in the forest understory in the form of leaf litter and branches (BNL 2014). The area is at high risk for catastrophic wildfire that would alter the forest ecology and pose a threat to neighboring residential areas, as well as BNL structures and infrastructure.

BNL is rich in natural resources, including 85 species of nesting birds, 15 mammal species, nine amphibian species, 10 reptile species, and hundreds of invertebrates. Furthermore, there are a number of species of concern on the BNL site, including northern long-eared bat, which the U.S. Fish and Wildlife Service has listed as threatened under the Endangered Species Act. The state endangered eastern tiger salamander and state threatened banded sunfish, swamp darter, and frosted elfin (*Calophrys iris*) are also found on the property (BNL 2011).

The BNL property incorporates low to extreme risk as shown in Figure 4.2. The areas of most extreme risk are found associated with the pine-dominated fuels. Due to previous fire occurrence and ecological values in the area, fuel reduction treatments that would both protect the forest

ecosystem and provide risk mitigation to residences that interface directly with BNL are priority under the CWPP.

Long Island Shooting Range and Firemans Park

The Long Island Shooting Range and Firemans Park are located south and adjacent to Brookhaven State Park. The area rates from low to high risk in Figure 4.3 due to the mosaic of urban and manicured land with patches of woodland. These sites are identified as community values at risk and as such are prioritized for protection.

Robert Cushman Murphy County Park

The Robert Cushman Murphy County Park is a 3,000 acre parkland, a portion of which is located in the eastern portion of the planning area. The Park rates as low, moderate, high and extreme, with the most extreme areas associated with the pine dominated forests in the planning area. The Park is identified as a priority area for protection because of the high to extreme risk of wildfire and the plethora of biological resources that are found there. The Park has also been identified as a community value at risk by the public in the survey and during discussion at the public meeting.

Otis Pike Preserve

The Otis Pike Preserve is managed by DEC and comprises 4,000 acres of wetland and upland open space area that offers numerous recreational opportunities. The Preserve is located within the planning area and extends beyond the planning area boundary. The Preserve rates as moderate, high and extreme risk in Figure 4.3 and like other areas the risk is based upon the mosaic of fuel types located in the planning area. The area is utilized for hunting and other recreational pursuits and has a rich biodiversity; as such it is recommended for prioritized protection from catastrophic wildfire through fuel treatments and public outreach.

4.5.2 RESIDENTIAL WILDLAND URBAN INTERFACE AREAS

Deer Leap Road Interface Area

NFPA 1144- Hazard Rating: 73 (High)

Interface communities include Deer Leap Road, Dew Flag Road, Half Moon Pond Road, Pine Bark Road, Pleasant View Road, Crescent Bow Road, and Old Saddle Road. These communities interface with BNL lands. The red line in Figure 4.5 denotes the area that the following assessment and rating were based upon. Focus is placed on those homes that are immediately adjacent to wildland fuels.

These residences are part of the WUI area that was threatened during the Crescent Bow fire of 2012. Figure 4.6 shows the burn scar (fainter green color) in the lower right where trees were consumed by the fire. Homes along this road are still at risk of future fires due to:

- their location adjacent to BNL lands with dense continuous wildland fuels that exhibit area of continuous pine-oak-dominated tree canopy and thick underbrush in immediate vicinity of homes (Figure 4.7);
- insufficient defensible space, as many homes have less than 30 feet of clearance around each structure;
- building construction that includes wood siding, wooden decks, and fences that can act as fuses from vegetation to homes; and
- adjacency of some residential structures on smaller lots with wooded vegetation between homes, which would facilitate fire transmission from property to property.

Positive features that may mitigate fire behavior in the area include:

- good access via a number of routes;
- good proximity to emergency responders;
- well maintained, surfaced roads;
- good turn-around space;
- good water supply via hydrants;
- minimal slope;
- irrigated lawns and landscaping; and
- good roofing construction.

Figure 4.5. Deer Leap Road interface area community denoted by red line. Approximate burn area boundary delineated with yellow line.

Figure 4.6. Heavily vegetated area adjacent to homes at the terminus of Old Saddle Road.

Figure 4.7. Barrier at end of Old Saddle Road intersecting BNL lands.

Action Items

This area has experienced a history of wildfire and continues to be rated at high risk of future fires due to rapid regeneration of burned areas. The following is a list of priority action items for this community. Many of these action items are relevant across the planning area and as such are described in more detail in Table 5.1–Table 5.6.

- Fuel reduction projects should be implemented to develop and/or maintain existing fuel breaks (potential location identified in Figure 4.8) and thin ladder fuels adjacent to homes.
- Wildfire signage should be placed at access points to public open space describing fire hazards and risks and listing fire prevention measures.
- Defensible space projects should be implemented to encourage community-led defensible space practices and reduction of structural ignitability using Firewise materials and procedures.
- Public land managers should focus on anti-dumping measures and curtailing of illegal all-terrain vehicle (ATV) use at open space access points.

Figure 4.8. Potential fuel reduction treatment location.

Madeline Road Interface Area

NFPA 1144 Hazard Rating: 48 (Moderate)

The red line in Figure 4.9 denotes the area that the following assessment and rating was based upon. Focus is placed on those homes that are immediately adjacent to wildland fuels. These residences are rated slightly lower risk then adjacent areas described above due to:

- larger lot sizes and reduced adjacency issues between structures;
- moderate defensible space surrounding homes with approximately 30 to 70 feet of clearance;
- newer construction;
- good access via a number of routes;
- good proximity to emergency responders;
- well maintained, surfaced roads;
- good turn-around space;
- good water supply via hydrants;
- minimal slope;
- location of a trail/road that serves as a fuel break to the east of homes (Figure 4.9)
- irrigated lawns and landscaping; and
- good roofing construction.

Despite the positive elements that reduce risk in this neighborhood, homes in the area are still at risk from wildfire spread due to:

- their location adjacent to BNL and Robert Cushman Murphy County Park lands with higher risk of ignitions;
- high tree density of pine-dominated woodland in immediate vicinity of homes; and
- heavy fuel loading on the public land adjacent to homes as a result of thick underbrush and continuity of tree crowns.

Figure 4.9. Madeline Road interface area denoted by red line.

Figure 4.10. Home with well-maintained lot and clearance of understory vegetation.

Due to the easterly aspect of much of this interface area, the risk of fire spread is lower due to the fact that most fires in this region spread in a west to east direction Figure 4.9). Residents should still be cautioned due to the potential occurrence of erratic winds during extreme fire weather, which might shift the prevailing wind direction towards homes.

Action Items

- Homes with a southerly aspect should implement additional defensible space practices with wildland fuels.
- Although many homes have 30 to 70 feet of defensible space (Figure 4.10), additional clearance is recommended particularly where wooden decks and fence lines come into close contact with wildland fuels.
- Fuel reduction projects should be implemented to develop and/or maintain existing fuel breaks and thin ladder fuels adjacent to homes (Figure 4.9 above).

Lake Panamoka Interface Area

NFPA 1144 Hazard Rating: 74 (High)

Interface communities include Montauk Trail, Panamoka Trail, Forest Trail, Lakeside Trail, Cheemaun Trail, Scout Trail, Setauket Trail, Newcombe Trail, and Tarkhill Trail. The red line in Figure 4.11 denotes the area that the following assessment and rating were based upon. Focus is placed on those homes that are immediately adjacent to wildland fuels.

The Lake Panamoka interface community is located immediately east of Brookhaven State Park and, due to the westerly exposure of many homes on the western edge of the lake, fire spread from public lands is a significant concern for fire managers and residents. Wildfire hazards for the interface community also include:

- high tree density in immediate vicinity of homes (Figure 4.12);
- heavy fuel loading on public land adjacent to homes with westerly exposure, thick underbrush and continuity of tree crowns could generate rapid fire spread;
- insufficient defensible space, as many homes have less than 30 feet of clearance around each structure (some have less than 10 feet of clearance);
- building construction that includes wood siding, wooden decks, and fences that can act as fuses from vegetation to homes; and
- adjacency of some residential structures.

Positive features that may mitigate fire behavior in the area include:

- good proximity to emergency responders;
- well maintained, surfaced roads;
- sufficient turn-around space;
- good water supply via hydrants;
- minimal slope;
- irrigated lawns and landscaping and close proximity to lake for drafting if necessary; and
- good roofing construction.

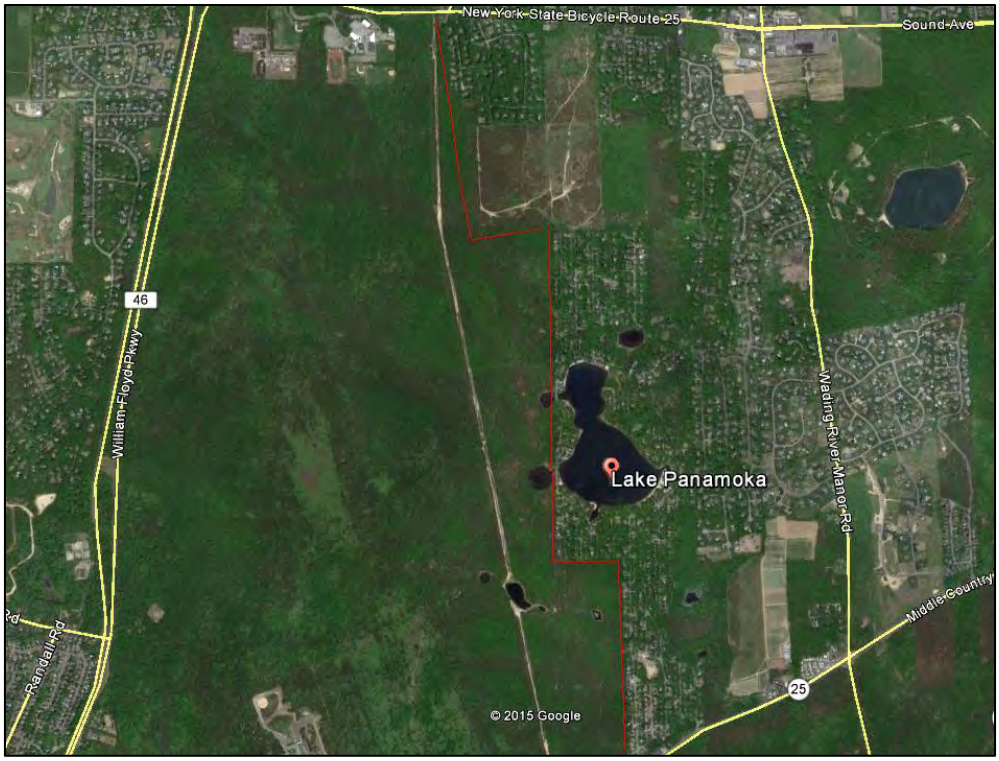


Figure 4.11. Lake Panamoka interface area denoted by red line.

Figure 4.12. Lake Panamoka interface area showing vegetation close to homes.

Action Items

The following is a list of priority action items for this community:

- Fuel reduction projects should be implemented to develop and/or maintain existing fuel breaks and thin ladder fuels adjacent to homes (Figure 4.13).
- Defensible space projects should be implemented to encourage community-led defensible space practices and reduction of structural ignitability using Firewise materials and procedures.
- Signage should be placed along roadways highlighting fire danger and risk.

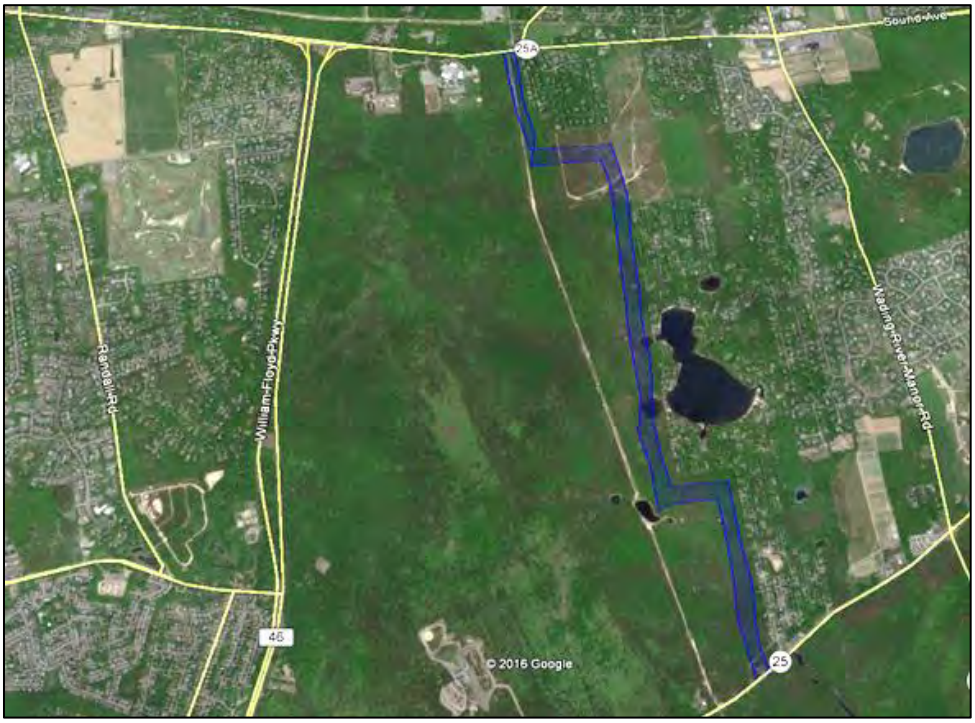


Figure 4.13. Potential fuel reduction treatment location for the Lake Panamoka interface area.

Patrick Lane Interface Area

NFPA 1144 Hazard Rating: 70 (High)

Patrick Lane is a short residential street with approximately 15 residences that is surrounded by Brookhaven State Park lands. The red line in Figure 4.14 denotes the area that the following assessment and rating were based upon.

This interface area was highlighted by fire managers as a concern due to exposures to wildland fuels on both the north and south sides of the road, as well as being a dead-end road. Due to its location east of an area of urban infrastructure, potential fire spread from the west is low under prevailing wind directions, but in the event of extreme fire behavior and erratic winds, residents should be cautioned.

Wildfire hazards for the interface community include:

- high tree density in immediate vicinity of homes;
- heavy fuel loading on Brookhaven State Park land adjacent to homes, and thick underbrush and continuity of tree crowns could generate rapid fire spread;
- insufficient defensible space, as many homes have less than 30 feet of clearance around each structure (some have less than 10 feet of clearance);
- dead-end road; however, a turn-around is present (Figure 4.15); and
- building construction that includes wood siding, wooden decks, and fences that can act as fuses from vegetation to homes.

Positive features that could mitigate fire behavior in the area include:

- good proximity to emergency responders;
- well maintained, surfaced roads;
- sufficient turn-around space;
- good water supply via hydrants;
- minimal slope;
- irrigated lawns and landscaping; and
- good roofing construction.

Figure 4.14. Patrick Lane interface area denoted by red line.

Figure 4.15. Patrick Lane, dead end on wildland fuels.

Action Items

The following is a list of priority action items for this community:

- Fuel reduction projects on Brookhaven State Park lands should be implemented to develop and/or maintain existing fuel breaks and thin ladder fuels adjacent to homes (Figure 4.14).
- Defensible space projects should be implemented to encourage community-led defensible space practices and reduction of structural ignitability using Firewise materials and procedures.
- Fuels at dead end point should be treated to maintain safe turn-around space for emergency vehicles (Figure 4.15).

Ridge Road Interface Area

NFPA 1144 Hazard Rating: 65 (Moderate)

The Ridge Road Interface Communities include all residential areas that are immediately east of Ridge Road and residences along Miranda Drive. The red line in Figure 4.16 denotes the area that the following assessment and rating were based upon. Focus is placed on those homes that are immediately adjacent to wildland fuels.

These residences are part of the WUI area that was threatened during the 1995 wildfires. Most homes are located east of Ridge Road (with the exception of homes on Miranda Drive), which would act as a buffer to fire spread; however, in the event of extreme fire behavior there is potential for fire crossing Ridge Road (Figure 4.17). Homes along this road are still at risk of future fires due to:

- their location adjacent to Rocky Point public lands, with higher risk of ignitions;
- history of high fire occurrence;
- high tree density in immediate vicinity of homes;
- heavy fuel loading adjacent to homes as a result of thick underbrush and continuity of tree crowns;
- insufficient defensible space, as many homes have less than 30 feet of clearance around each structure, with some homes having less than 10 feet of clearance;
- building construction that includes wood siding, wooden decks, and fences that can act as fuses from vegetation to homes; and
- adjacency of some residential structures.

Positive features that could mitigate fire behavior in the area include:

- good access via Ridge Road and a number of routes;
- good proximity to emergency responders;
- well maintained, surfaced roads;
- good turn-around space;
- good water supply via hydrants;
- minimal slope;
- irrigated lawns and landscaping; and
- good roofing construction.

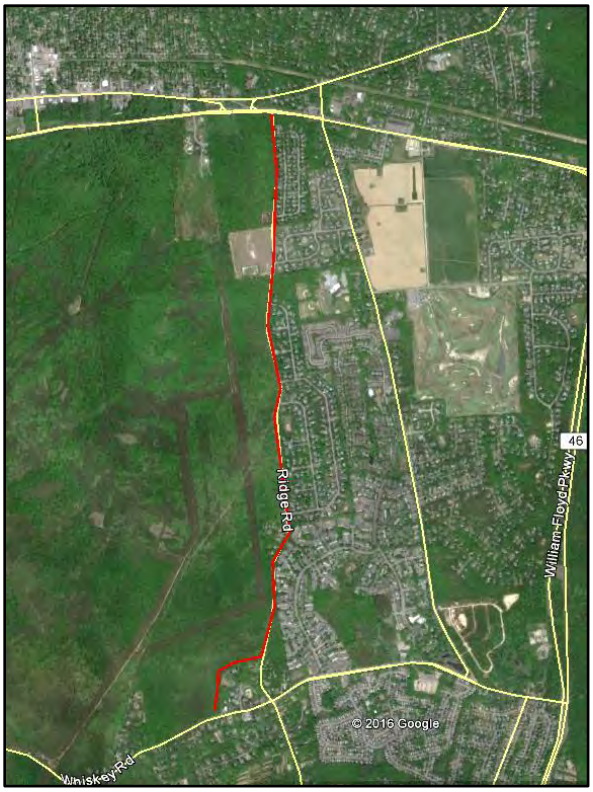


Figure 4.16. Ridge Road interface area denoted by red line.

Figure 4.17. Ridge Road interfaces with thick pine-dominated stands with many ladder fuels.

Action Items

The following is a list of priority action items for this community:

- Fuel reduction projects on DEC lands should be implemented to develop and/or maintain existing fuel breaks and thin ladder fuels adjacent to homes.
- Defensible space projects should be implemented to encourage community-led defensible space practices and reduction of structural ignitability using Firewise materials and procedures.
- Signage should be placed along roadways highlighting fire danger and risk.

Wading River Hollow Road Interface Area

NFPA 1144 Wildfire Hazard Rating: 73 (High)

This portion of Wading River Hollow Road is located north of Whiskey Road and west of Ridge Road. The red line in Figure 4.18 denotes the area that the following assessment and rating were based upon. Focus is placed on those homes that are immediately adjacent to wildland fuels.

This area was identified as at-risk from wildfire due to its location adjacent to the Rocky Point Preserve and history of previous fire occurrence. Homes along this road are at risk of future fires due to:

- their location adjacent to DEC public lands with higher risk of ignitions (Figure 4.19);
- history of high fire occurrence;
- high tree density in immediate vicinity of homes;
- heavy fuel loading on public land adjacent to homes as a result of thick underbrush and continuity of tree crowns;
- insufficient defensible space, as many homes have less than 30 feet clearance around each structure, with some homes having vegetation in contact with the home;
- building construction that includes wood siding, wooden decks, and fences that can act as fuses from vegetation to homes;
- narrow driveways with vegetation covering or close to the driveway that would impede emergency responders;
- adjacency of some residential structures.

Positive fire mitigation in the area includes:

- good access via Ridge Road and a number of routes;
- good proximity to emergency responders;
- well maintained, surfaced roads;
- good turn-around space;
- good water supply via hydrants;
- minimal slope; and
- irrigated lawns and landscaping.

Figure 4.18. Wading River Hollow Road interface area denoted by red line.

Figure 4.19. Wading River Hollow Road, dead end to DEC lands.

Action Items

The following is a list of priority action items for this community:

- Fuel reduction projects on DEC lands should be implemented to develop and/or maintain existing fuel breaks and thin ladder fuels adjacent to homes (Figure 4.19).
- Defensible space projects should be implemented to encourage community-led defensible space practices and reduction of structural ignitability using Firewise materials and procedures.
- Signage should be placed along roadways highlighting fire danger and risk.
- Fuels at dead end point should be treated to maintain safe turn-around space for emergency vehicles.

Woodlot Road

NFPA 1144 Wildfire Hazard Rating: 73 (High)

The Woodlot Road interface was identified as an area of concern due to its westerly exposure adjacent to wildland fuels on state lands. The red line in Figure 4.20 denotes the area that the following assessment and rating were based upon. Focus is placed on those homes that are immediately adjacent to wildland fuels.

The homes at greatest risk are those on the west side of Woodlot Road, which are immediately adjacent to wildland fuels; however, due to vegetation overhanging the road, fire could also easily spread from crown to crown, jumping the road and impacting the east side as well. Homes along this road are at risk of future fires due to:

- their location adjacent to DEC public lands with higher risk of ignitions;
- history of high fire occurrence;
- high tree density in immediate vicinity of homes;
- heavy fuel loading on public land adjacent to homes as a result of thick underbrush and continuity of tree crowns;
- needed maintenance of existing fuel breaks;
- heavy concentrations of standing and fallen dead trees;
- insufficient defensible space, as many homes have less than 30 feet of clearance around each structure, with some homes having vegetation in contact with the home;
- building construction that includes wood siding, wooden decks, and fences that can act as fuses from vegetation to homes (Figure 4.21);
- narrow driveways with vegetation covering or close to the driveway that would impede emergency responders;
- significant numbers of horses and other livestock that contributes to evacuation concerns and clogging of evacuation routes with livestock trailers;
- adjacency of some residential structures.
- A number of residents of Woodlot road attended the April 21st public meeting. Many raised concerns regarding heavy fuel loading on adjacent DEC lands, made up of both standing and downed trees. They were concerned that there had not been any maintenance of existing fuel breaks in the area and that was putting their homes at risk. In addition a number of residents had large lots with horses. During the 1995 fires evacuation of horses and other livestock had been impeded because home owners trying to enter the area to evacuate their animals were not given access. A comprehensive livestock evacuation plan is needed to address these concerns. An example of a livestock evacuation plan is provided in Appendix F.

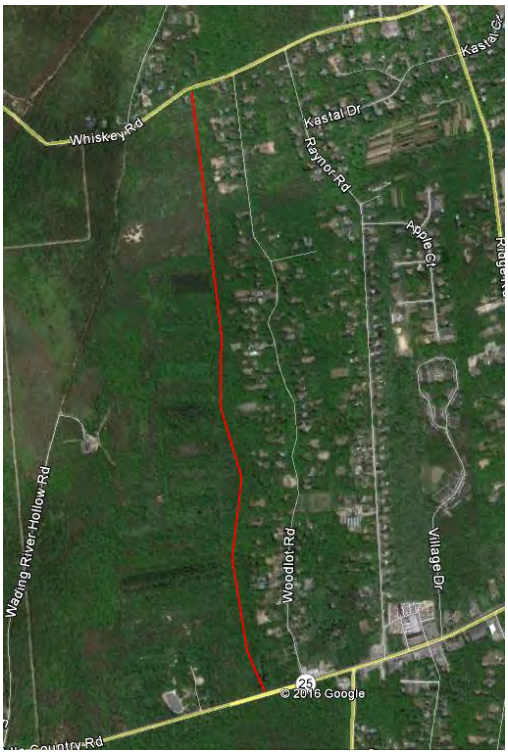


Figure 4.20. Woodlot Road interface area denoted by red line.

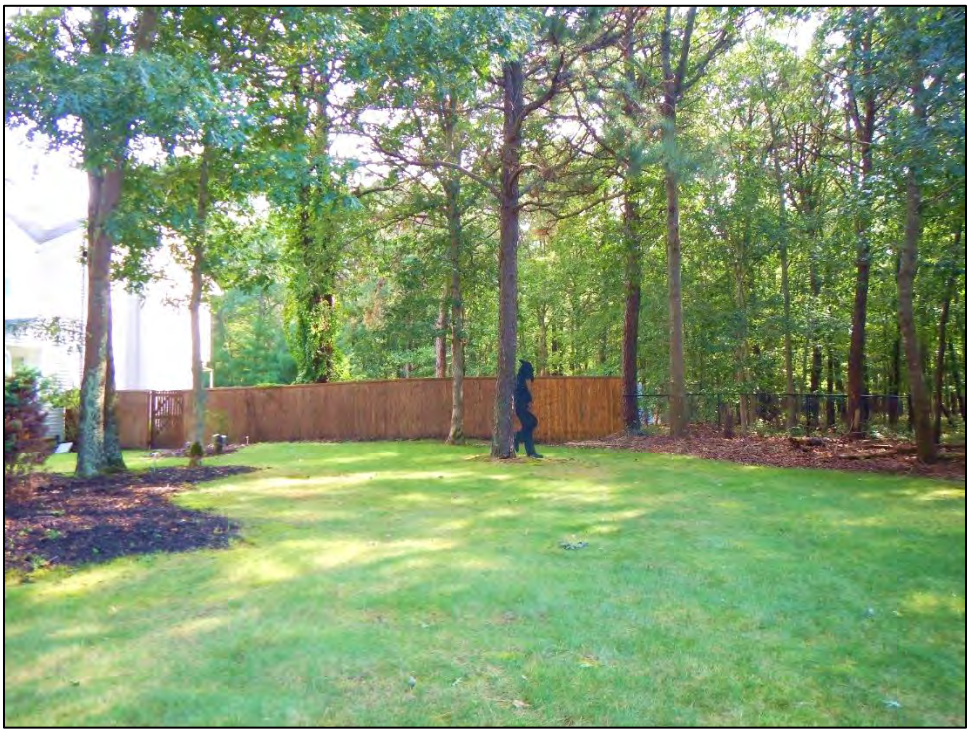


Figure 4.21. Example of home with manicured defensible space but wooden fence connecting home to wildland fuels.

Action Items

The following is a list of priority action items for this community.

- Fuel reduction projects on DEC property should be implemented to develop and/or maintain existing fuel breaks and thin ladder fuels adjacent to homes (Figure 4.22).
- Defensible space projects should be implemented to encourage community-led defensible space practices and reduction of structural ignitability using Firewise materials and procedures.
- Signage should be placed along roadways highlighting fire danger and risk.
- Pre-planning should be initiated with fire departments to identify access hazards and suggested mitigation measures needed to reduce risks associated with long, narrow driveways.
- Pre-evacuation planning should be developed for livestock, including emergency sheltering of livestock during a wildfire event.

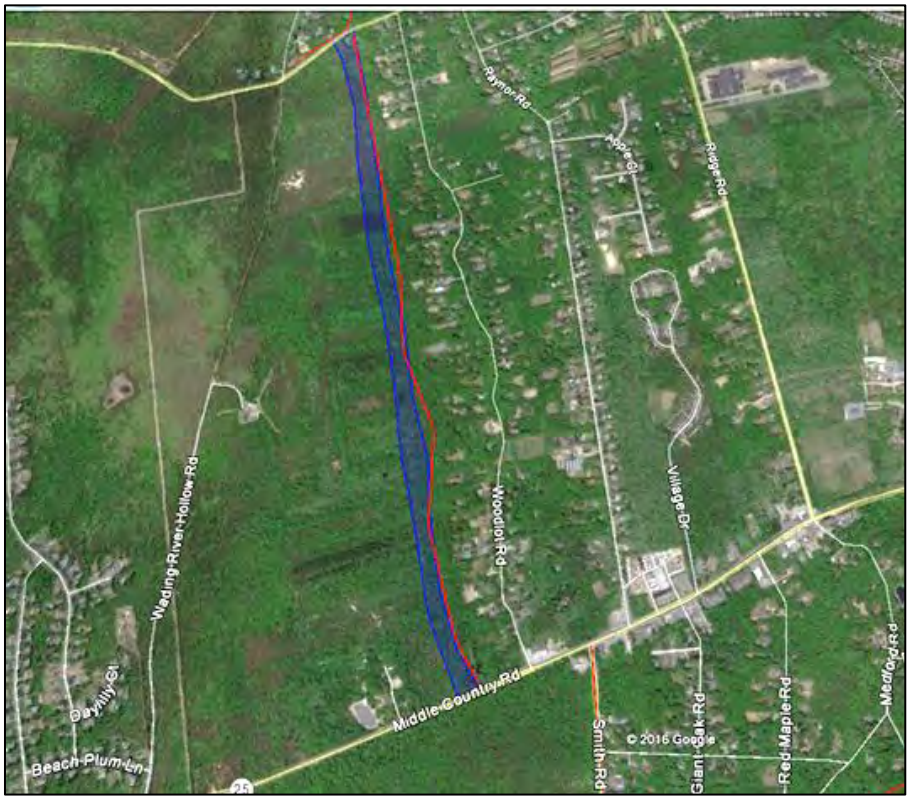


Figure 4.22. Possible location of fuel reduction treatments to protect the Woodlot Road interface area.

Strathmore Ridge

NFPA 1144 Wildfire Hazard Rating: 76 (High)

The Strathmore Ridge WUI area includes all homes within the Strathmore Ridge subdivision. The red line in Figure 4.23 denotes the area that the following assessment and rating were based upon. Focus is placed on those homes that are immediately adjacent to wildland fuels.

Homes in this subdivision are at risk of future fires due to:

- their location adjacent to open space with higher risk of ignitions;
- high tree density in immediate vicinity of homes;
- evidence of dumping of wood and other vegetation along the woodland interface;
- steep topography to the south of the subdivision in area of thick fuels (Figure 4.24), with potential for wind channeling from the south;
- heavy fuel loading on public land adjacent to homes as a result of thick underbrush and continuity of tree crowns;
- insufficient defensible space, as many homes have less than 30 feet of clearance around each structure, with some homes having vegetation in contact with the home;
- building construction that includes wood siding, wooden decks, and fences that can act as fuses from vegetation to homes;
- some structural maintenance needed to screen soffits and vents as homes could be at threat from significant ember cast;
- close adjacency of residential structures.

Positive fire mitigation in the area includes:

- a paved footpath surrounding the entire subdivision that creates small fire break in the event of ground fire spread (though overhanging trees in some areas could transmit flames to properties in the event of crown fire) (Figure 4.25);
- good access and evacuation via Smith Road;
- good proximity to emergency responders;
- well maintained, surfaced roads;
- good turn-around space and large areas of communal parking;
- good water supply via hydrants; and
- irrigated lawns and landscaping.

Figure 4.23. Strathmore Ridge interface area denoted by red line.

Figure 4.24. Thick fuels in hollow on the southeast side of the planning area.

Figure 4.25. Paved path surrounding Strathmore Ridge subdivision, but homes are still situated close to wildland fuels.

Action Items

The following is a list of priority action items for this community:

- Fuel reduction projects should be implemented to develop and/or maintain existing fuel breaks and thin ladder fuels adjacent to homes (Figure 4.26), with specific focus on areas where fire behavior may be influenced by increased topography and slope.
- Structural ignitability improvements should be implemented with focus on soffits and vents to reduce risk of fire from ember cast.
- Signage should be placed in communal areas to curtail illegal dumping or slash into wooded areas.

Figure 4.26. Possible location of fuel treatments to protect the Strathmore Ridge subdivision.

Smith Road Interface Area

NFPA 1144 Wildfire Hazard Rating: 91 (High)

The Smith Road WUI area includes all homes between Smith Road and William Floyd Parkway. The red line in Figure 4.27 denotes the area that the following assessment and rating were based upon. Focus is placed on those homes that are immediately adjacent to wildland fuels.

Homes in this WUI area are at risk of future fires due to:

- their location adjacent to state and BNL lands with higher risk of ignitions;
- high tree density in immediate vicinity of homes;
- heavy fuel loading on public lands adjacent to homes as a result of thick underbrush and continuity of tree crowns;
- insufficient defensible space, as many homes have less than 30 feet of clearance around each structure, with some homes having vegetation in contact with the home;
- building construction that includes wood shake siding, wooden decks, and fences that can act as fuses from vegetation to homes;
- a thick shrub component and lots of regenerating pine (sapling trees) acting as ladder fuels (Figure 4.28);
- varied topography;
- some structural ignitability concerns with older homes;
- many dead-end spur roads, with some terminating at open space, leading to ingress and egress concerns; and
- close adjacency of residential structures.

Positive features that could mitigate fire behavior in the area include:

- good evacuation route available via Smith Road;
- good proximity to emergency responders;
- well maintained, surfaced roads;
- reasonable turn-around space, but some driveways are narrow and lined with trees;
- good water supply via hydrants; and
- irrigated lawns and landscaping.

Figure 4.27. Smith Road interface area denoted by red line.

Figure 4.28. Evidence of thick ladder fuels.

Action Items

The following are a list of priority action items for this community.

- Fuel reduction projects should be implemented on state and BNL land to develop and/or maintain existing fuel breaks and thin ladder fuels adjacent to homes.
- Structural ignitability improvements should be implemented with focus on soffits and vents to reduce risk of fire from ember cast.
- Signage should be placed in communal areas to curtail illegal dumping or slash into wooded areas.
- Fuels at dead-end points should be treated to maintain safe turn-around space for emergency vehicles.
- Defensible space projects should be implemented to encourage community-led defensible space practices and reduction of structural ignitability using Firewise materials and procedures.

Eason Drive

NFPA 1144 Wildfire Hazard Rating: 85 (High)

The Eason Drive WUI area includes all homes along Eason Drive, Scenic Hills Drive, and Fox Hollow Lane west to Wading River Hollow Road. The red line in Figure 4.29 denotes the area that the following assessment and rating were based upon. Focus is placed on those homes that are immediately adjacent to wildland fuels.

Homes in this WUI area are at risk of future fires due to:

- their location adjacent to state lands with higher risk of ignitions;
- high tree density in immediate vicinity of homes (Figure 4.30);
- heavy fuel loading on public land adjacent to homes as a result of thick underbrush and continuity of tree crowns;
- insufficient defensible space, as many homes have less than 30 feet of clearance around each structure, with some homes having vegetation in contact with the home;
- building construction that includes wooden decks and fences that can act as fuses from vegetation to homes;
- limited setback from slopes, increasing vulnerability to wildfire spread from below;
- steeper slopes and varied topography;
- some structural ignitability concerns with older homes;
- some dead-end spur roads, with some terminating at open space, leading to ingress and egress concerns;
- close adjacency of residential structures.

Positive fire mitigation in the area includes:

- properties away from immediate interface are at lower risk;
- good property maintenance in general;
- good proximity to emergency responders;
- well maintained, surfaced roads;
- reasonable turn-around space and short driveways;
- good water supply via hydrants; and
- irrigated lawns and landscaping.

Figure 4.29. Eason Road interface area denoted by red line.

Figure 4.30. Many homes are immediately adjacent to wildland fuels with minimal clearance.

Action Items

The following is a list of priority action items for this community.

- Fuel reduction projects should be implemented to develop and/or maintain existing fuel breaks and thin ladder fuels adjacent to homes with specific focus on areas where fire behavior may be influenced by increased topography and slope.
- Structural ignitability improvements should be implemented with focus on soffits and vents to reduce risk of fire from ember cast.
- Signage should be placed in communal areas to curtail illegal dumping or slash into wooded areas.
- Fuels at dead-end points should be treated to maintain safe turn-around space for emergency vehicles.
- Defensible space projects should be implemented to encourage community-led defensible space practices and reduction of structural ignitability using Firewise materials and procedures.

Jones Pond Community

NFPA 1144 Wildfire Hazard Rating: 67 (Moderate)

The Jones Pond WUI area includes the scattered residents that are located along Schultz Road, North Street, David Terry Road, Wading River Manor Road, Ryerson Avenue, and Scudder Avenue. The red line in Figure 4.31 denotes the area that the following assessment and rating were based upon. Focus is placed on those homes that are immediately adjacent to wildland fuels.

Homes in this WUI area are at risk of future fires due to:

- their location scattered amongst/adjacent to public lands with higher risk of ignitions;
- high tree density in immediate vicinity of homes;
- heavy fuel loading on public land adjacent to homes as a result of thick underbrush and continuity of tree crowns;
- moderate defensible space, as some homes have less than 30 feet of clearance around each structure, but others have reasonable clearance; some homes have vegetation in direct contact with the home;
- building construction that includes wooden decks and fences that can act as fuses from vegetation to homes;
- varied topography;
- fire wells were installed in the area after the 2012 fire to resolve water supply issues, hydrants are still absent from the area;
- some commercial property that may increase hazards depending on content;
- larger numbers of values at risk due to commercial properties; and
- some structural ignitability concerns with older homes.

Positive fire mitigation in the area includes:

- good separation between residential structures;
- good property maintenance in general;
- good proximity to emergency responders;
- well maintained, surfaced roads and good access;
- reasonable turn-around space;
- evidence of some fuel reduction work and slash piles (Figure 4.32); and
- irrigated lawns and landscaping.

Figure 4.31. Jones Pond interface area denoted by red line.

Figure 4.32. Evidence of some fuel reduction work and slash piles in preparation for removal.

Action Items

- Fuel reduction projects should be implemented to develop and/or maintain existing fuel breaks and thin ladder fuels adjacent to homes. Due to the more open nature of this area, landscape-level treatments on Robert Cushman Murphy County Park and BNL could be used to benefit woodland health and reduce potential for extreme fire behavior close to homes.
- Structural ignitability improvements should be implemented with focus on soffits and vents to reduce risk of fire from ember cast.
- Defensible space projects should be implemented to encourage mitigation of structural ignitability using Firewise materials and procedures.
- Individual home assessments should be conducted to identify specific hazards.
- Signage should be placed along roadways highlighting fire danger and risk.

Oakwood Drive Interface

NFPA 1144 Wildfire Hazard Rating: 70 (High)

The Oakwood Drive WUI area was impacted during the 2012 fires and as such the road is called out separately here. The red line in Figure 4.33 denotes the area that the following assessment and rating were based upon. Focus is placed on those homes that are immediately adjacent to wildland fuels.

Homes in this WUI area are at risk of future fires due to:

- High tree density in immediate vicinity of homes
- Heavy fuel loading on public land adjacent to homes thick underbrush and continuity of tree crowns could generate rapid fire spread
- Insufficient defensible space— many homes have less than 30-foot clearance around each structure, some have less than 10-foot clearance
- Dead-end road; however, a turn-around is present
- Building construction includes wood siding, wooden decks and fences that can act as fuses from vegetation to homes
- Water supply only via fire wells for drafting, no public hydrants

Positive fire mitigation in the area includes:

- Good proximity to emergency responders
- Well maintained, surfaced roads
- Sufficient turn-around space
- Good water supply via hydrants
- Minimal slope
- Irrigated lawns and landscaping
- Good roofing construction

Figure 4.33. Oakwood Drive interface area denoted by red line.

Action Items

- Fuel reduction projects should be implemented to develop and/or maintain existing fuel breaks and thin ladder fuels adjacent to homes. Due to the more open nature of this area, landscape-level treatments on Robert Cushman Murphy County Park and BNL could be used to benefit woodland health and reduce potential for extreme fire behavior close to homes.
- Structural ignitability improvements should be implemented with focus on soffits and vents to reduce risk of fire from ember cast.
- Defensible space projects should be implemented to encourage mitigation of structural ignitability using Firewise materials and procedures.
- Individual home assessments should be conducted to identify specific hazards.
- Signage should be placed along roadways highlighting fire danger and risk.
- Since public hydrants are not available in the area, all water sources available for drafting should be mapped.

4.6 COMMUNITY VALUES AT RISK (CVARS)

Earlier compilation of the critical infrastructure in the planning area (Map 7, Appendix A), coupled with the community assessments, public outreach, and Core Team input, has helped in the development of a list of CVARs from wildland fire. The public are encouraged to provide additional CVAR during public meetings.

In addition to critical infrastructure, CVARs can also include natural, social, and cultural resources (Map 8, Appendix A). It is important to note that although an identification of CVARs can inform treatment recommendations, a number of factors must be considered in order to fully prioritize areas for treatment; these factors include appropriateness of treatment, land ownership constraints, locations of ongoing projects, available resources, and other physical, social, or ecological barriers to treatment.

The scope of this CWPP does not allow determination of the absolute natural, socioeconomic, and cultural values that could be impacted by wildfire in the planning area. In terms of socioeconomic values, the impact due to wildfire would cross many scales and sectors of the economy and call upon resources locally, regionally, and nationally.

4.6.1 NATURAL CVARS

The CWPP planning area has a variety of natural resources of particular concern to land managers, such as rare habitats and listed plant and wildlife species. The public outreach has emphasized the importance of natural/ecological values to the general public. Examples of natural values identified by the public and the Core Team include:

- Natural areas
- Native species
- Wildlife habitat
- Threatened and endangered species
- Wetland areas
- Agricultural lands
- Air quality
- Historic white pine plantations at BNL
- County Park land

4.6.2 SOCIOECONOMIC CVARS

Social values include population, recreation, infrastructure, agriculture, and the built environment. Much of the built environment in the planning area falls within the WUI zones. Examples include the following:

- Relativistic Heavy Ion Collider (RHIC) - BNL
- Trails and recreational infrastructure
- Signage, including safety signs and Smokey Bear sign
- Utility lines, infrastructure, etc., specifically power lines through Brookhaven State Park
- Fire departments
- Bridges
- Highways
- Schools
- Churches
- Library
- Longwood Estate
- Firemans Park
- Town of Brookhaven
- Rest homes, senior housing, day care, and other groups homes
- Water storage
- Long Island Shooting Range

4.6.3 CULTURAL CVARS

Many historical landmarks are scattered throughout Suffolk County. Particular CVARs that have been identified by the Core Team and the public in the CWPP planning area are:

- Historic homes and buildings
- Robert Cushman Murphy County Park
- Longwood Estate

4.7 PUBLIC OUTREACH

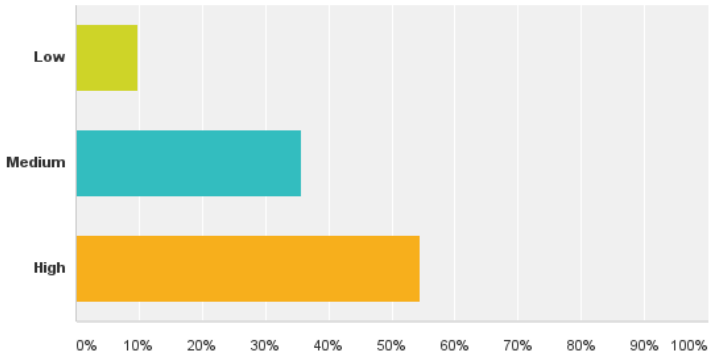
An online survey was developed for this project in order to gather feedback from the community on wildfire concerns, assistance that the community needs to reduce wildfire risk and barriers to action. The following is a summary of the results of the community survey. One hundred and one residents responded to the survey, providing the following information.

Question 1 asked respondents to list their place of residence either as a street address or a general location. Respondents represented all three communities (Manorville, Ridge, and Calverton) relatively evenly.

The survey asked the following questions:

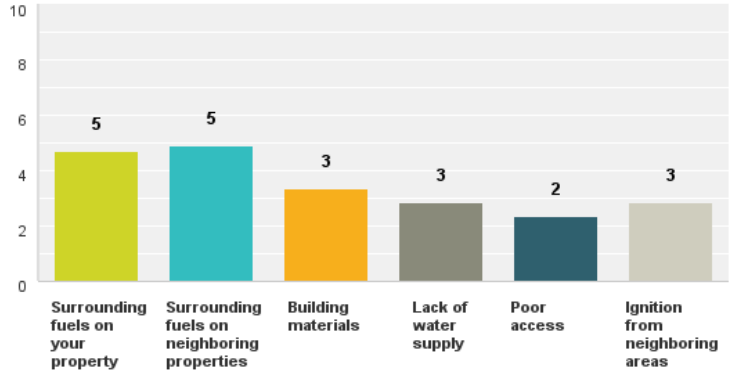
Q2 How would you rate your house in terms of risk from wildfire? (consider the proximity of your house to tracts of undeveloped land, vegetated land, emergency response and access).

Answered: 101 Skipped: 0



Q3 My home is vulnerable to wildfire because of: (please rank 1= most relevant)

Answered: 97 Skipped: 4



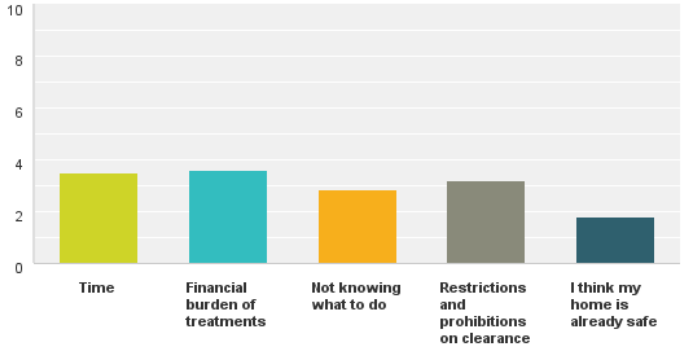
Note: Numbers denote the weights of response- 5 being the parameter that respondents ranked number 1 (most relevant) with greatest frequency.

Q4 How prepared is your community for a large wildfire?

	Poorly prepared	poor-moderately prepared	Moderately prepared	moderate-well prepared	Well prepared	Total	Weighted Average
Number of responses	22.34% 21	20.21% 19	38.30% 36	11.70% 11	7.45% 7	94	2.62

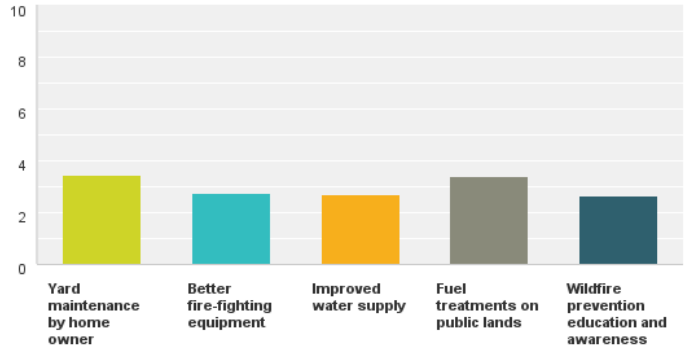
Q6 My biggest challenge to making my home fire safe is.....(rank in order of relevance)

Answered: 92 Skipped: 9



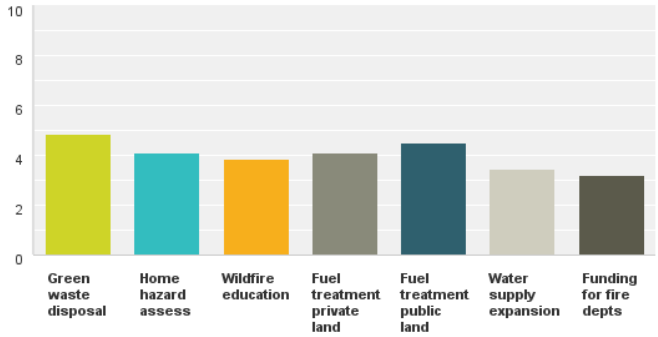
Q5 Rate the following actions in their importance to making the community better prepared for wildfire? (most important first).

Answered: 101 Skipped: 0



Q7 I would be most interested in funding to help me and my community with... (rank in order of importance)

Answered: 98 Skipped: 3



Below are some responses that residents provided when asked if they had additional comments. For more public comments please see Appendix C:

- *Concentrated efforts during low humidity high windy conditions to spot fires early before they become uncontrollable.*
- *Private removal of dead, dying or undesirable trees can easily cost the homeowner thousands of dollars. Many trees that pose not only a fire hazard but also a wind damage hazard are left neglected due to these high cost. Subsidizing these costs so that these dangers could be mitigated would be the best use of resources.*
- *I am an active volunteer firefighter in Ridge. I feel that fire breaks are over grown. I have personally driven down fire breaks while training with the fire department and have observed over grown fire breaks.*
- *Education is the best, I am very proud of our Ridge FD.*
- *Fine and make clean up all the illegal dumping (tree debris, building material etc.) behind every house that backs on undeveloped land. This lazy illegal dumping disgraces all of our park land and creates a fire danger. Increased enforcement (now nonexistent) would generate funds through fines for other parts of the fire prevention program.*
- *I would like to see areas affected by the southern pine beetle prioritized for two reasons: 1) dead trees and fallen limbs pose a fire risk; 2) fire management techniques (i.e. prescribed fire) may help reduce SPB threat.*
- *Controlled burns brought back.*
- *Getting city water in my neighborhood- Calverton resident*
- *More fire hydrants, fire fighting equipment, monitoring stations, fire patrols in fire areas, more clean-up of roadside areas in fire zones, stricter access to DEC areas.*
- *Need better clean-up of access roads.*
- *Natural areas, preserved lands. Things that can be done to protect our preserved land to protect before fire happens. Education of the public, fire prevention.*
- *Protect all natural areas, cultural sites, municipal infrastructure, and recreation sites. These things are our community, if they get destroyed by wildfire then we have to pay to restore them.*
- *Mandated educational forums. Financing extension of fire hydrants.*
- *I would like to see the Leisure Village community as a whole be more educated and involved in fire prevention.*
- *All homeowners should be responsible for cleaning up downed trees and shrubs. The Town should be responsible for clearing downed trees and shrubs.*

- *We had wildfires in our backyard a few years ago. Scared us to come home to smoke and blocked road. Pets were inside - fire rescue saved my pets and my home. Impressive job firefighters did that day. We are eternally grateful to the men and women of the fire department.*

- *Perhaps a system of fire lanes and perhaps extension of inexpensive above-ground water lines - possible using flexible PVC tubing running alone fire lanes, trails and other disturbed areas.*

These results (from 101 respondents) suggest that the majority of people perceive their home to be at moderate to high risk of wildfire. A majority of respondents felt that fuel hazards both on public and private land contribute to the fire risk for their community. Most people felt that their community was either moderately to poorly prepared for a large wildfire. When asked what actions the respondents would like to see implemented to improve preparation for wildfire, the responses were mixed but with slightly more people looking to removal of fuels either through yard clean-up on private properties or fuel treatments on public lands. When asked what are the barriers to them improving their own fire risk, again the responses were mixed but with slightly more people noting time, financial burden, and restriction and prohibitions on clearance as the hurdles to action. When asked what respondents would like to see funding efforts directed towards, the responses were varied; green waste disposal was marginally higher than home hazard assessment and fuel treatments on private and public lands. This assertion was further supported during the public meetings when residents were supportive of implementing programs to provide green waste disposal assistance to residents. The general findings from these surveys are that hazardous fuel reduction actions on public and private land, coupled with slash disposal, are a priority for most community members. Community education and funding for improvement of fire response is also important as was noted in the open-ended questions. The results of this public outreach help to drive the priorities for treatment and are used to formulate recommendations and action items.

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5.0 RECOMMENDATIONS AND ACTION ITEMS

This chapter addresses four different types of recommendations: 1) fuels reduction projects, 2) public education and outreach, 3) actions homeowners and communities can take to reduce structural ignitability, and 4) actions to improve firefighting capability. These recommendations are based on Core Team input, public outreach, the Composite Risk/Hazard Assessment, and the Community Risk/Hazard Assessment. The recommendations are general in nature to provide maximum flexibility in implementation.

5.1 RECOMMENDATIONS FOR FUELS REDUCTION PROJECTS

The purpose of any fuels reduction treatment is to protect life and property by reducing the potential for catastrophic wildfire, as well as to restore landscapes to a sustainable and healthy condition. Moderating extreme fire behavior, reducing structural ignitability, creating defensible space, providing safe evacuation routes, and maintaining all roads for firefighting access are methods of fuels reduction likely to be used around communities located in a WUI zone. Use of multiple treatment methods often magnifies the benefits.

Fuels should be modified with a strategic approach across the planning area to reduce the threat that high-intensity wildfires pose to lives, property, and other values. Pursuant to these objectives, recommendations have been developed in the context of existing and planned fuels management projects. These recommendations initially focus on areas adjacent to structures (defensible space), then near community boundaries (fuel breaks, cleanup of adjacent open spaces), and finally in the wildlands beyond community boundaries (larger scale forest health and restoration treatments). A common focus of fuels treatment is to reduce brush, diseased trees, dead fuels, and immature trees in favor of healthy, more mature trees.

While not necessarily at odds with one another, the emphasis of each of these treatment types is different. Proximate to structures, the recommendations focus on reducing fire intensity consistent with Firewise and International Fire Code standards. Further into open space areas, treatments will tend to emphasize the restoration of historic conditions and general forest health. Cooperators in fuels management should include federal, state, and local agencies as well as interested members of the public.

Table 5.1 summarizes the types of treatments recommended throughout the planning area. The majority of the treatments are focused on high or extreme risk areas, as defined by the Composite Risk/Hazard Assessment, Core Team collaboration, and public input. Many of these treatment recommendations are general across the communities because similar conditions and concerns were raised for all communities that border wildland areas. Table 5.1 addresses the requirement for an action plan and assessment strategy by providing monitoring guidelines and a timeline for implementation. This timeline is obviously dependent on available funding and resources, as well as National Environmental Policy Act (NEPA) or State Environmental Quality Review Act (SEQRA) protocols for treatments on public lands.

The treatment list is by no means exhaustive and should be considered purely a sample of required projects for the future management of the planning area. Many projects may be eligible

for grant funds available from federal and/or state sources. For a list of funding sources please refer to Appendix G.

Fire management cannot be a one-size-fits-all endeavor; this plan is designed to be flexible. Treatment approaches and methods will be site-specific and should be adapted to best meet the needs of the landowner and the resources available. Moreover each treatment recommendation should address protection of CVARs, particularly the protection of threatened and endangered species. It is the intent of this plan to be an evolving document that will incorporate additional areas of the CWPP planning area as they change in risk category over time.

Table 5.1. Fuels Reduction Treatment Recommendations

Project	Location and Landownership/ Management	Method	Serves To	Timelines for Implementation and Priority (High, Medium, Low)	Monitoring	Contact
Defensible space assessments	All private land within the RMCCWPP planning area would be eligible	Conduct Firewise Communities-based assessments of individual homes. The professional assessment would help identify the most critical actions that an individual could take. Assessments could also include marking trees and shrubs suggested for removal.	Reduce risk of home ignitions. Empower homeowners to take the most effective actions. Allow funding to address a larger number of homes.	Fall 2016 High	Conduct on-site inspections with owners; identify and mark trees or shrubs for removal within the 100-foot safety zone. Develop a community task force to carry out assessments of properties.	Central Pine Barrens Commission
Create new or maintain existing fuel breaks on the western edge of communities	All public land within the RMCCWPP planning area would be eligible.	Strategically place treatments on public land to improve effectiveness. Fuel break prescriptions should be site-specific, depending on fuel type, topography, soils, and adjacent land management practices. Examples include mowing and blading strips along fence lines or shaded fuel breaks.	Help mitigate extreme fire behavior and provide an area from which firefighters can safely suppress a fire.	Fall 2016 High	Regular maintenance needed to ensure access is clear of vegetation or obstructions including stumps that impact access by emergency vehicles. Monitoring should occur prior to fire season (February).	Central Pine Barrens Commission
Protect power lines and communication lines	Utility company rights-of-way. Priority is the Brookhaven State Park right-of-way.	Maintain clearance under power lines and around posts.	Prevent destruction of energy or communications infrastructure in event of fire.	Fall 2016 High	Regular maintenance needed to ensure lines are clear of vegetation.	PSEG and other utility companies.
Fire effects monitoring	Private and public. Entire RMCCWPP planning area.	Carry out fuels monitoring and fire effects monitoring following wildfire and/or prescribed fire.	Improve understanding of the effectiveness of fuels treatments on fire behavior and provide an inventory of fuels loading to direct treatment.	Ongoing Moderate	Monitoring should be carried out for multiple (>3) years post-burn (both prescribed fire and wildfire) to assess vegetation response, wildlife response, soils, and hydrology. Refer to Chapter 6, Levels 1–4.	Student Conservation Association volunteers, local high schools, Eagle Scouts.
Create local fuels reduction task force/WUI working group	Private and public. Landscape scale.	Formulate a task force of local practitioners who could develop best management practices	Protect community and infrastructure by empowering local landowners to create	Ongoing Moderate	Monitor effects of treatments on species dynamics and species composition, particularly	Collaboration of land managers in planning area to improve fire planning. Work from the grass-roots level up: VFDs,

Project	Location and Landownership/ Management	Method	Serves To	Timelines for Implementation and Priority (High, Medium, Low)	Monitoring	Contact
		for fuels treatment in grass, shrublands, timber and woodland fuels, particularly in the WUI. Create demonstration sites and workshops to inform landowners. Use local spark plugs and/or choose demonstration site in visible location to attract local attention.	mechanism to protect their own properties.		invasion of exotic species. Monitor regrowth and erosion, and maintain clearance. Refer to Chapter 6, Levels 1–4. Monitoring and maintenance should occur prior to fire season (February).	conservation and watershed groups. For funding sources refer to Appendix G.
Continuing fuel treatments in cooperation with public lands managers. (Figure 5.1)	Private and public lands adjacent to and beyond WUI areas.	Conduct mechanical, prescribed fire, chemical treatments.	Create landscape level treatments that will mitigate fire behavior before fires impinge on WUI areas. Whenever possible focus fuel treatment efforts in areas that would provide ancillary benefits for addressing southern pine beetle infestation and oak die off.	High Ongoing fuels planning	Ongoing, following agencies protocols. Monitor for and remove stumps that might impact access by emergency vehicles.	Commission, DEC, State Parks, County Parks, BNL. For funding sources refer to Appendix G.
Southern pine beetle focused treatments	In identified southern pine beetle infested stands on public property	Identify and prioritize fuel treatments in areas impacted by southern pine beetle outbreaks.	Address community members concerns that southern pine beetle infested areas are significantly increasing wildfire hazard due to concentrations of standing and downed dead fuels.	High	Monitor effects of treatments on species dynamics and species composition, particularly invasion of exotic species.	Commission, DEC, State Parks, County Parks, BNL. For funding sources refer to Appendix G.

Figure 5.1 illustrates past, present and future fuels treatments on private and public lands in the planning area, as well as the fire perimeter from the Crescent Bow Fire. Note that future potential treatments included in this document are conceptual and have not been field verified for viability and in some cases would have to undergo the NEPA/SEQA process to assess their impacts on natural and cultural resources. The best type of fuels treatment for each area would be determined during this process, which incorporates thorough public scoping.

NOTE: Although fuel treatments are designed to help to mitigate high intensity fire behavior and allow fire fighters access for suppression efforts, no fuel treatments suggested here can be 100% guaranteed to protect life and property, particularly when environmental conditions are primed to create catastrophic fire behavior.

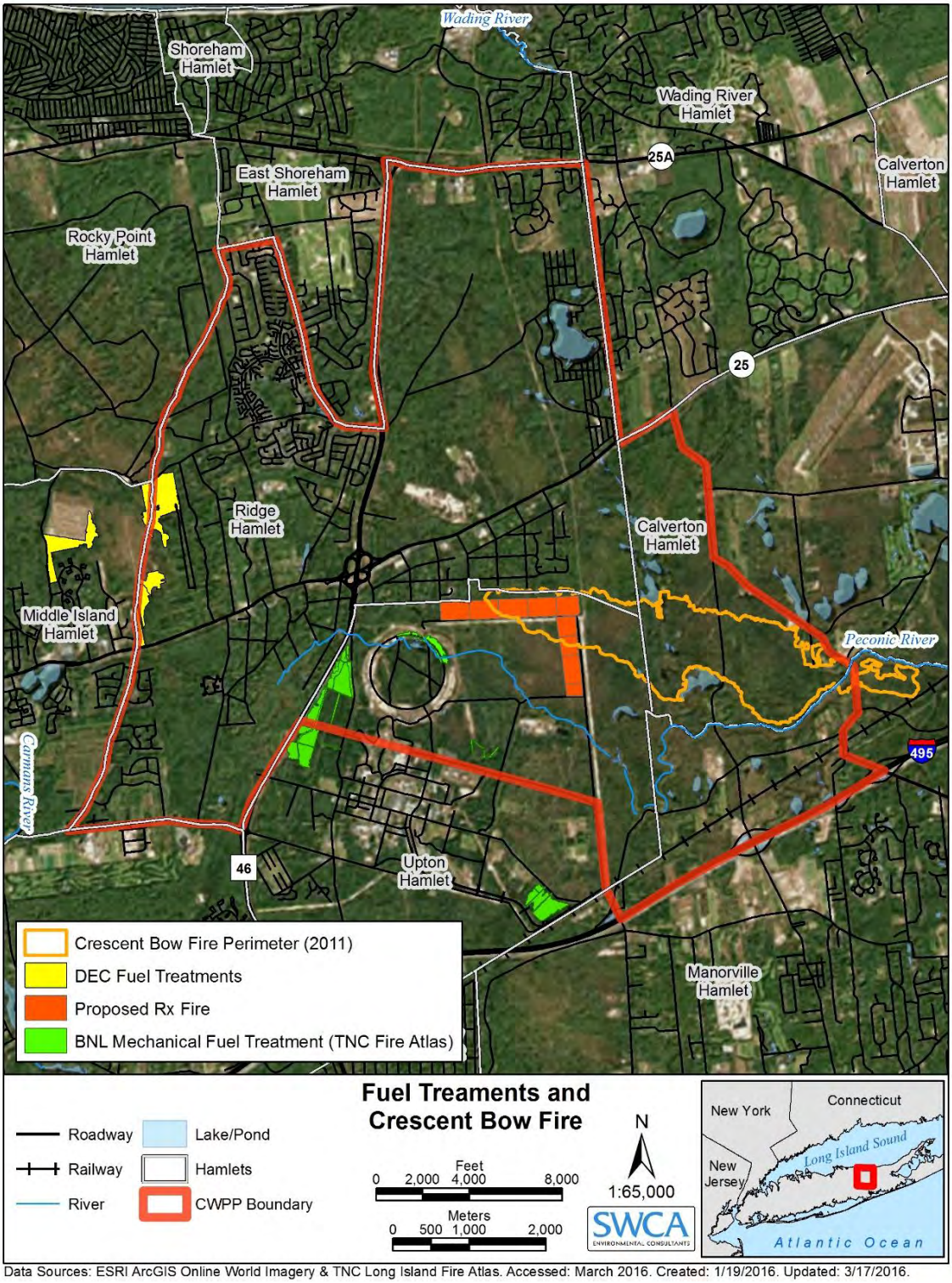

Figure 5.1. Fuel Treatment Map (existing and proposed)

5.2 FUELS TREATMENT SCALES

5.2.1 DEFENSIBLE SPACE

Defensible space is perhaps the fastest, most cost-effective, and most efficacious means of reducing the risk of loss of life and property. The WFTF's Firewise Wildfire Prevention Subcommittee has been working with the DEC Forest Rangers and the national Firewise Communities program to help inform Suffolk County residents about wildland fire safety and prevention. Although fire agencies can be valuable in providing guidance and assistance, creating defensible space is the responsibility of the individual homeowner.

The DEC provides defensible space recommendations on its website at: http://www.dec.ny.gov/public/42529.html. Effective defensible space consists of creating an essentially fire-free zone adjacent to the home, a treated secondary zone that is thinned and cleaned of surface fuels, and (if the parcel is large enough) a transitional third zone that is basically a managed forest area. These components work together in a proven and predictable manner. Zone 1 keeps fire from burning directly to the home; Zone 2 reduces the adjacent fire intensity and the likelihood of torching, crown fire, and ember production; and Zone 3 does the same at a broader scale, keeping the fire intensity lower by maintaining a more natural, historic condition (Figure 5.2).

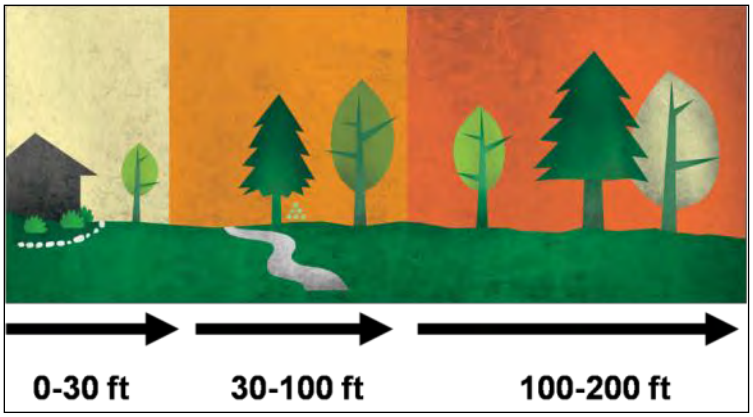

Figure 5.2. Defensible space zones.

Source: www.firewise.org

Area property owners first need to check with local Town, County and State agencies for ordinances and regulations related to clearing restrictions, before clearing and removing vegetation to create a defensible space around a structure. Land owners may also need to check with their local town to determine if there are any covenants, easements or buffers on their property which restrict clearing of vegetation.

The Central Pine Barrens Comprehensive Land Use Plan has specific standards and guidelines that property owners need to be aware of and consider when contemplating clearing or removing vegetation from their property.

Property owners need to carefully review any activities proposed on property located in the Compatible Growth Area of the Central Pine Barrens area if that property was developed after or is proposed to be developed after the 1993 adoption of the Long Island Pine Barrens Protection Act (the "Act"), and if the proposed activities are considered to be development as per NYS ECL Article 57, Section 57-0107(13)). In such cases, the clearance of vegetation to enhance and foster a defensible space around structures (as a supplemental measure to reduce structural ignitability) is limited to the area allowed to be cleared on the property per the vegetation clearance limits standard contained in the Central Pine Barrens Comprehensive Land Use Plan. In these situations, it is recommended that property owners submit to the Central Pine Barrens Commission a written request for a determination as to whether or not the work they propose to undertake, especially if it involves clearing and removal of vegetation, would require further review and approval from the Commission.

For property owners that own property located in the Core Preservation Area of the Central Pine Barrens, the clearance of vegetation to enhance and foster a defensible space around structures (as a supplemental measure to reduce structural ignitability and if such activity is deemed to constitute development for the purposes of NYS ECL Article 57, Section 57-0107(13)) would require review by the Central Pine Barrens Commission to determine whether or not an approval from the Commission is necessary,. It should be noted that the act of clearing vegetation in the Core Preservation Area is generally considered to be development in the Core Preservation area. It is therefore advised that property owners in the Core Preservation Area submit to the Central Pine Barrens Commission a written request for a determination as to whether or not the work they propose to undertake would require further review and approval from the Commission, especially if it involves clearing and removal of vegetation. Only the Commission can make this determination in the Core Preservation Area.

Property owners also need to check with other local, Town, County and State agencies to ensure they are in conformance with their requirements and to determine whether or not they would need to get their approval.

A copy of §57-0107(13) of Article 57 of the State Environmental Conservation Law (the Long Island Pine Barrens Protection Act) is provided in Appendix H.

It should be emphasized that defensible space is just that—an area that allows firefighters to work effectively and with some degree of safety to defend structures. While defensible space may increase a home's chance of surviving a fire on its own, a structure's survival is not guaranteed, with or without firefighter protection. Nevertheless, when these principles are consistently applied across a neighborhood, everybody benefits.

Specific recommendations should be based on the particular hazards adjacent to a structure such as slope steepness and fuel type. Local fire authorities or a state forester should be contacted if a professional assessment seems warranted. Firewise guidelines and the Homeowners Guide (Appendix I) are an excellent resource, but creating defensible space does not have to be an overwhelming process. Assisting neighbors may be essential in many cases. Homeowners should consider assisting the elderly, sharing ladders for gutter cleaning, and assisting neighbors with large thinning needs. Adopting a phased approach can make the process more manageable and encourage maintenance (Table 5.2).

Table 5.2. Example of a Phased Approach to Mitigating Home Ignitability

Year	Project	Actions
1	Basic yard cleanup (annual)	Dispose of clutter in the yard and under porches. Remove dead branches from yard. Mow and rake. Clean off roofs and gutters. Remove combustible vegetation near structures. Coordinate disposal as a neighborhood or community. Post 4-inch reflective address numbers visible from road.
2	Understory thinning near structures	Repeat basic yard cleanup. Limb trees up to 6–10 feet. Trim branches back 15 feet from chimneys. Trim or cut down brush. Remove young trees that can carry fire into forest canopy. Coordinate disposal as a neighborhood or community.
3	Understory thinning on private property along roads and drainages	Limb trees up to 6–10 feet. Trim or cut down brush. Remove young trees that can carry fire into forest canopy. Coordinate disposal as a neighborhood or community.
4	Overstory treatments on private property	Evaluate the need to thin mature or diseased trees. Prioritize and coordinate tree removal within neighborhoods to increase cost effectiveness.
5	Restart defensible space treatment cycle	Continue the annual basic yard cleanup. Evaluate need to revisit past efforts or catch those that were bypassed.

5.2.2 Fuel Breaks and Open Space Cleanup

The next location priority for fuels treatments should be where the community meets the wildland. This may be the outer margins of a town or an area adjacent to occluded open spaces such as a park. Fuel breaks (also known as shaded fuel breaks) are strips of land where fuel (for example living trees and brush, and dead branches, needles or downed logs) has been modified or reduced to limit the fires ability to spread rapidly. Fuel breaks should not be confused with firebreaks which are areas where vegetation and organic matter is removed down to mineral soil. Shaded fuel breaks may be created to provide options for suppression resources, opportunities to introduce prescribed fire, or to create a zone where crown fire will be forced to the ground where it is more easily contained. In many cases, shaded fuel breaks may be created by thinning along roads. This provides access for mitigation resources and firefighters, as well as enhancing the safety of evacuation routes.

Some areas adjacent to communities require fuel reduction to mitigate a hazardous condition, although are not suitable for fuel breaks.

5.2.3 Larger-scale Treatments

Farther away from WUI communities, the emphasis of treatments often becomes broader. While reducing the buildup of hazardous fuels remains important, other objectives are often included, such as restoration of historic conditions and forest health. Wildfires frequently burn across jurisdictional boundaries, sometimes on landscape scales. As such, these larger treatments need to be coordinated on a strategic level. This requires coordination between projects and jurisdictions, as is currently occurring. Land managers have carried out numerous fuels reduction projects across the planning area and region and have ongoing projects planned on public lands

that are designed to reduce hazardous fuels to protect communities and resources (see Figure 5.1).

5.3 FUEL TREATMENT METHODS

Since specifics of the treatments are not provided in detail in Table 5.1, different fuels reduction methods are outlined in the following narrative.

Several treatment methods are commonly used, including manual treatments, mechanized treatments, and prescribed fire (Table 5.3). This brief synopsis of treatment options is provided for general knowledge; specific projects will require further planning. The appropriate treatment method and cost will vary depending on factors such as the following:

- Diameter of materials
- Proximity to structures
- Acreage of project
- Fuel costs
- Steepness of slope
- Area accessibility
- Density of fuels
- Project objectives

It is imperative that long-term monitoring and maintenance of all treatments is implemented. Post-treatment rehabilitation such as seeding with native plants and erosion control may be necessary.

Table 5.3. Summary of Fuels Treatment Methods

Treatment	Comments
Machine mowing	Appropriate for large, flat, grassy areas on relatively flat terrain.
Prescribed fire	Can be very cost effective. Ecologically beneficial. Can be used as training opportunities for firefighters. May require manual or mechanical pretreatment. Carries risk of escape, which may be unacceptable in some WUI areas. Unreliable scheduling due to weather and smoke management constraints.
Brush mastication	Brush species (oak in particular) tend to resprout vigorously after mechanical treatment. Frequent maintenance of treatments are typically necessary. Mastication tends to be less expensive than manual (chainsaw) treatment and eliminates disposal issues.
Timber mastication	Materials up to 10 inches in diameter and slopes up to 30% can be treated. Eliminates disposal issues. Environmental impact of residue being left on site is still being studied.
Manual treatment with chipping or pile burning	Requires chipping, hauling, pile burning of slash in cases where lop and scatter is inappropriate. Pile burning must comply with smoke management policy.
Feller buncher	Mechanical treatment on slopes more than 30% or of materials more than 10 inches in diameter may require a feller-buncher rather than a masticator. Costs tend to be considerably higher than masticator.

5.3.1 MANUAL TREATMENT

Manual treatment refers to crew-implemented cutting with chainsaws. Although it can be more expensive than mechanized treatment, crews can access many areas that are too steep or otherwise inaccessible with machines. Treatments can often be implemented with more precision than prescribed fire or mechanized methods allow. Merchantable materials and firewood can be removed while non-merchantable materials are often lopped and scattered, chipped, or piled and burned on site. Care should be exercised to not increase the fire hazard by failing to remove or treat discarded material in a site-appropriate manner.

Strategic timing and placement of fuels treatments is critical for effective fuels management practices and should be prescribed based on the conditions of each particular treatment area. Some examples of this would be to place fuel breaks in areas where the fuels are heavier and in the path of prevailing winds and to mow grasses just before they cure and become flammable. Also, burning during the hotter end of the prescription is important since hotter fires are typically more effective at reducing heavy fuels and shrub growth. In areas where the vegetation is sparse and not continuous, fuels treatments may not be necessary to create a defensible area where firefighters can work. In this situation, where the amount of fuel to carry a fire is minimal, it is best to leave the site in its current condition to avoid the introduction of exotic species.

5.3.2 MECHANIZED TREATMENTS

Mechanized treatments include mowing, mastication (ground-up timber into small pieces), and whole tree felling. These treatments allow for more precision than prescribed fire, and are often more cost-effective than manual treatment.

Mowing, including ATV and tractor-pulled mower decks can effectively reduce grass fuels adjacent to structures and along highway rights-of-way and fence lines. For heavier fuels, a number of different masticating machines can be used, including drum- or blade-type masticating heads mounted on machines and ranging in size from a small skid-steer to large front-end loaders. Some masticators are capable of grinding standing timber up to 10 inches in diameter. Other masticators are more effective for use in brush or surface fuels. Mowing and mastication do not actually reduce the amount of on-site biomass, but alter the fuel arrangement to a less combustible profile.

In existing fuel break areas maintenance is crucial especially in areas of encroaching shrubs or trees. In extreme risk areas more intensive fuels treatments may be necessary to keep the fire on the ground surface and reduce flame lengths. Within the fuel break, shrubs should be removed, and the branches of trees should be pruned from the ground surface to a height of 4 to 8 feet, depending on the height of the fuel below the canopy, and thinned with a spacing of at least two to three times the height of the trees to avoid movement of an active fire into the canopy.

Mechanical shears mounted on feller bunchers are used for whole tree removal. The stems are typically hauled offsite for utilization while the limbs are discarded. The discarded material may be masticated, chipped, or burned in order to reduce the wildfire hazard and to speed the recycling of nutrients.

5.3.3 PRESCRIBED BURNING

Prescribed burning is also a useful tool to reduce the threat of extreme fire behavior by removing excessive standing plant material, litter, and woody debris while limiting the encroachment of shrubby vegetation. Where possible, prescribed fire could occur on public lands since fire is ecologically beneficial to this fire-adapted vegetation community and wildlife habitat. As outlined in fire management planning documents for agencies with jurisdiction in the area, the purpose of prescribed burning in this vegetation type is to 1) reducing available fuel, 2) maintain fire-dependent communities such as pine barrens habitats and warm season grasses, 3) reduce or eliminate exotic vegetation (DEC 2007; BNL 2014). BNL, DEC and Suffolk County Parks work in cooperation to implement prescribed burning in the Central Pine Barrens.

Prescribed burning in the Central Pine Barrens is considered low to moderate in complexity (BNL 2014) and would only be implemented by properly qualified personnel. All prescribed fire operations will be conducted in accordance with federal and state laws and regulations. Public safety would be the primary consideration in the design of any prescribed burn plan so as to not negatively impact the WUI. Pre-fire vegetation sampling would be carried out during planning to ensure resource protection. The areas to be burned would occur within fuel breaks or appropriate fire lines (BNL 2014). Agency use of prescribed fire on public lands would be carried out within the confines of the agency's fire management planning documents and would require individual prescribed burn plans that are developed for specific burn units and consider smoke management concerns and sensitive receptors within the WUI.

Following any type of fuels reduction treatment, post-treatment monitoring should continue to ensure that management actions continue to be effective throughout the fire season. Vegetation can change rapidly in response to drought or moisture from year to year and during the course of the season, so fuels treatments should be adjusted accordingly.

5.3.4 THINNING AND PRESCRIBED FIRE COMBINED

Combining thinning and prescribed fire can be the most effective treatment (Graham et al. 2004). In forests where fire exclusion or disease has created a buildup of hazardous fuels, prescribed fire cannot be safely applied and pre-burn thinning is required. The subsequent use of fire can further reduce residual fuels and reintroduce this ecologically imperative process.

5.3.5 MANAGEMENT OF NON-NATIVE PLANTS

The Science and Stewardship Division represents the Commission on the New York State Partnership for Regional Invasive Species Management and the local Long Island Invasive Species Management Area. The Long Island Invasive Species Management Area provides strategies for invasive species management. Specific to the CWPP planning area the group responded to reports of mile-a-minute vine infestation in the Crescent Bow fire area and followed up with land managers (Commission 2014). The USDA maintains a list of noxious weeds rated from A to C based on the current degree of infestation of the species and the potential for eradication (USDA 2010). Fuel treatment approaches should always consider the potential for introduction or proliferation of invasive non-native species as a result of management actions.

5.3.6 FUEL BREAKS

Fire behavior in the CWPP planning area has been modeled using FlamMap. This assessment provides estimates of flame length and rate of spread; the information should be used by land managers when prescribing treatments. Land managers are cautioned, however, that fuel breaks will not always stop a fire under extreme fire behavior or strong winds; these should only be seen as a mitigating measure and not a fail-safe method for fire containment. Furthermore, fuel break utility is contingent upon regular maintenance, as regrowth in a fuel break can quickly reduce its effectiveness. Input provided during public outreach activities identified a need for maintenance of existing fuel breaks that have become overgrown. Maintenance of existing breaks could be more cost efficient than installation of new features.

Within a fuel break, shrubs should be removed where they would generate high-severity fire behavior. It is not possible to provide a standard treatment prescription for the entire landscape because fuel break dimensions should be based on the local fuel conditions and prevailing weather patterns. For example, in some areas, clearing an area too wide could open the landscape to strong winds that could generate more intense fire behavior and/or create wind throw.

Strategic placement of fuel breaks is critical to prevent fire from moving from wildland fuels into adjacent neighborhoods. A fuel break of 100 to 300 feet in shrubland should modify fire behavior significantly enough to allow suppression by firefighters. It is important to note, however, that shrub fuels are often replaced by grassland fuels in shrubland fuel breaks; flame lengths and rates of spread could be faster in these grassland fuels, but fireline intensity (heat produced per unit area) will be reduced, allowing more effective suppression. For effective management of most fuels, fuel breaks should be prescribed based on the conditions in each particular treatment area. Some examples of this would be to place fuel breaks in areas where fuels are heavier or in areas with easy access for fire crews. Because of the dominant wind patterns in Suffolk County (i.e., out of the west), fuel breaks are recommended on the west sides of communities. In areas where the vegetation is discontinuous, fuel treatments may not be necessary. In this situation it is best to leave the site in its current condition to avoid the introduction of more flammable, exotic species which may respond readily following disturbance.

Well-managed fuels reduction projects often result in ecological benefits to wildlife and watershed health. Simultaneously, planning and resource management efforts should occur when possible while reducing fuels to ensure that the land remains viable for multiple uses in the long term. The effectiveness of any fuels reduction treatment will increase over time with a maintenance and monitoring plan. Monitoring will also ensure that objectives are being met in a cost-effective manner.

The Commission has retained an ecological services consultant that will perform extensive stewardship work in the Central Pine Barrens area over a 5-year span (Commission 2014). Many fuel reduction treatments including prescribed fire could occur under this contract including public lands within the CWPP planning area.

5.3.7 SOUTHERN PINE BEETLE

As outlined in the Commission's 2014 Annual Report (Commission 2014), the southern pine beetle (*Dendroctonus frontalis*) is a major threat to the Central Pine Barrens. Control of the beetle will involve extensive tree cutting, raising concerns about fuel load and possibly increased access for ATVs. Many user groups have been encouraged to provide assistance to monitor for signs of the beetle and report back to the Commission. The beetle is expected to cause significant changes to the Central Pine Barrens, especially in areas already impacted by oak die-off and the 2012 Crescent Bow fire. Treatments of areas for the goal of fuel reduction could have an ancillary benefit for mitigating southern pine beetle. Efforts should be made to focus treatments in areas that would provide these mutual benefits. The community support such actions as evidenced by a number of residents raising concern of the effect that beetle infestation has on fire risk on public lands. The community would like to see changes made to the length of time vegetation is left on site following treatments.

The Commission through the Science and Stewardship Division works with scientists and other professionals to monitor and keep abreast of potential threats to forest health, including pests and pathogens. The Division has been working with forest entomologists from Cornell University, Dartmouth College, U.S. Forest Service, DEC, and other scientists to collect and analyze insect specimens (Commission 2014). The Science and Stewardship Division has collaborated with these partner agencies to conduct assessments and develop response plans to combat the infestation of the southern pine beetle.

The Commission will be continuing to monitor the beetle and to discuss and implement response actions in response to the outbreak over the coming months and years.

5.3.8 OAK DIE-OFF

Stands within the planning area have been affected in the recent past by multiple defoliations by the orange striped oakworm (*Anisota senatoria*) and other insect defoliators and other contributing factors such as fungal disease and drought, resulting in the high number of dead standing oak snags in the planning area.

Outbreaks usually last 2 to 4 years in duration and are typically patchy in nature. Because the species is native to the United States it has a well-established complex of natural enemies that eventually build up and reduce the population (Siegert and McCullough 1998).

Although standing dead snags and large fallen logs typically demonstrate lower fire risk in terms of fuel loading, standing snags and fallen logs can create an access hazard that should be considered in management of these areas.

5.4 RECOMMENDATIONS FOR PUBLIC EDUCATION AND OUTREACH

Needs for public education and outreach have been emphasized throughout the RMCCWPP process by all participating parties. The Core Team has consistently commented on the need for better education of the public for fire preparedness, and discussions with community members during public outreach have indicated that although most people are aware of the danger of wildland fire in their community many could be better informed of effective mitigation options. Over 17% of the people surveyed have stated that they would like more information and

education regarding how they can reduce the risk of fire to their families and property, and 18% of the people do not know what they needed to do in order to reduce fire risk. Table 5.4 lists recommendations for improving public education and outreach.

Many long-time residents of the Central Pine Barrens have grown up with wildfire; however, it is important to continually raise awareness of fire risk and improve fire education (Winter and Fried 2000; McCaffrey 2004). The recruitment of volunteer neighborhood leaders to participate in planning efforts or attend workshops on fire behavior and defensible space may prove to be the best option to disseminate available information.

Although many residents are familiar with Firewise Communities and the Commission has already implemented Firewise workshops in the past, many others could benefit from greater exposure to this program. Workshops demonstrating and explaining Firewise Communities principles have been suggested to increase homeowner understanding of home protection from wildfire. One goal is for communities to apply to become a Firewise Community, recognized in the state as a shining example for fire prevention. Information about the program is available at http://www.firewise.org/usa/index.htm. Greater participation in the Firewise Communities program could improve local understanding of wildfire and, in turn, improve protection and preparedness.

Other methods to improve public education could include utilizing existing signage to indicate fire danger level (low, moderate, high, extreme); increasing awareness about fire department response and fire department resource needs; providing workshops at demonstration sites showing Firewise Communities landscaping techniques or fuels treatment projects; organizing community cleanups to remove green waste; publicizing availability of government funds for thinning; and, most importantly, improving communication between homeowners and local land management agencies to improve and build trust, particularly since the implementation of fuel treatments and better maintenance of existing treatments has been identified repeatedly by the public as a needed action to reduce risk.

The Core Team raised the concern of potential ignitions of wildfire coming from illegal trespass by dirt bikes, ATVs, and off-road vehicles, as well as increased illegal dumping. The environmental impacts of these activities have also been raised in the 2014 Annual Report (Commission 2014). The Commission's Law Enforcement Council has convened a task force to step-up patrols of these areas.

Table 5.4. Recommendations for Public Outreach and Education

Project	Description	Presented By	Target Date	Resources Needed	Serves To
Targeted wildfire info sessions	Review existing programs (Ready-Set-Go, Firewise) for suitability of existing fire prevention materials and where necessary fund development of unique adapted materials and presentations to highlight how a fire might affect particular groups within the community.	Active local residents, WFTF, Commission	Spring 2017	Funding for research, writing, and presentation of detailed information on how large-scale wildfire would affect the target audience and the measures that could be taken to reduce the threat. Flyers could be sent out with utility bills or other community mailings.	Deliver a clear and consistent message that impacts of wildfire are far-reaching and that it is in the best interest of a diverse set of stakeholders to become involved in planning and preparing for fire.
Insurance Service Office informational meetings	Invite Insurance Services Office representatives to speak to groups regarding ways to improve insurance ratings in the community.	Insurance Services Office in conjunction with local VFDs	Spring 2017	Resources provided by Insurance Services Office. Venue provided by fire department.	Communities can learn how to improve their insurance ratings, which will reduce insurance costs in their community by implementing wildfire prevention measures.
Fire departments open invitation days	Raise awareness of the fire departments through open house and tours of equipment.	VFDs	Annually- pre-fire season would be advised.	Advertising, refreshments, handouts.	Protect communities and infrastructure by potentially increasing recruitment and financial support for the fire service.
Neighbors for defensible space	Organize a community group made up of residents and agency personnel to develop materials and communicate relevant defensible space messages. Could coordinate with fire departments or the WFTF. Possibility to coordinate actual implementation of defensible space and slash clear-up with the local Eagle Scout Group or high school volunteers.	WFTF, fire departments, local residents, Eagle Scouts, High School Community Volunteer Program	Spring 2017	Funding to help cover costs of materials (green waste removal or chipper) and participation. People trained in defensible space practices.	Engage diverse stakeholders in reaching out to community members and encourage defensible space practices. Empower homeowners to make affordable and effective changes to reduce the vulnerability of individual homes.
Media involvement	Develop a local newspaper column that provides fire safety information, promotional information for VFDs, fire announcements, and emergency planning.	Agency Public Information Officers, Emergency Manager, Commission	Monthly column year-round	Columns, information, and articles to be provided by fire departments, towns, county, state representatives.	Protect communities and infrastructure through increasing public awareness and providing a channel for information regarding emergency fire response.
Radio announcements	Create public service announcements to be run during periods of elevated fire danger.	Agency Public Information Officers, Emergency Manager, Commission	Annually, seasonal	Radio contacts, Professional voice over person to create and record announcements.	Raise awareness of elevated fire danger.
Fire danger rating brochure	Create fire danger rating brochure that explains the fire danger rating signs and what the public should do at the different rating levels.	Commission	Spring 2018	Printing costs and distribution. Could be available as online resource to save on costs.	Raise awareness of elevated fire danger and inform residents of suitable actions.

Project	Description	Presented By	Target Date	Resources Needed	Serves To
Increase signage/replace or augment existing signage	Utilize existing signage to spread fire prevention message along highways and in public open space areas (trailheads, info kiosks) to reduce human ignitions. Promote the use of existing electronic signs at firehouses and other locales to display fire prevention information, safety messages and fire danger rating linked to safety actions.	Commission	Summer 2017	Mostly existing signs and posting sites, people to post and update signs. Replace, or augment the existing Smokey Bear signs with electronic Fire Danger Warning Signs that are solar powered, LED displays (visible day & night), and accessible and programmable through an internet website.	Protect communities and infrastructure by raising awareness of local citizens and those traveling in the Central Pine Barrens area about actions that can prevent fire.
Promote and Increase the use of prescribed burning as a fuels reduction method	Gain public support for using prescribed burns to reduce fuel loads and to improve ecosystem health through a pilot burn project and demonstration site. Possibly model site on the one implemented at the Sarnoff Preserve near Riverhead. Consider developing informational material for distribution at natural areas or via email distribution lists.	DEC, BNL, other applicable agencies, private landowners	Summer 2017	Prescribed burn prescription, type-6 engines, hand crews, equipment. Research and costs of producing[1], printing, and distributing paper informational flyer.	Protect communities and infrastructure by reducing fuel loads.
Homeowner's guide	Develop a handbook that gives locally relevant and detailed information to help residents be more prepared for wildfire, including a defensible space checklist specific to local structural and wildland fuel considerations. Refer to Appendix I. Utilize local landscape and residence photos.	Local fire departments, Commission	Fall 2017	Review existing materials for potential to adapt to local conditions. Funding to develop and print copies of the handbook. Volunteers (Eagle Scouts) to help distribute and explain the document.	Give residents detailed and locally specific tools that they can use to improve preparedness.
Emergency preparedness meetings	Use American Red Cross volunteers and other preparedness experts. Attend community functions and hold special meetings to provide guidance for creating household emergency plans. Ready Set Go Program	American Red Cross, town, county, state personnel VFDs, etc	Ongoing	Written materials.	Improve preparedness by facilitating the communication between family members and neighbors about what procedures to follow in the event of a wildfire.
Plan livestock evacuation routes and inform communities	Work with emergency management officials to plan evacuation routes for residents with livestock and then hold community meetings to disseminate to the public.	Emergency management officials, livestock agencies/civic groups	Fall 2017	GIS software or maps.	Protect communities, livestock and infrastructure through increased awareness.
Implement Firewise Communities programs	Work with communities to participate in Firewise Communities and prepare for fire events. Hold Firewise booths at local events for example during the October Fire Awareness Week each year.	County OEM, Commission	Fall 2017, ongoing	Firewise Communities educational materials.	Protect communities and infrastructure through increased awareness and defensible space.

Project	Description	Presented By	Target Date	Resources Needed	Serves To
Raise awareness of fire prevention at a young age	Introduce wildfire prevention into school curriculum. Work with fire departments, school board and Public Information Officers to organize kid-focused travelling workshops. Could include a session at the Annual Pine Barrens Discovery Day event	Commission, VFDs, town, county, and state representatives Suffolk County Fire Safety Educators Association	Spring 2017	Firewise materials, Smokey Bear literature, presenters.	Protect communities and infrastructure through increased awareness.
Raise awareness of the problem of illegal dumping on public lands.	Part of targeted wildfire prevention through direct mailings.	Commission	Spring 2017	Resources to fund development of literature and for cost of direct mailing to high risk communities. Could work with utility companies if distribution funds are not available.	Raise awareness about the wildfire hazard that dumping of vegetation and other waste can create.

[1] Wertheim National Wildlife Refuge produced a prescribed fire brochure that could maybe be revised for this purpose

5.5 RECOMMENDATIONS FOR REDUCING STRUCTURAL IGNITABILITY

Table 5.5 provides a list of community-based recommendations to reduce structural ignitability that should be implemented throughout the RMCCWPP planning area. Reduction of structural ignitability depends largely on public education that provides homeowners the information they need to take responsibility for protecting their own properties. A list of action items that individual homeowners can follow can be found in Section 5.5.1. Carrying out fuels reduction treatments on public lands may only be effective in reducing fire risk to some communities; however, if homeowners have failed to provide mitigation efforts on their own land, the risk of home ignition remains high and firefighter lives are put at risk when they carry out structural defense. Many committed members of the community serve their neighbors as volunteer firefighters, but these firefighting resources are continually stretched, particularly during a widespread wildfire. Preparing for wildland fire by creating defensible space around the home is an effective strategy for reducing structural ignitability. Studies have shown that burning vegetation beyond 120 feet of a structure is unlikely to ignite that property through radiant heat (Cohen and Butler 1996), but fire brands that travel independently of the flaming front have been known to destroy houses that had not been impacted by direct flame impingement. Education about managing the landscape around a structure, such as removing weeds and debris within a 30-foot radius and keeping the roof and gutters of a home clean, are two methods for creating defensible space. Educating people about the benefits of the proper maintenance of their property that includes pruning and trimming trees and shrubs and, where warranted, the removal of trees and other vegetation, and using Firewise Communities landscaping methods on their property is also essential for successful household protection.

In order to facilitate defensible space projects, community members at the public meetings were interested in programs that could be provided for green waste disposal, for example the provision of a chipper on organized community clean-up days 2-3 times a year.

Area property owner's first need to check with local Town, County and State agencies for ordinances and regulations related to clearing restrictions, before clearing and removing vegetation to create a defensible space around a structure. Land owners may also need to check with their local Town to determine if there are any covenants, easements or buffers on their property which restrict clearing of vegetation.

The Central Pine Barrens Comprehensive Land Use Plan has specific standards and guidelines that property owners need to be aware of and consider when contemplating clearing or removing vegetation from their property.

Property owners need to carefully review any activities proposed on property located in the Compatible Growth Area of the Central Pine Barrens area if that property was developed after or is proposed to be developed after the 1993 adoption of the Long Island Pine Barrens Protection Act (the "Act"), and if the proposed activities are considered to be development as per NYS ECL Article 57, Section 57-0107(13). In such cases, the clearance of vegetation to enhance and foster a defensible space around structures (as a supplemental measure to reduce structural ignitability) is limited to the area allowed to be cleared on the property per the vegetation clearance limits standard contained in the Central Pine Barrens Comprehensive Land Use Plan. In these situations, it is recommended that property owners submit to the Central Pine Barrens

Commission a written request for a determination as to whether or not the work they propose to undertake, especially if it involves clearing and removal of vegetation, would require further review and approval from the Commission.

For property owners that own property located in the Core Preservation Area of the Central Pine Barrens, the clearance of vegetation to enhance and foster a defensible space around structures (as a supplemental measure to reduce structural ignitability and if such activity is deemed to constitute development for the purposes of NYS ECL Article 57, Section 57-0107(13)) would require review by the Central Pine Barrens Commission to determine whether or not an approval from the Commission is necessary. It should be noted that the act of clearing vegetation in the Core Preservation Area is generally considered to be development in the Core Preservation area. It is therefore advised that property owners in the Core Preservation Area submit to the Central Pine Barrens Commission a written request for a determination as to whether or not the work they propose to undertake would require further review and approval from the Commission, especially if it involves clearing and removal of vegetation. Only the Commission can make this determination in the Core Preservation Area.

Property owners also need to check with other local, Town, County and State agencies to ensure they are in conformance with their requirements and to determine whether or not they would need to get their approval.

A copy of § 57-0107(13) of Article 57 of the State Environmental Conservation Law (the Long Island Pine Barrens Protection Act) is provided in Appendix H.

It is important to note that no two properties are the same. Homeowners and communities are encouraged to research which treatments would have the most effect for their properties. Owners of properties on steep slopes, for example, should be aware that when constructing defensible space they have to factor in slope and topography, which would require extensions to the conventional 30-foot recommendations. A number of educational programs are now available to homeowners through programs like Ready-Set-Go (http://www.wildlandfirersg.org) and Firewise (www.firewise.org). More detailed information on reducing structural ignitability can also be found in Appendix I (Homeowner's Guide).

Some structural ignitability hazards are related to homes being in disrepair, vacant or abandoned lots, and minimal yard maintenance. In order to influence change in homeowner behavior, town or county ordinances may be needed.

Table 5.5. Recommendations for Reducing Structural Ignitability

Project	Private Lands/ Homeowner	Public Lands	Programs Available	Description	Possible Contacts for More Information	Priority
Offer fire protection workshops	All residents would be encouraged to participate. Could work in cooperation with the local VFDs.	None	Community fire liaison, agency outreach personnel, Firewise, Ready-Set-Go	Offer hands-on workshops to highlight individual home vulnerabilities and teach how-to techniques to reduce ignitability of common structural elements. Examples include installing metal flashing between houses and fences or decks, and installing wire mesh over eaves, vents, and under decks.	www.firewise.org, www.nfpa.org, www.wildlandfirersg.org.	High 2016–2018
Individual home-hazard assessments	All residents would be encouraged to participate. Could work in cooperation with the local VFDs, adopt a "train the trainer" approach to develop a citizen strike team.	None	Firewise Assessing Hazards in the Home Ignition Zone	Develop or train a team of citizens that could do home assessments. Could be tiered from workshops described above. Would build through word-of-mouth between neighbors as well as through Civic Group involvement. Commission and/or fire departments could provide senior oversight and training.	Training workshops offered by the Commission through the Fire Academy.	High 2016–2017
Continue to pursue strengthening of WUI building codes for new development	CWPP planning area.	None	International Wildland-Urban Interface Code	The ICC enforces building codes and ordinances for new development in the WUI.	Ongoing process. The Commission is working with Town planning departments, and fire marshals to make amendments to the Comprehensive Land Use Plan that will incorporate some of the ICC WUI code regulations.	Moderate 2018
Construct defensible space/ consider defensible space demonstration site which ensuring adherence to Central Pine Barrens Commission and Town regulations and covenants for vegetation clearance	All residents would be encouraged to participate and could enter a lottery to be picked as demonstration site	None	Firewise Communities, local fire department liaison	Educate homeowners about defensible space by choosing one or more demonstration sites that follow New York State defensible space guidelines: Evaluate area within 30 feet of structures to determine vegetation maintenance requirements including tree maintenance and if determined necessary, removal. Keep grass mown and green within 100 feet of structures. Keep flammable materials at least 30 feet from structures. Surround foundations with rocks or gravel to a width of 1 foot.	www.firewise.org or local Firewise Communities-trained personnel; Ready-Set-Go Program.	High 2016–2017

Project	Private Lands/ Homeowner	Public Lands	Programs Available	Description	Possible Contacts for More Information	Priority
Create a Firewise Landscaping Plant list	Develop a Firewise landscaping plant list for homeowners to use. Assess potential to develop a demonstration site. Work with local home improvement stores to promote or provide a discount to customers using more fire resistant materials or purchasing more fire resistant plants, or create a display for stores for them to display Firewise or similar poster information along with brochures?	Commission	Spring 2018	Research Firewise plants suitable for the region. Staff time to develop plant list, poster materials and research demonstration site.	Provide residents with an alternative landscaping option that enables them to maintain an aesthetically pleasing yard, while reducing flammability and risk of fire spread to property.	Moderate 2017-2018
Implement spring community yard clean-up days and provide chipper and/or other green waste disposal opportunities to residents.	All residents would be encouraged to participate in each community.	None	Town Waste Management Programs	Yard waste pick-up is already provided by the Town of Brookhaven as part of its waste management program, however a community led day of yard clean-up with fire mitigation in mind would encourage large numbers within the community to carry-out mitigation measures and implementation of defensible space. The event could be promoted by the Town and waste pick-up coordinated with the event. Some existing restrictions that are placed on pick-up (i.e., no branches over 6" diameter, logs or stumps) could be waived for the event to encourage participation.	Towns in conjunction with Central Pine Barrens Commission.	High 2016–2017
Assess and improve accessibility to property	All residents would be encouraged to participate.	None	Fire departments, code enforcement officers	Weekend program to inform homeowners about the importance of keeping driveways accessible to fire trucks and emergency responders.	Local fire departments, seek community "spark plugs" to assist in coordination.	Moderate 2017

Project	Private Lands/ Homeowner	Public Lands	Programs Available	Description	Possible Contacts for More Information	Priority
Provide printed list of mitigation measures to homeowners with different scales of actions	All residents would be encouraged to participate.	None	Fire departments, Firewise Communities, academic and peer-reviewed literature	List of Action items broken down by cost: Low or no cost – ensure house numbers are easily viewed from the street. Medium cost – annual clearance and thinning of trees and shrubs along driveways to facilitate save access by emergency vehicles.	Commission, fire departments	High 2016
Combat dumping of vegetation debris on adjacent public lands	Central Pine Barrens in conjunction with land agency and law enforcement personnel	All	Investigate use of remote video camera technology with sensors to detect offenders.	Investigate the use of remote cameras installed on public lands that are adjacent to private land boundaries. Would aid in enforcement of dumping that contributes to wildfire hazard. Would be focused in known problem areas.	Commission.	Moderate 2017
Investigate and consider revisions to Town ordinance concerning wooden five rail panels for horse corral fencing-potential fire hazard.	Private lands in cooperation with Towns	None	NA	Community members voiced concerns that Town ordinances governing the type of fencing allowed for horse corrals (wooden five rail fencing) increased structural ignitability concerns on their properties. Residents would like to be able to install metal fencing particularly on properties with immediate adjacency to wildland fuels.	Commission/Towns	Moderate 2018.

5.5.1 Action Items for Homeowners to Reduce Structural Ignitability

Low or No Cost Investment (<$50)

- Regularly check fire extinguishers and have a 100-foot hose available to wet perimeter.
- Maintain defensible space for 30 feet around home (see Table 5.5). Work with neighbors to provide adequate fuels mitigation in the event of overlapping property boundaries.
- Make every effort to keep lawn mowed and green during fire season.
- Screen vents with non-combustible meshing with mesh opening not to exceed nominal ¼-inch size.
- Ensure that house numbers are easily viewed from the street.
- Keep wooden fence perimeters free of dry leaves and combustible materials. If possible, non-combustible material should link the house and the fence.
- Keep gutters free of vegetative litter. Gutters can act as collecting points for fire brands and ashes.
- Store combustible materials (firewood, propane tanks, grills) away from the house; in shed, if available.
- Clear out materials from under decks and/or stacked against the structure. Stack firewood at least 30 feet from the home, if possible.
- Reduce your workload by considering local weather patterns. Since the prevailing winds in the area are often from the west, consider mitigating hazards on the west corner of your property first, then work around to cover the entire area.
- Seal up any gaps in roofing material and enclose gaps that could allow fire brands to enter under the roof tiles or shingles.
- Remove flammable materials from around propane tanks.

Minimal Investment (<$250)

- When landscaping in the Home Ignition Zone (HIZ) (approximately 30 feet around the property), select non-combustible plants, lawn furniture, and landscaping material. Combustible plant material like junipers and ornamental conifers should be pruned and kept away from siding. If possible, trees should be planted in islands and no closer than 10 feet to the house. Tree crowns should have a spacing of at least 18 feet when within the HIZ. Vegetation at the greatest distance from the structure and closest to wildland fuels should be carefully trimmed and pruned to reduce ladder fuels, and density should be reduced with approximately 6-foot spacing between trees crowns (Figure 5.2). Ensure that any vegetation treatment does not conflict with Central Pine Barrens Commission and local Town Laws regulations and covenants mandating preservation of certain percentage and quantity of natural vegetation and restrictions on clearing of vegetation.
- Box in eaves, attic ventilation, and crawl spaces with non-combustible material.

- Work on mitigating hazards on adjoining structures. Sheds, garages, barns, etc., can act as ignition points to your home.
- Enclose open space underneath permanently located manufactured homes using non-combustible skirting.
- Clear and thin vegetation along driveways and access roads so they can act as a safe evacuation route and allow emergency responders to access the home.
- Purchase or use a National Oceanic and Atmospheric Administration weather alert radio to hear fire weather announcements.

Moderate to High Investment (>$250)

- Construct a non-combustible wall or barrier between your property and wildland fuels. This could be particularly effective at mitigating the effect of radiant heat and fire spread where 30 feet of defensible space is not available around the structure. Ensure that any vegetation treatment does not conflict with Central Pine Barrens Commission and local Town Laws regulations and covenants mandating preservation of certain percentage and quantity of natural vegetation and restrictions on clearing of vegetation.
- Construct or retrofit overhanging projections with heavy timber that is less combustible.
- Replace exterior windows and skylights with tempered glass or multilayered glazed panels.
- Invest in updating your roof to non-combustible construction. Look for materials that have been treated and given a fire-resistant roof classification of Class A. Wood materials are highly combustible unless they have gone through a pressure-impregnation fire-retardant process.
- Construct a gravel turnaround in your driveway to improve access and mobilization of fire responders.
- Treat construction materials with fire-retardant chemicals.
- Install a roof irrigation system.
- Replace wood or vinyl siding with nonflammable materials.
- Relocate propane tanks underground.

5.6 Recommendations for Improving Firefighting Capabilities

There are two fire departments that have district jurisdiction within the planning area, the Ridge Fire Department and the Manorville Fire Department. Both of these departments are run by volunteers. Educating the public so they can reduce its dependence on fire departments is essential because these resources are often stretched thin during fire season. Table 5.6 provides recommendations for improving firefighting capabilities. Many of these recommendations are general in nature because they are applicable across districts. Districts should work together in implementing these actions and provide feedback to other fire chiefs on funding and grant successes, this way each district benefits from a lessons learned approach.

Table 5.6. Recommendations for Improving Firefighting Capabilities

Project	Fire Department	Description	Timeline	Contact	Priority
Provide minimum wildland PPE for all firefighters in each district	All fire departments	Seek grant money to be spent on acquisition of PPE. Task a member of each district to inventory PPE and investigate grant sources. Develop a schedule of equipment replacement to allow for allocation of funds and seeking of grants.	Monthly review of grant opportunities Annual audit of PPE	Review NFPA Standard 1977 Responsibility of fire chief,	Very high
Increase the number of "red-carded" individuals in each fire district	All fire districts	New York Wildfire and Incident Management Academy (NYWIMA) offers NWCG Basic Wildland Fire Fighting and Fire Behavior, S-130/S-190 classes to VFDs every Fall with an option to attend on weekends. Possible incentives needed to encourage attendance. Use online forum to facilitate scheduling. Work with federal agencies to develop evening and weekend courses for volunteers. Pursue online training programs and have trainees work with an in-house trained mentor to complete training. Facilitate Annual refresher participation by having in-house refreshers available or convene districts to have a Suffolk County wide refresher. Utilize available funds for volunteers to participate in the annual Wildfire Academy. Suffolk County has a dedicated brush truck training facility that NYWIMA uses to train local FDs.	Annually, or following recruitment drives	Fire Marshal, County Fire	Very high
Define specific qualification needs for each district	All fire districts	Determine qualification needs and provide training to accomplish needs; e.g., in three years this department would like to have five Type II firefighters, two squad leaders, three driver/operators, two engine bosses, and one strike team leader/Type IV Incident Commander. This would aid in recruiting strategies, resource allocations, and mutual aid.	Project out 3 years	In-house	High
Carry out detailed pre-incident planning workshops within districts and with neighboring districts and mutual aid partners	Suffolk Countywide	The CWPP identifies areas of high risk and hazard, allowing engine companies to target specific areas for tactical planning. The plan and associated GIS data can be used as a whole to assist planning at the strategic level. Issues of access are also addressed highlighting the need for infrastructure development.	Annually during winter months	All fire agencies	Very high
Increase VFD recruitment (diversify age classes)	All fire districts	Target fire education in schools to encourage younger generations to become interested in firefighting. Carry out recruitment drives through open house and mailings. Provide training incentives for VFD fire fighters.	Annually	Fire chiefs, school districts, Public Information Officers	High
Increase funds for VFDs	All fire departments	1) Maintain contact with State Division of Fire Safety and regularly	Monthly review	Fire chiefs,	High

Project	Fire Department	Description	Timeline	Contact	Priority
		seek grant money. 2) Implement regular evaluations of resource needs for each VFD and make available to public to raise awareness of shortages. 3) Maintain updated list of district fires and provide to DEC. 4) Use local media to inform public of fire resources situation. Work with local newspaper editor to have a year-round column that documents fire department activities. 5) Apply for rural fire assistance program grants. 6) Improve International Standards Organization ratings.	of grant opportunities	Suffolk County emergency manager, Fire Services staff, and Town and County Managers to approach County Commissioners to raise the issue in commissioner meetings	
Investigate potential for use of drones to assess and monitor wildfire	All fire departments	Drones could be a useful tool for the monitoring of wildfire in areas with limited access but future research is needed to fully assess their utility and application. The fire departments could launch a pilot study to determine effectiveness of the tool.	Fall 2017	County Fire	Low
Install global positioning system (GPS) tracking systems on all vehicles	All fire departments	In order to track fire department vehicles and improve oversight install GPS tracking on all vehicles.	Fall 2017	County Fire	Low

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6.0 MONITORING AND IMPLEMENTATION

Developing an action plan and an assessment strategy that identifies roles and responsibilities, funding needs, and timetables for completing highest-priority projects is an important step in organizing the implementation of the RMCCWPP. Table 5.1 in the previous section identifies tentative timelines and monitoring protocols for fuels reduction treatments, the details of which are outlined below.

All stakeholders and signatories to this CWPP desire worthwhile outcomes. We also know that risk reduction work on the ground, for the most part, is often not attainable in a few months—or even years. The amount of money and effort invested in implementing a plan such as this requires that there be a means to describe, quantitatively or qualitatively, if the goals and objectives expressed in this plan are being accomplished according to expectations.

This section will present a suite of *recommended* CWPP monitoring strategies intended to help track progress, evaluate work accomplished, and assist planners in adaptive management.

Strategies outlined in this section take into account several variables:

- Do the priorities identified for treatment reflect the goals stated in the plan? Monitoring protocols can help address this question.
- Can there be ecological consequences associated with fuels work? We may be concerned about soil movement and/or invasive species encroachment post-treatment. Relatively cost-effective monitoring may help clarify changes.
- Vegetation will grow back. Thus, fuel break maintenance and fuels modification in both the home ignition zone and at the landscape scale all require periodic assessment. Monitoring these changes can help decision makers identify appropriate treatment intervals.
- As the CWPP evolves over time, there may be a need to track changes in policy, codes, requirements, stakeholder changes, and levels of preparedness. These can be significant for any future revisions and/or addendums to the CWPP.

Table 6.1 identifies recommended monitoring strategies, both quantifiable and non-quantifiable, for assessing the progress of the CWPP. It must be emphasized that these strategies are 1) not exhaustive (new strategies and protocols can evolve with new CWPP action items) and 2) dependent on available funds and personnel to implement them.

Table 6.1. Recommended Monitoring Strategies

Strategy	Task/Tool	Lead	Remarks
Photo record (documents pre- and post-fuels reduction work, evacuation routes, workshops, classes, field trips, changes in open space, treatment type, etc.) See levels 1 and 2 below.	*Establish field global positioning system (GPS) location; photo points of cardinal directions; keep photos protected in archival location*	Core Team member	Relatively low cost; repeatable over time; used for programs, and tracking objectives
Number of acres treated (by fuel type, treatment method) See monitoring levels 3 and 4 below.	GPS/GIS/fire behavior prediction system	Core Team member	Evaluating costs, potential fire behavior
Number of home ignition zones/defensible space treated to reduce structural ignitability	GPS	Home-owner	Structure protection
Number of residents/citizens participating in any CWPP projects and events	Meetings, media interviews, articles	Core Team member	Evaluate culture change objective
Number of homeowner contacts (brochures, flyers, posters, etc.)	Visits, phone	Agency representative	Evaluate objective
Number of jobs created	Contracts & Grants	Core Team member	Evaluate local job growth
Education outreach: number, kinds of involvement	Workshops, classes, field trips, signage	Core Team member	Evaluate objectives
Emergency management: changes in agency response capacity	*Collaboration*	Agency representative	Evaluate mutual aid
Codes and policy changes affecting CWPP	Qualitative	Core Team	CWPP changes
Number of stakeholders	Added or dropped	Core Team	CWPP changes
Wildfire acres burned, human injuries/fatalities, infrastructure loss, environmental damage, suppression and rehabilitation costs	Wildfire records	Core Team	Compare with 5- or 10-year average

An often overlooked but critical component of fuels treatment is monitoring. It is important to evaluate whether fuels treatments have accomplished their defined objectives and whether any unexpected outcomes have occurred. In addition to monitoring mechanical treatments, it is important to carry out comprehensive monitoring of burned areas to establish the success of fuels reduction treatments on fire behavior, as well as monitoring for ecological impacts, repercussions of burning on wildlife, and effects on soil chemistry and physics. Adaptive management is a term that refers to adjusting future management based on the effects of past management. Monitoring is required to gather the information necessary to inform future management decisions. Economic and legal questions may also be addressed through monitoring. In addition, monitoring activities can provide valuable educational opportunities for students.

The monitoring of each fuels reduction project would be site-specific, and decisions regarding the timeline for monitoring and the type of monitoring to be used would be determined by project. Monitoring and reporting contribute to the long-term evaluation of changes in

ecosystems, as well as the knowledge base about how natural resource management decisions affect both the environment and the people who live in it.

The most important part of choosing a monitoring program is selecting a method appropriate to the people, place, and available time. Several levels of monitoring activities meet different objectives, have different levels of time intensity, and are appropriate for different groups of people. They include the following:

Minimum—Level 1: Pre- and Post-project Photos

Appropriate for many individual homeowners who conduct fuels reduction projects on their properties.

Moderate—Level 2: Multiple Permanent Photo Points

Permanent photo locations are established using rebar or wood posts, GPS'd locations and photographs are taken on a regular basis. Ideally, this process would continue over several years. This approach might be appropriate for more enthusiastic homeowners or for agencies conducting small-scale, general treatments.

High—Level 3: Basic Vegetation Plots

A series of plots can allow monitors to evaluate vegetation characteristics such as species composition, percentage of cover, and frequency. Monitors then can record site characteristics such as slope, aspect, and elevation. Parameters would be assessed pre- and post-treatment. The monitoring agency should establish plot protocols based on the types of vegetation present and the level of detail needed to analyze the management objectives.

Intense—Level 4: Basic Vegetation Plus Dead and Downed Fuels Inventory

The protocol for this level would include the vegetation plots described above but would add more details regarding fuel loading. Crown height or canopy closure might be included for live fuels. Dead and downed fuels could be assessed using other methods, such as Brown's transects (Brown 1974), an appropriate photo series (Ottmar et al. 2000), or fire monitoring (Fire Effects Monitoring and Inventory System [FIREMON]) plots.

6.1 IDENTIFY TIMELINE FOR UPDATING THE RMCCWPP

The HFRA allows for maximum flexibility in the CWPP planning process, permitting the Core Team to determine the timeframe for updating the CWPP; it is suggested that a formal revision be made on the fifth anniversary of signing and every 5 years following. The Core Team are encouraged to meet on an annual basis to review the project list, discuss project successes and strategize regarding project implementation funding.

6.2 IMPLEMENTATION

The RMCCWPP makes recommendations for prioritized fuels reduction projects and measures to reduce structural ignitability and carry out public education and outreach. Implementation of fuels reduction projects need to be tailored to the specific project and will be unique to the location depending on available resources and regulations. On-the-ground implementation of the

recommendations in the RMCCWPP planning area will require development of an action plan and assessment strategy for completing each project. This step will identify the roles and responsibilities of the people and agencies involved, as well as funding needs and timetables for completing the highest-priority projects (SAF 2004). Information pertaining to funding can be found in Appendix G.

6.3 CONCLUSION

The RMCCWPP has been developed to meet the requirements of a CWPP as specified in the HFRA (as amended). The plan addresses how to prepare for wildland fire throughout the planning area and assesses the risk of this type of fire event creating damage to communities in WUI areas. The GIS risk assessment and field assessments of communities predicts high to extreme risk of catastrophic wildfire throughout much of the planning area, and in most cases close to communities. This assessment of risk is verified by the fire management professionals and emergency operators throughout these communities.

The planning process emphasizes public participation and collaborative planning among federal, state, County, and local governments and other contributing agencies. The document makes recommendations for fuels reduction treatments, educational outreach activities, firefighting capabilities, and reduction of structural ignitability. The recommendations are based on a Composite Risk / Hazard Assessment, individual Community Risk / Hazard Assessments, identification of CVARs, and comments from the Core Team and community members. The recommendations are general in nature to provide high levels of flexibility in the implementation phase. The public has provided input that is used to develop the recommendations through filling out surveys and talking with members of the Core Team. The public is aware of the need to implement mitigation measures around each individual's homes, but many are often not sure how to go about implementing these measures.

The goal of the RMCCWPP is to reduce the risk for catastrophic wildfire throughout the planning area by providing specific information regarding what is most at risk and how to protect these places and community values from future fires. Fuels reduction can alleviate some of the risk but often reducing the potential for structural ignitability are the most effective ways in which homeowners can protect their homes and property. Most communities throughout the planning area are dependent on volunteer firefighting; with limited resources and funds, personnel become stretched particularly during fire season. The County is made up of a mosaic of private lands and publically managed lands; much of the implementation recommended in this plan falls to both private landowners, state, county, and municipal agencies. It will be important for land management agencies to provide knowledge, skills, and funding assistance to these private landowners so that sufficient fire mitigation measures can be made. Moreover, collaboration between public and private entities is important in order to provide continuous landscape treatments to protect WUI communities. Lastly, the RMCCWPP is a living document and should be revised as environmental conditions change or social issues arise.

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APPENDIX A.
MAPS

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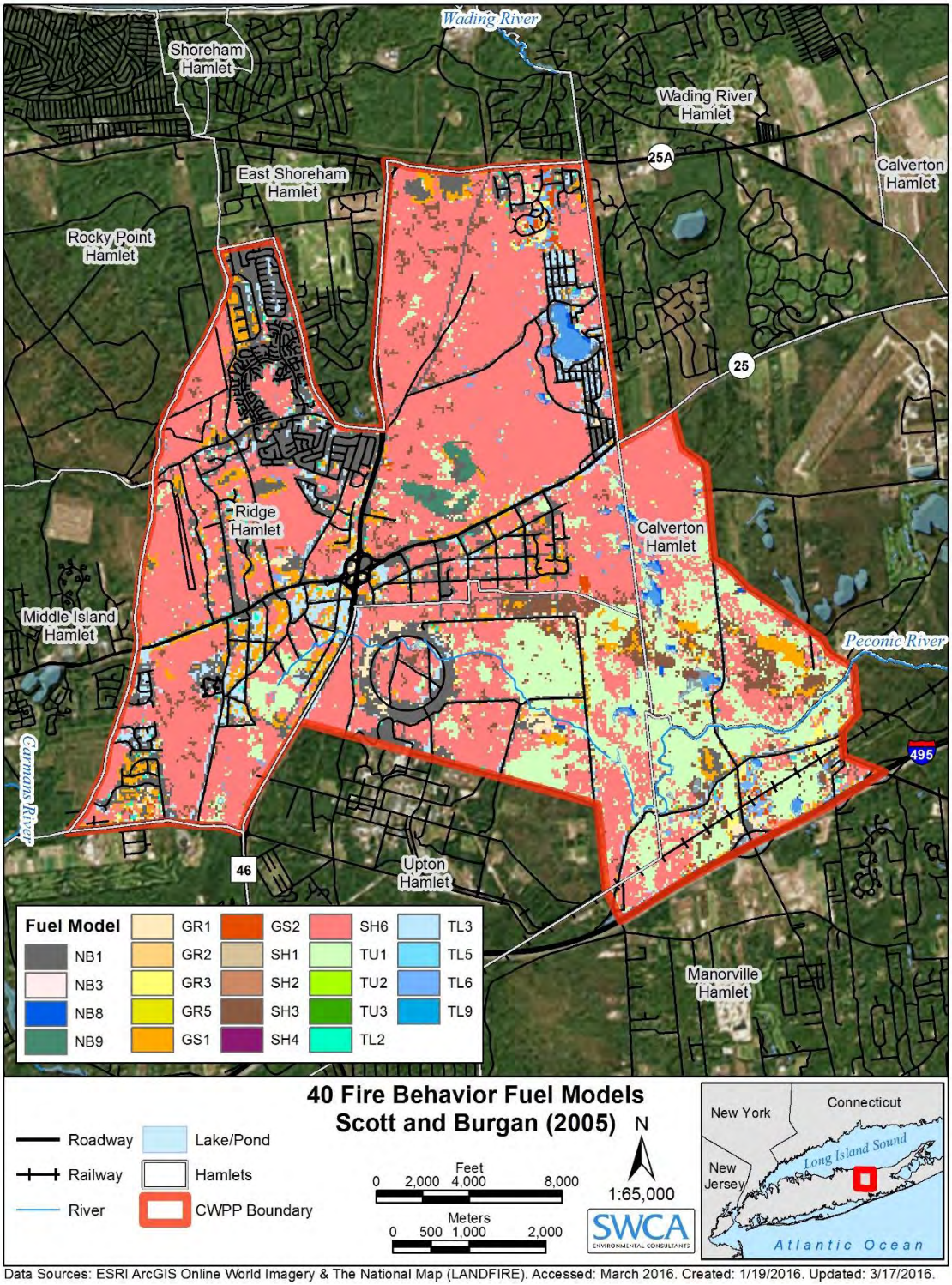
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GR2
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ENVIRONMENTAL CONSULTANTS
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New Jersey
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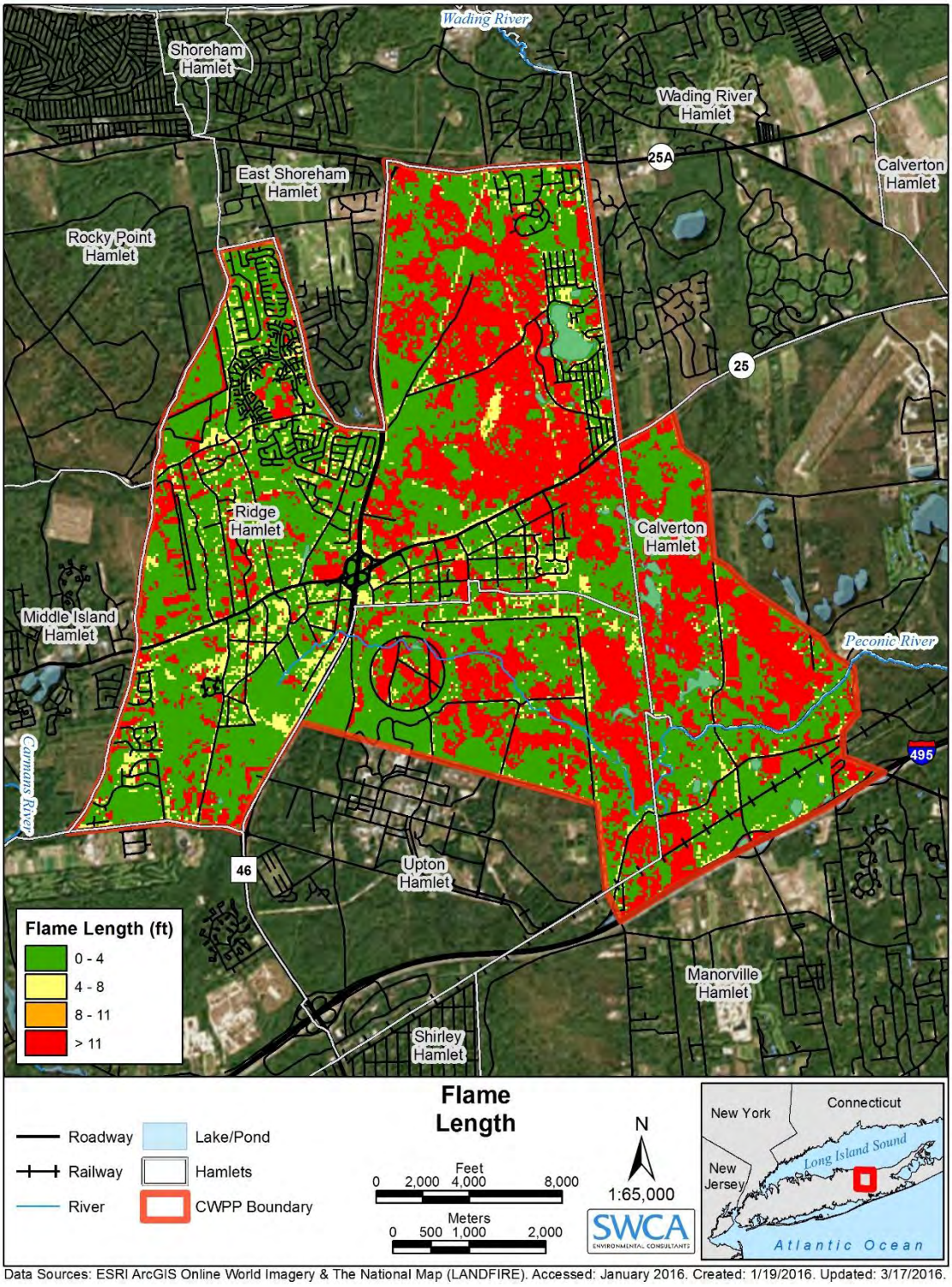
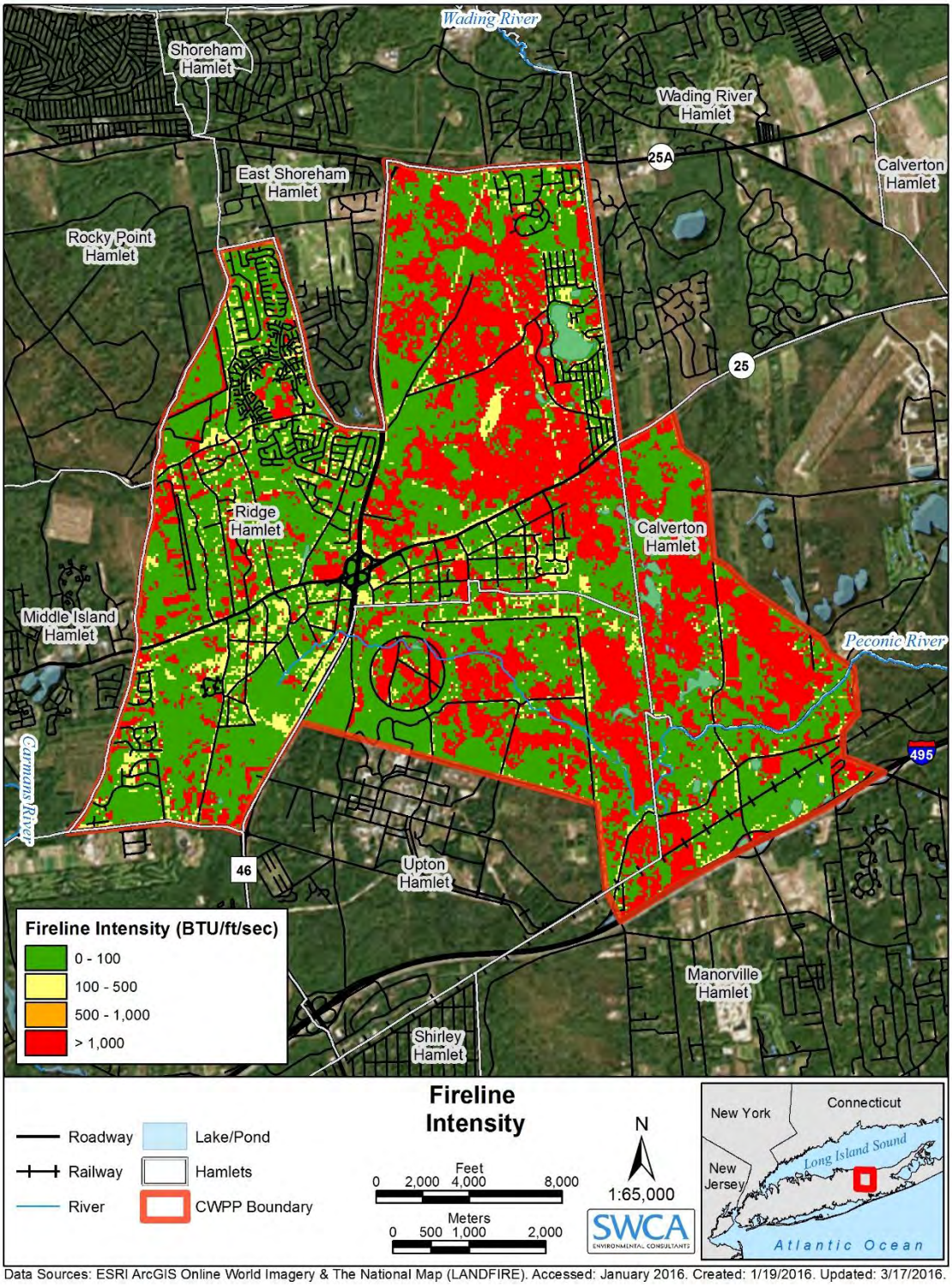
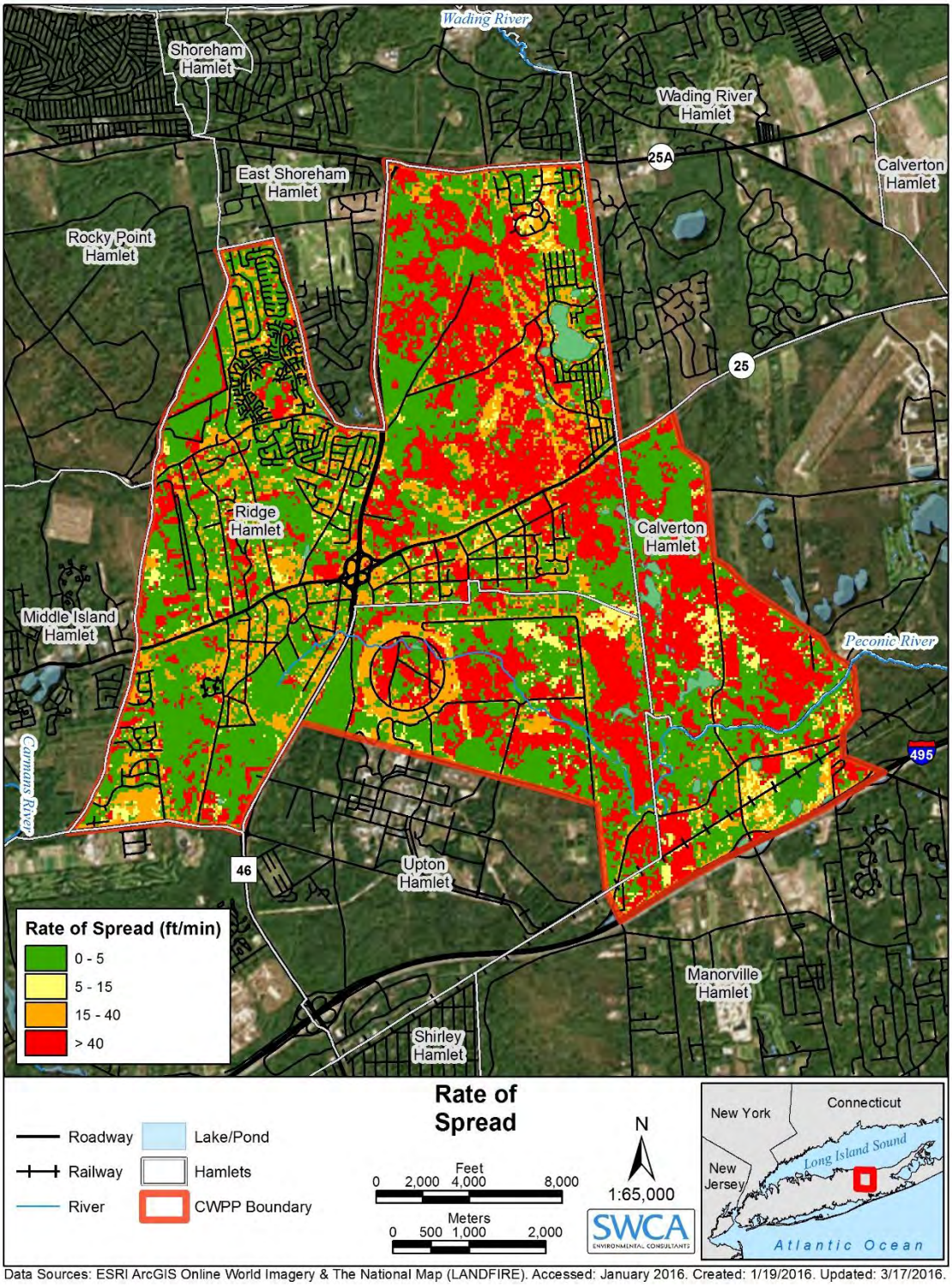
Map 1. Fuels.



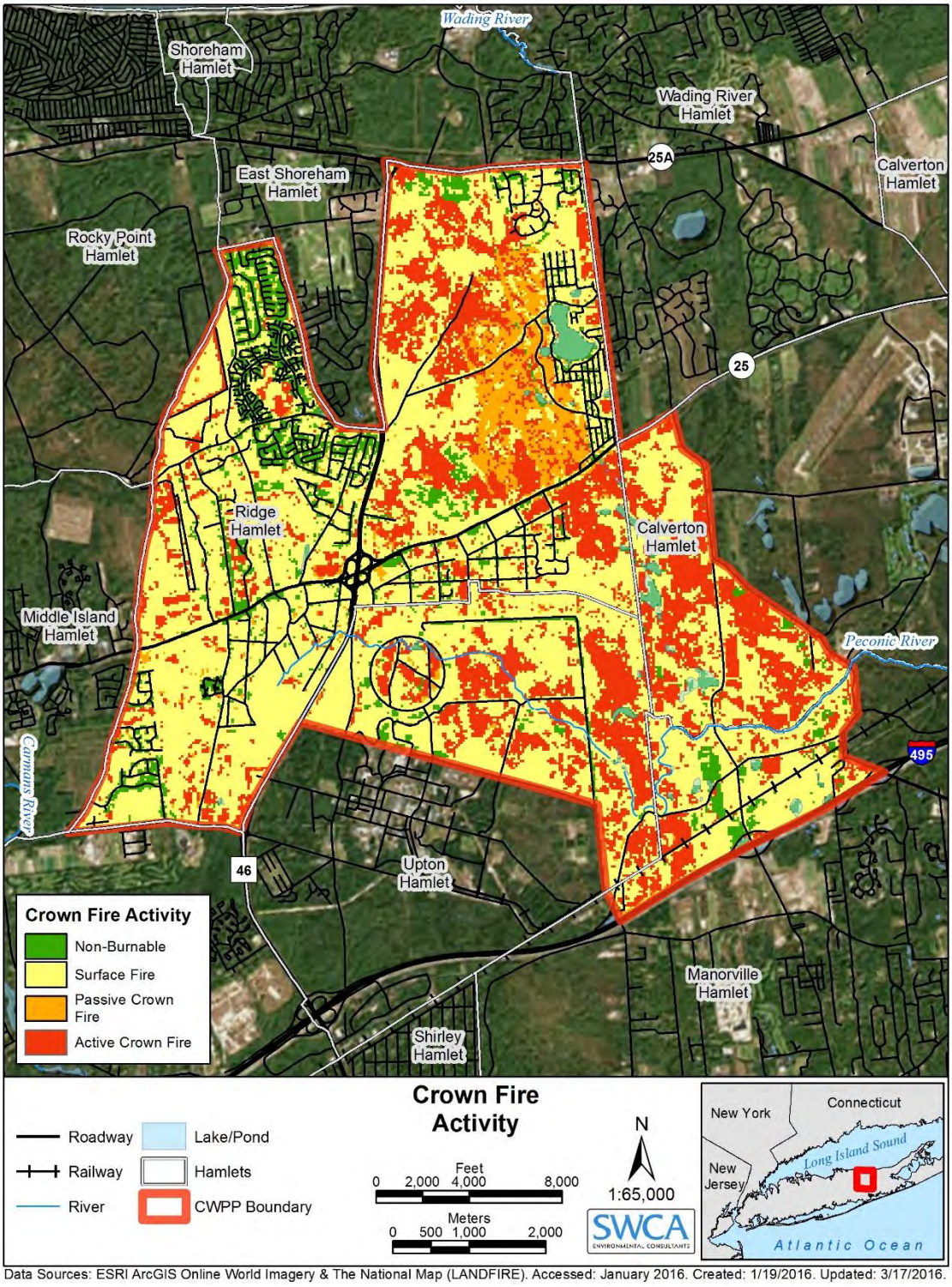
Map 2. Flame length.



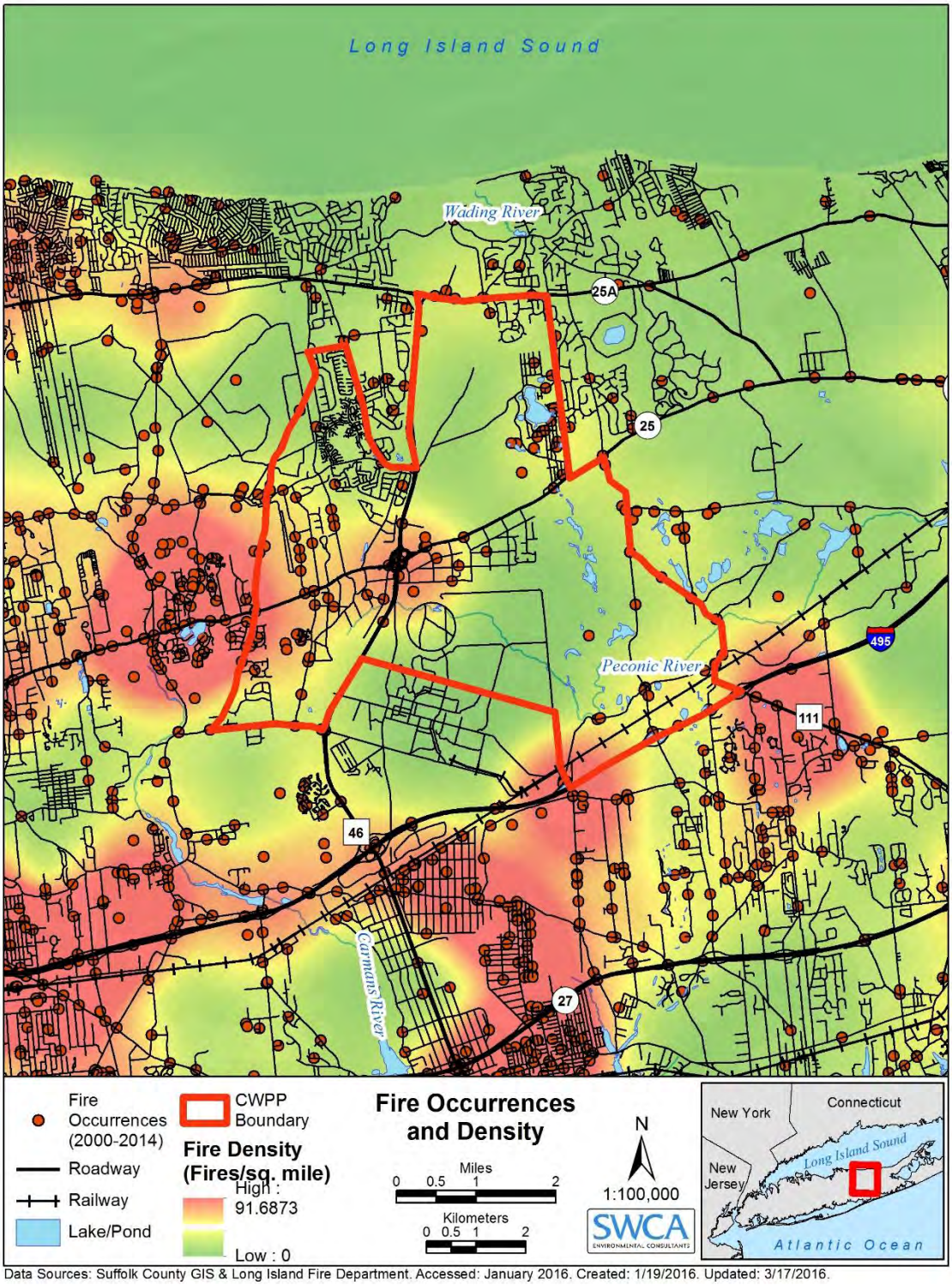
Map 3. Fireline intensity.



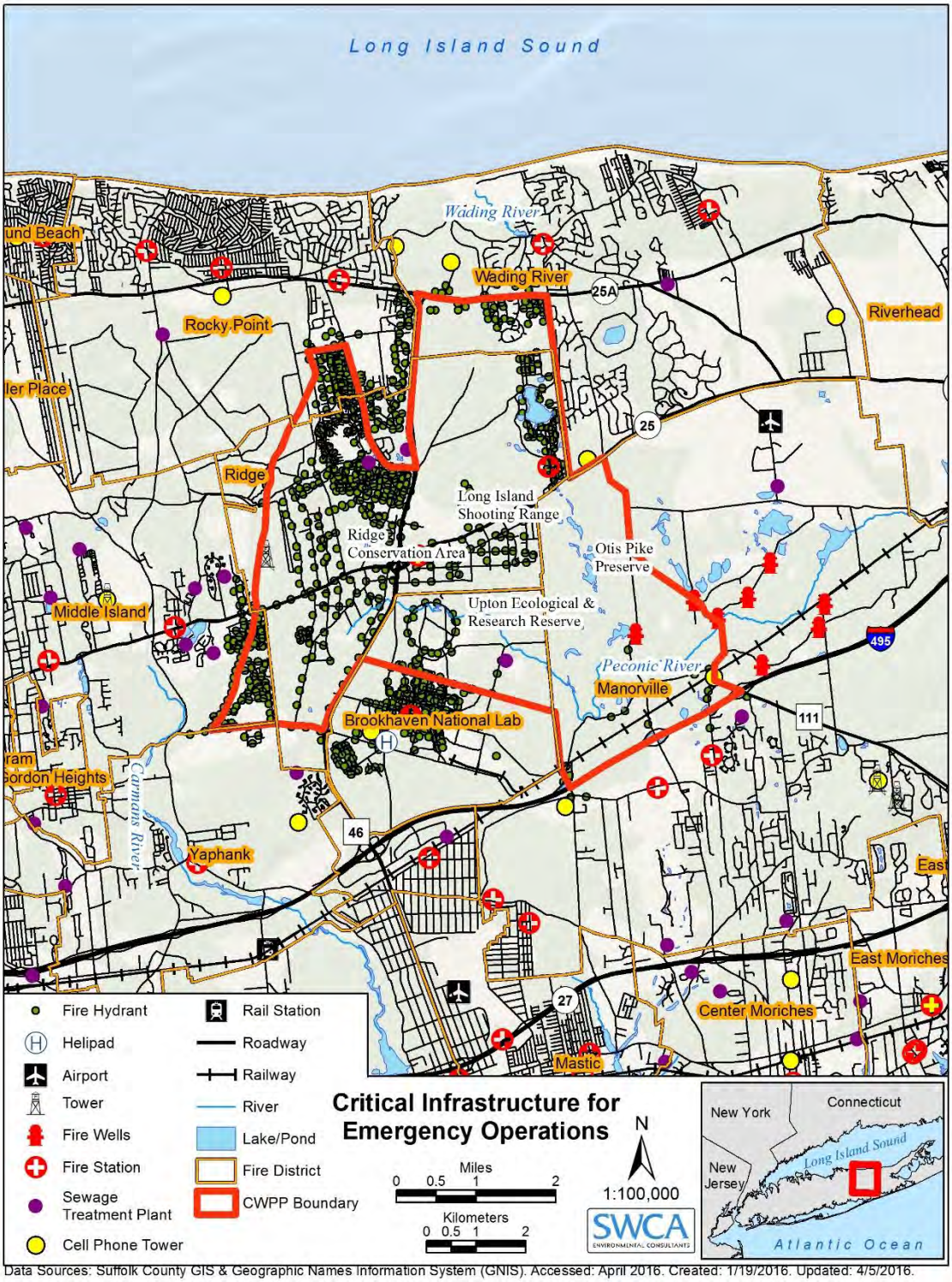
Map 4. Rate of spread.



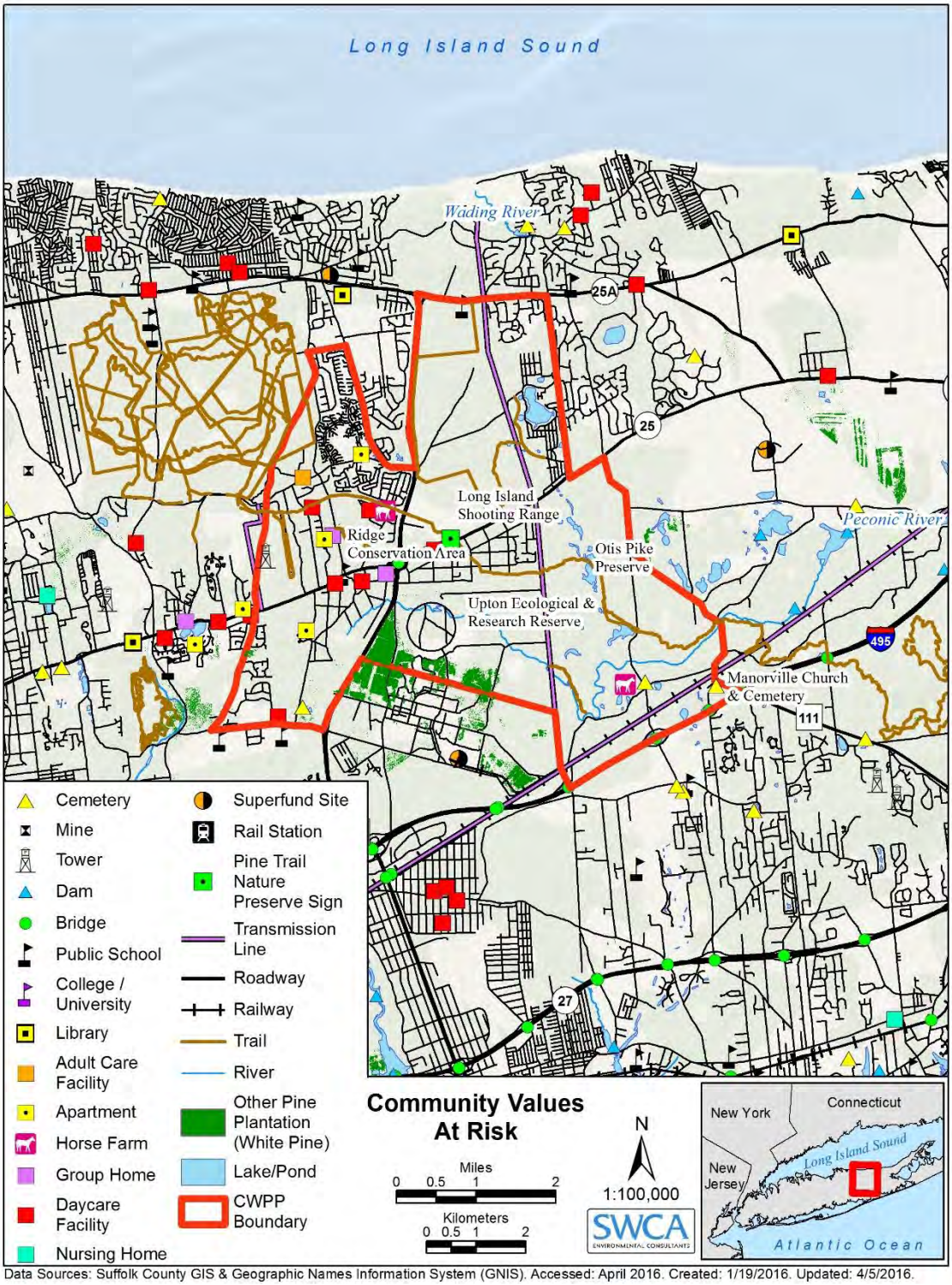
Map 5. Crown fire Activity.



Map 6. Fire occurrence and density.



Map 7. Critical infrastructure map.



Map 8. Community Values at Risk

APPENDIX B.
CORE TEAM CONTACT LIST

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Ridge-Manorville-Calverton CWPP
Core Team List

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Andrew Jacob, Assistant Division Director NYSDEC Division of Forest Protection 625 Broadway 8th Floor Albany, NY 12233-2560 (518) 402-8832	Judy Jakobsen, Policy & Planning Manager Central Pine Barrens Commission 624 Old Riverhead Road Westhampton Beach, NY 11978 (631) 288-1079
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Robert Marsh, Regional Supervisor Natural Resources Division NYS DEC Region 1 SUNY @ Stony Brook 50 Circle Road Stony Brook, NY 11790-3409 (631) 444-0270	Daniel McCormick, Deputy Town Attorney and Central Pine Barrens Commission Designated Representative Town of Riverhead Town Attorney's Office 200 Howell Avenue Riverhead, NY 11901 (631) 727-3200
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APPENDIX C.
MEDIA OUTREACH AND COMMUNITY COMMENTS

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Central Pine Barrens Joint Planning & Policy Commission
624 Old Riverhead Road
Westhampton Beach, New York 11978
Web Address: http://www.pb.state.ny.us

For: Immediate Release

Tuesday, December 2, 2014

Contact: John W. Pavacic, Executive Director
Central Pine Barrens Joint Planning & Policy Commission
Phone: Office: (631) 288-1079
e-mail: jpavacic@pb.state.ny.us

Central Pine Barrens Commission Advances Plan to Mitigate Risks in Wildfire-Prone Communities

With support from the New York Firewise Council and Federal, State and local agencies, the Central Pine Barrens Joint Planning and Policy Commission has begun the next phase of its program to mitigate wildfire hazards and risks in fire-prone communities in the Central Pine Barrens. The hamlet of Ridge, located in the Pine Barrens area of central Brookhaven, has been selected as the first community on Long Island to have a Community Wildfire Protection Plan (CWPP) prepared to help guide public land managers and local residents on how to reduce the area's wildfire risk from nearby woodlands. The CWPP will include public outreach strategies from the National Fire Protection Association's (NFPA's) Firewise and Firewise Communities program to educate Ridge residents on how to create a "survivable or defensible" space around their homes to reduce damage and loss from wildfire.

The selection of Ridge for a CWPP comes more than two years after the community was impacted by the April, 2012, Crescent Bow fire, which burned more than 1,000 acres, caused considerable property damage and forced the evacuations of some local residents.

Wildfire is a natural process in the fire-adapted Pine Barrens. Because of the relatively close proximity of some communities to the fire-prone ecosystem, however, wildfires can pose a risk to area residents and their properties as was demonstrated by the Crescent Bow fire. The Community Wildfire Protection Plan helps to arm communities like Ridge with information on how to reduce risks to both public safety and property through the development of an area-specific plan that includes an assessment of the wildfire risk to Ridge, structure flammability, mitigation of hazardous fuels (vegetation) and non fuels, community preparedness and emergency procedures. The CWPP for Ridge will also contain wildfire mitigation measures to be implemented on large wooded or natural public lands that are within the wildland urban interface area (locations where development abuts the Pine Barrens) to provide protection for residents and businesses that are adjacent to these areas. Public outreach strategies incorporated into the CWPP will include the NFPA's Firewise and Firewise Communities program (information available from firewise.org) that teaches homeowners how to create a "defensible space" around their home that reduces the intensity and destruction of an approaching fire through the use of fire resistive building materials and good property maintenance type measures.

Brookhaven Town Supervisor **Edward P. Romaine** said: "While people can undertake measures to protect their homes individually, working with their neighbors to protect the entire neighborhood is a more efficient and effective means of providing protection. When an entire residential community has taken proactive steps to protect their homes, the whole area is better protected, and, in the event of a fire, firefighters are better able to focus resources on the main body of the fire. The Town of Brookhaven supports this wildfire protection and mitigation effort and will be fully participating in the development and implementation of this worthwhile undertaking. I encourage Ridge community representatives to join the Town, Suffolk County, the Commission and other agencies in helping to make this area safer from the threats posed by wildfires."

John W. Pavacic, Executive Director of the Central Pine Barrens Commission noted "The CWPP planning process complements on-going efforts to initiate Firewise protection principles in the Central Pine Barrens and beyond. As the Ridge area has been identified as part of a community at greatest risk to wildfire damage and loss in all of New York State, we are looking forward to working with the local fire department, civic organizations and fellow governmental entities in mitigating the impacts that wildfires can cause."

Once the CWPP is completed it will make the Ridge community eligible for federal funding to help implement mitigation measures identified in the plan. Additional information can be obtained from and additional questions can be directed to **John Pavacic** of the **Central Pine Barrens Commission at (631) 288-1079 or info@pb.state.ny.us** .

# # #

Ridge, scorched by 2012 wildfire, to join federal program to help property owners

December 4, 2014 by CARL MACGOWAN / carl.macgowan@newsday.com

A community in Brookhaven Town that was scorched by a 2012 wildfire that burned more than 1,000 acres in central Suffolk County will join a federal program that helps property owners protect their homes, a state commission has announced.

The hamlet of Ridge is the first on Long Island to become part of the federal Community Wildfire Protection Plan, the Central Pine Barrens Joint Planning and Policy Commission said in a news release.

Inclusion in the program makes homeowners eligible for training by the National Fire Protection Association on how to create "defensible spaces" around their homes to reduce damage caused by fires, such as by clearing brush and using fire-resistant building materials, the commission said. The designation also makes Ridge eligible for federal funds to help implement fire protection measures, the commission said.

In a statement, the commission's executive director, John W. Pavacic, said the organization is "looking forward to working with the local fire department, civic organizations and fellow governmental entities in mitigating the impacts that wildfires can cause."

Several houses and 1,124 acres of pine forest were destroyed by the Crescent Bow wildfire, which started April 9, 2012, and scorched sections of Ridge and Manorville. A state investigation determined that the fire -- the seventh-largest in New York history -- was deliberately set. No arrests have been made.

Ridge Fire Chief Steven Gray said the federal program would be "an asset to the community" by helping residents prepare in advance for fires.

"That fire was a fast-moving fire that shifted all over the place, and this study will definitely help," Gray said. "Houses that aren't immediately in heavily wooded areas could be affected by floating embers."

Gray said he recalled being met in 2012 by a 30- to 40-foot wall of fire "that blew right by me. I have never seen fire move that fast."

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PRESS RELEASE

FOR IMMEDIATE RELEASE
December 7, 2015

Contact: Judy Jakobsen
jjakobsen@pb.state.ny.us

Community Wildfire Protection Plan on Way For Ridge, Manorville and Calverton

Pine Barrens Commission Joins Area Fire Departments To Create Plan Vital to Wildland Fire Protection

The Central Pine Barrens Joint Planning and Policy Commission, in collaboration with the Ridge and Manorville Fire Departments and various land management agencies, is in the process of developing a Community Wildfire Protection Plan (CWPP) to bolster wildfire protection for the communities of Ridge, Manorville and Calverton. This CWPP team of agency and fire department representatives will be holding its second of four planned meetings on Friday, December 11, 2015 to discuss the preliminary results of a wildfire risk assessment prepared for these communities that will identify areas of greatest risk for loss of and damage to property from wildfire. In addition, representatives from the CWPP team will be making a presentation to the Brookhaven National Laboratory Community Advisory Council at their meeting on Thursday, December 10, 2015 to obtain public input on community wildfire concerns.

According to Pine Barrens Commission Executive Director John Pavacic, the Central Pine Barrens has been identified as the area with the greatest potential risk of property loss from wildfire in all of New York State. As such, it is essential to get communities located within the Pine Barrens, such as Ridge, Manorville and Calverton, to actively participate in the CWPP's development by filling out a survey at https://www.surveymonkey.com/s/N2DZGCP. Doing so will help authorities to identify various factors that may be instrumental in protecting these communities in the event of a wildfire.

"This is a vital step for ensuring the protection of these communities from wildfire," said Pavacic. "We hope to see a large number of residents fill out the survey so we'll have as much relevant information as possible when developing a comprehensive CWPP for Ridge, Manorville and Calverton."

(continued)

The CWPP concept resulted from the federal Healthy Forest Restoration Act of 2003. The Act provided communities with the opportunity to influence how and where federal agencies implement fuel reduction projects on federal lands. This CWPP, once completed, will provide recommendations to reduce the risk of wildfire to life and property in these communities.

For further information on the CWPP process and the plan in progress for the Ridge, Manorville and Calverton area visit the Central Pine Barrens Commission's website at pb.state.ny.us, or contact either Judy Jakobsen of the Central Pine Barrens Commission at jjakobsen@pb.state.ny.us or Victoria Amato of the SWCA Environmental Consultants at vamato@swca.com. To view a Facebook page on the CWPP, search for Ridge-Manorville-Calverton Community Wildfire Protection Plan.

The Central Pine Barrens Joint Planning and Policy Commission was established by the New York State Legislature to protect and preserve drinking water and other natural resources in the Central Pine Barrens region. In addition to its regional land use planning, land preservation and regulatory functions, the Commission supports relevant scientific research, solicits and receives recommendations from the statutorily-created Pine Barrens Advisory Committee, oversees the work of three committees which aid the Commission - the Protected Lands Council, the Law Enforcement Council and the Wildfire Task Force - and also manages several discrete units which implement the Commission's many missions: the Divisions of Compliance and Enforcement, Education and Outreach, Land Use and Science and Stewardship, along with the Pine Barrens Credit Transfer of Development Rights Program.

###

The Office of Legislator Al Krupski
Suffolk County Legislator
1st District

For Immediate Release:
December 14, 2015

Contact: Gwynn Schroeder
631.852.3200

Legislator Al Krupski Calls on Community to Help Protect Against Wildfires

Public Input Needed to Develop Mitigation Plan

Residents of Ridge, Manorville and Calverton have the opportunity to provide input on the development of a Community Wildfire Protection Plan (CWPP), an initiative of the Central Pine Barrens Commission, **public land management agencies,** and the Ridge and Manorville Fire Departments. The Central Pine Barrens has been identified as "the area with the greatest potential risk for damage to and loss of property from wildland fire in all of New York State" according to the John Pavacic, the Commission's Executive Director.

Legislator Krupski, who is a member of the Brookhaven National Lab's Community Advisory Council (CAC) and whose district includes Ridge, Manorville and Calverton, participated in a discussion on the development and implementation of a CWPP at a recent CAC meeting.

"We've experienced devastating fires in the Pine Barrens and we know we are at risk for more," said Legislator Krupski. "The development of a CWPP is vital to the health and safety of residents and to the protection of private property and our critically important natural resources. Community input is invaluable because these are the people most familiar with conditions within their own neighborhoods and they can identify potential risks and help prioritize the mitigation of those risks. I encourage anyone, including those who have knowledge of or an interest in the future of the Pine Barrens or wildfire prevention, to get involved."

CWPPs are a result of the Healthy Forrest Restoration Act (HFRA) 2003 which gave local communities a voice in how federal lands are managed in regards to reducing hazardous fuels in woodlands and how federal funding is utilized to achieve this goal. Once completed, the CWPP can be a valuable tool in obtaining aid for wildfire prevention. It also has the potential to be utilized as a template for developing CWPPS in other areas within the Pine Barrens region.

The next public meeting is expected to be scheduled for some time in February. In the meantime, resident of Ridge, Manorville and Calverton are encouraged to participate in a survey about community preparedness by visiting http://www.surveymonkey.com/r/N2DZGCP .

For more information about the Ridge-Manorville-Calverton CWPP, please contact Judy Jakobsen at the Central Pine Barrens Commission by emailing jjakobsen@pb.state.ny.us or calling 631-288-1079. **Visit the Ridge-Manorville-Calverton Community Wildfire Protection Plan on Facebook and share this page with other community residents.**

###

Environment

Pine Barren fire plan needs more neighbors' input

by Paul Squire | 12/14/2015 12:00 PM

Authorities are coming up with a plan to deal with wildfire management in the Manorville and Calverton Pine Barrens and have asked nearby residents to share their thoughts. But so far, just 36 have said what they think of the plan, according to Legislator Al Krupski.

Mr. Krupski said it's important for more neighbors to have their voices heard.

"Community input is invaluable because these are the people most familiar with conditions within their own neighborhoods and they can identify potential risks and help prioritize the mitigation of those risks," he said. "I encourage anyone, including those who have knowledge of or an interest in the future of the Pine Barrens or wildfire prevention, to get involved."

The draft — called a Community Wildfire Protection Plan — would give local communities a say in how the federal government deals with preventing out-of-control wildfires, like the one that charred more than 1,000 acres of pine barrens across Brookhaven and Riverhead Towns in 2012.

The CWPP is being developed by the Central Pine Barrens Commission and local fire departments. The plan specifically refers to areas around the Brookhaven National Lab and in western Riverhead Town.

The next public meeting is expected to be scheduled for some time in February. In the meantime, residents of Ridge, Manorville and Calverton can participate in a survey about community preparedness by clicking here.

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Cops: More charges brought against suspect in Flanders car break-ins

Photo caption: Life flourishing in charred forest in Manorville in April 2013, a year a wildfire burned over 1,000 acres of pine barrens. (Credit: Paul Squire)

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Pine Barrens, wildfire

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by Paul Squire 12/15/15 8:00am
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Pine barrens residents asked to help prevent wildfires

December 16, 2015 By Carl MacGowan carl.macgowan@newsday.com

Smoke rises from a massive brush fire in the pine barrens on April 9, 2012. Residents are being urged to take steps to prevent wildfires. (Credit: Kevin P. Coughlin)

Residents and property owners in Ridge, Manorville and Calverton are being asked to join efforts to help prevent a wildfire like the one that scorched more than 1,000 acres in those communities three years ago.

Fire officials, residents and the state's Long Island Pine Barrens commission are developing a plan that seeks to protect homes from future fires by encouraging homeowners to rid their properties of debris that could cause flames to spread rapidly.

A draft of the Community Wildfire Protection Plan will be discussed at a public meeting in February, with a final plan to be announced by next spring, said Judy Jakobsen, policy and planning manager for the Central Pine Barrens Joint Planning and Policy Commission.

Residents are invited to take part in an online survey at surveymonkey.com to help officials develop the plan. Efforts to draft the plan are funded by a $30,000 grant from the U.S. Forest Service, Jakobsen said.

Homeowners can protect their houses by getting rid of mulch, dry leaves and other debris that can act as a "wick" as fire races from property to property, she said.

"A lot of it is good property maintenance. You have to be concerned about embers landing on your property, so it's making sure your grass is kept green and leaves are out of your gutters," Jakobsen said. "The goal is to reduce the wildfire risk in this area."

The plan would cover 13,600 heavily wooded acres in Ridge, parts of Manorville and Calverton, and Brookhaven National Laboratory in Upton, where the Crescent Bow wildfire started on April 9, 2012, in a forested area away from lab buildings. The fire spread quickly to nearby woods and neighborhoods, burning 1,124 acres and destroying several homes before it was brought under control about 24 hours after it started.

A state investigation determined the fire had been deliberately set, but no arrests have been made.

Legis. Al Krupski (D-Cutchogue) said in a statement residents should take part in the survey.

"We've experienced devastating fires in the Pine Barrens and we know we are at risk for more," he said, adding that the protection plan "is vital to the health and safety of residents and to the protection of private property and our critically important natural resources."

Eric Rehbein, of Yaphank, a retired New York City firefighter involved in developing the protection plan, said some prevention measures, such as using fireproof building materials, may be too expensive for some homeowners. He said most measures are not onerous.

"There's a lot of things that are not too difficult to do, and if it's going to save their house, it's definitely worth it," he said.

Brookhaven National Lab ecologist Kathy Schwager, who is also helping develop the plan, said the federal research facility intends to thin wooded sections of the 5,300-acre property and reduce brush and shrubs. She said residents should take steps such as removing leaves and pine needles from rooftops.

"All those things could potentially be destroyed in a fire and end up destroying their own houses in a fire," she said.

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WHAT TO Watch

HUNTINGTON

PUBLIC HEARINGS. The zoning board meets at 6 p.m. tonight at Town Hall.

EAST HAMPTON

BOARD MEETS. The East Hampton Town Board meets tonight at 6:30 p.m. at Town Hall.

OYSTER BAY

ZBA MEETS. The Zoning Board of Appeals meets at 7 p.m. tonight at Town Hall East.

BELLPORT

TRUSTEES MEET. The board meets Monday at 7 p.m. at 4 Bell St.

SOUTHAMPTON

BOARD MEETING. The town board meets Tuesday at 1 p.m. at Town Hall.

VILLAGE MEETING. The board of trustees meets at 6 p.m. Tuesday at 23 Main St.

GLEN COVE

CITY COUNCIL. The council meets at 7:30 p.m. Tuesday at City Hall.

BROOKHAVEN

PLANNING BOARD. The board meets at 4 p.m. Monday at Town Hall, 1 Independence Hill in Farmingville.

NOW ONLINE

Catch up with these stories today at newsday.com/towns

TOP tweets

I'm pretty sure that I only use Twitter on the Long Island rail road.

@the_stink

RIDGE / CALVERTON / MANORVILLE

KEVIN COUGHLIN

Smoke rises from a massive brush fire on April 9, 2012, in a forested area at Brookhaven National Laboratory in Upton. Residents are being urged to take steps to prevent wildfires.

ONLY YOU CAN PREVENT WILDFIRES

Officials ask for community's help in developing strategy to avert blazes

BY CARL MACGOWAN
carl.macgowan@newsday.com

Residents and property owners in Ridge, Manorville and Calverton are being asked to join efforts to help prevent a wildfire like the one that scorched more than 1,000 acres in those communities three years ago.

Fire officials, residents and the state's Long Island Pine Barrens commission are developing a plan that seeks to protect homes from future fires by encouraging homeowners to rid their properties of debris that could cause flames to spread rapidly.

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"All those things could potentially be destroyed in a fire and end up destroying their own houses in a fire," she said.

Protecting homes against wildfires

- Mow lawns regularly
- Prune trees 6 to 8 feet from the ground
- Space conifer trees 30 feet apart
- Water plants, trees and mulch
- Create fire-free area 30 feet from house, using nonflammable landscaping materials and high-moisture shrubs
- Remove dead vegetation from under decks and within 10 feet of house
- Use fire-resistant material for roofing and exterior walls
- Move firewood and propane tanks away from the house

SOURCE: NATIONAL FIRE PROTECTION ASSOCIATION

newsday.com NEWSDAY, THURSDAY, DECEMBER 17, 2015

MEDIA ADVISORY

FOR IMMEDIATE RELEASE
April 18, 2016

Contact: Judy Jakobsen
jjakobsen@pb.state.ny.us

Draft to be Released of Long Island's First Community Wildfire Protection Plan

Community Meeting in Ridge on Thursday, April 21

The Central Pine Barrens Joint Planning and Policy Commission this Thursday will present the first draft of a wildfire protection plan developed with the input of residents of Ridge, Calverton and Manorville, public land managers and local fire departments to bolster wildfire protection in those communities. The meeting will provide an opportunity for the public to offer additional input on wildfire concerns for their community.

According to John Pavacic, the Commission's executive director, the Community Wildfire Protection Plan, or CWPP, will help to identify high fire risk areas and prioritize areas for mitigation, fire suppression and emergency preparedness.

"We're expecting this plan, which will be the first of its kind on Long Island, to greatly help these communities to better prepare for area wildfires," Pavacic said.

What: **Meeting to present draft Community Wildfire Protection Plan**

Where: **Ridge Fire Department, 20 Francis Mooney Drive, Ridge**

When: **Thursday, April 21 at 7 p.m.**

Free Emergency Planning Kit for attendees while supplies last

The Central Pine Barrens Joint Planning and Policy Commission was established by the New York State Legislature to protect and preserve drinking water and other natural resources in the Central Pine Barrens Region. In addition to its regional land use planning, land preservation and regulatory functions, the Commission supports relevant scientific research, solicits and receives recommendations from the statutorily-created Pine Barrens Advisory Committee, oversees the work of three committees which aid the Commission – the Protected Lands Council, the Law Enforcement Council and Wildfire Task Force – and also manages several discrete units which implement the Commission's many missions: the Divisions of Compliance and Enforcement, Education and Outreach, Land Use and Science and Stewardship, along with the Pine Barrens Credit Transfer of Development Rights Program.

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Around LI

HAUPPAUGE

Smoking cessation classes being offered

The Suffolk County Department of Health Services is offering another set of smoking cessation programs to residents of the county.

The "Learn to Be . . . Tobacco Free" classes help participants learn how to quit using tobacco or nicotine products.

"We are promoting good health to all residents in Suffolk County," County Executive Steve Bellone said in a release. "For those who are addicted to tobacco or nicotine products, we urge them to get the support they need to prevent illnesses that are caused by tobacco."

"Breaking an addiction to nicotine can be very difficult," said Dr. James Tomarken, the health department commissioner. "Studies have shown that smokers who try to quit smoking using a combination of behavioral support and medicine are three times more likely to be successful than those who try to stop smoking without support."

The classes are free, though medically eligible participants may be charged a fee for medication.

In Center Moriches, classes are 6 to 7 p.m. every Monday from May 2 through June 13 at the Center Moriches Library, 235 Main St. There is no class on Memorial Day. To register, call 631-878-0940.

In Hauppauge, classes are 6 to 7 p.m. every Tuesday from May 3 through June 7 at the Suffolk County Department of Health Services' Office of Education, 725 Veterans Memorial Hwy., North County Complex, Building C-928 in Smithtown. There will be a reunion on June 28. To register, call 631-853-4017.

In Setauket, classes are 6 to 7 p.m. every Thursday from May 12 through June 16 at the Stony Brook Tech Center, 14 Research Way in Setauket. There will be a reunion on July 7. To register, call 631-444-4000. — SOPHIA CHANG

RIDGE

Wildfire protection plan to be discussed

A plan crafted by the state pine barrens agency to help protect homes in eastern Brookhaven Town from wildfires will be discussed Thursday night in Ridge.

Officials from the Central Pine Barrens Joint Planning and Policy Commission will present a draft of the Community Wildfire Protection Plan at 7 p.m. at the Ridge Fire Department, 20 Francis Mooney Dr. The meeting is open to the public.

Commission executive director John Pavacic said the plan identifies potential high-risk areas for wildfires and sets priorities for fire mitigation and emergency preparedness. The plan was developed by commission members with public land managers, local fire departments and residents of Ridge, Calverton and Manorville, he said.

"We're expecting this plan, which will be the first of its kind on Long Island, to greatly help these communities to better prepare for area wildfires," Pavacic said in a statement. "This meeting will provide an opportunity for the public to offer additional input on community wildfire concerns."

Efforts to develop the plan began after the Crescent Bow wildfire burned more than 1,000 acres in Ridge, Manorville and Calverton in April 2012. Officials said the fire was deliberately set, but no arrests have been made. — CARL MACGOWAN

Stick out your tongue

STEVEN SUNSHINE

ROSLYN. Science Museum of Long Island employee Caitlin Orellana, 27, shows off Iggie, an 11-year-old skink, to kids and parents visiting the Nassau County Museum of Art yesterday for an Earth Day celebration. ■ **More LI top photos: newsday.com/topphotos**

BAY SHORE

Drug, alcohol abuse center relocates too

The Long Island Prevention Resource Center, formerly based in Amityville since 2009, has joined forces with the Family Service League and has moved into one of its Bay Shore locations.

The resource center, which relocated from South Oaks Hospital and now shares a space at the Iovino South Shore Family Center at 1444 Fifth Ave., has spent the past seven years building community coalitions to help battle drug and alcohol issues plaguing the area, said program director Pamela Mizzi.

The center partners with local schools, governments, police departments and community organizations to educate and train them on how to prevent drugs and alcohol from affecting their specific populations.

"Because the topic is so emotional and so broadly based, people just spend an hour lamenting the problem," Mizzi said. "We use strategic prevention framework that provides a laser-focus to an individual community on how we can change something here and how we can go about doing it."

Funded by the state Office of Alcohol and Substance Abuse Services, the center currently supports 20 community coalitions in Suffolk County and another 25 in Nassau, Mizzi said.

Karen Boorshtein, president and chief executive of Family Service League, said in a statement: "The devastating issues associated with alcohol and chemical dependency are among the most critical challenges facing many of the families who have come to depend on FSL's spectrum of programs."

Mizzi said that while the dangers of drug use on Long Island continue to be a hot topic, many groups focus on underage drinking that has "an across-the-board acceptability" because parents feel their children are safe while drinking inside the home. But Mizzi warns the practice is still "illegal, unhealthy and inappropriate."

"Prevention is a long-term game," Mizzi said. "We make shorter-term gains and celebrate reducing risk factors in the community but we also know communities that have active coalitions have lower prevalence rates across the board."

For more information, call the center at 631-650-0136 or visit liprc.org. — SARAH ARMAGHAN

AMITYVILLE

Village OKs plan for downtown developer

Amityville trustees last week approved a plan for selection of a master developer for downtown redevelopment by next fall.

A request for proposals will be sent to Tritec Development, Avalon Bay, Renaissance Downtowns, and the Albanese Organization, with responses due in mid-July.

Residents will be invited to view and comment on proposals, Mayor James Wandell said. "This has been a transparent and participatory process from the very beginning, and it will continue to be," he said. "We are finally starting to get some traction."

Village officials have identified a "target area" for new zoning and redevelopment along the Route 110 corridor from Sunrise Highway in the north, south roughly to Avon Place. That area includes about 60 parcels with 40 owners and includes some village-owned land.

Proposals should include mixed-use and transit-oriented plans, the village document states, and should include ideas on streetscape improvements and public space. The document also asks for property acquisition strategies "including opinion regarding eminent domain."

Similar plans in Copiague and Wyandanch have polarized

See AROUND LI on A22

newsday.com NEWSDAY, MONDAY, APRIL 18, 2016

COMMUNITY COMMENTS

SURVEY COMMENTS

Below is a selection of responses given when survey-takers were asked if they have additional comments:

- Perhaps a meeting could be held in the daytime in one of the Leisure Communities to instruct seniors in the need to be well informed concerning wild fire prevention.
- Televise the results of the last wildfire nearby, with suggestion to prevent it again.
- Sump inside Leisure Knoll is filled with dead and dying and live trees, dead trees and vines. Branches covered with dead vines are on the ground. All this approximately 25 feet from homes.
- All homeowners should be responsible for cleaning up downed trees and shrubs. The Town should be responsible for clearing downed trees and shrubs. The property on Whiskey Road NW of Rocky Point - most of the trees lining the street are dead.
- Need better communications from fire department regarding evacuation procedures.
- I have horses. The last fire was a horror show. It put my animals at risk. The response was unorganized. I believe there should be a text alert for us horse owners if there is a brush fire in our area. If we know in advance we can make better choices as to who needs to be evacuated, if we really do need to move horses or not.
- We can't clear all down trees and leaves because we are in pine barrens. These create fire hazards.
- I have noted that there is only one exit from our over 600 homes. I have no idea how we could all be evacuated quickly in an emergency. There are dead and/or dying trees infested with pine borers in our community (Leisure Glen). As senior citizens each individual homeowner cannot afford to have those trees removed and the complex insists that we must do so.
- Educating the public on what to do before a fire (prevention) and what one must do when a fire is in your area. Communication with your fire department, more water resources, clearing of dead trees and brush (on private land, but more important on public land- nature preserve).
- We had wildfires in our backyard a few years ago. Scared us to come home to smoke and blocked road. Pets were inside - fire rescue saved my pets and my home. It was an impressive job by firefighters that day. We are eternally grateful to the men and women of the fire department.

- There is publically owned land adjacent to my property that is filled with fuel for fire in the form of brush and leaves that has been dumped on that property. I would like to see that cleaned up as it poses a risk to the properties in my neighborhood.
- I have horses, I protect them first and then me.
- As an avid mountain biker I see many natural areas that have been affected by storms. There are thousands of up-rooted, broken and dead trees. They have been seasoned for years and pose an extremely dangerous potential fuel source for wildfire. The land that these trees are on is owned by town, county, and state and I believe it is their responsibility to remove the fuel source before we have another major wildfire. It would also be wise to have signs leading in and out of preserves indicating the fire hazard on a regular basis. There is just too much fuel out there.
- Get NY State DEC to maintain the land with a fire prevention trail behind the homes.
- Lack of water sources is of great concern in this area (Manorville/Calverton)
- Thank you for the opportunity to learn more about fire prevention.
- Able to get home to evacuate pets and horses during a wildfire. Have a horse farm in area, would need to be able to enter property.
- I live in retirement community Leisure Glen. We have only one exit (entrance) to this community. Along with this danger is a dense area of trees, bushes, etc. I think thinning out this material should be a huge priority. During the pine barrens fire we had ash in our pool & evacuation was being planned. No one seems to be taking this problem seriously.
- Perhaps a system of fire lanes and perhaps extension of inexpensive above-ground water lines - possible using flexible PVC tubing running alone fire lanes, trails and other disturbed areas
- I would like to see someone also look into properties that border the pine barrens and that they are kept somewhat maintained.
- Why is it that there is no enforcement of the illegal dumping of yard waste? Almost every single house that adjoins any undeveloped public land has created a private dump on that land for yard waste and more importantly, tree cuttings. These piles of wildfire fuel are dangerous and a great place for a fire to start. Enforcement could generate much needed funds that pay for many of the priorities on this survey. How do we get an enforcement effort underway?
- Thank you for providing the recent mailing re. The upcoming community meeting as well as a link to the draft wildfire protection plan.....it's interesting and informative reading, as well as important.
- More patrols for dirt bikes when brush fires are at high risk.

- Action needed as soon as possible!

- The lack of fire hydrants in my area is always alarming to me...especially after the fire 4 years ago, since the fires were 1/2 mile from my house at the closest. We are on well water with no hydrants close by.

- My property borders on protected forest land and a sump where there are lots of dead trees. There is a property on my block that looks like a major fire hazard where the owner may be disabled. There are dead and downed trees all over the entire property.

- Leisure Knoll has performed surveys of our wooded areas and there is a large amount of dead branches and trees (both fallen and standing). It is much more than we can handle. Are there any funds or assistance available to assist us in cleaning up these areas?

- Concentrated efforts during low humidity high windy conditions to spot fires early before they become uncontrollable.

- Private removal of dead, dying or undesirable trees can easily cost the homeowner thousands of dollars. Many trees that pose not only a fire hazard but also a wind damage hazard are left neglected due to these high cost. Subsidizing these costs so that these dangers could be mitigated would be the best use of resources.

- I have always been quite concerned about wildfire potential in my immediate area/community. I am particularly concerned with neighbors dumping tons of leaves and logs in adjacent woodlands, even blocking access to those areas. People just look for an easy way out, it's expensive to take away leaves. The town used to vacuum the leaves if we got them to the street. We need help. I would like you to come to our local area to do a presentation.

- I am an active volunteer firefighter in Ridge. I feel that fire breaks are over grown. I have personally driven down fire breaks while training with the fire department and have observed over grown fire breaks.

- Fine and make clean up all the illegal dumping (tree debris, building material etc.) behind every house that backs on undeveloped land. This lazy illegal dumping disgraces all of our park land and creates a fire danger. Increased enforcement (now nonexistent) would generate funds through fines for other parts of the fire prevention program.

PUBLIC MEETING COMMENTS

Below is a summary of the comments/concerns that were received during the public meetings held on December 10th and April 21st:

- There is a need for the state to reduce fuel loads adjacent to residential areas, specifically on Rocky Point and Brookhaven State Park properties.
- Need to improve the ability of fire fighters to have access through the woods to fight the fires.
- There is a need for fire breaks to be restored and for shaded fuel breaks (i.e.; Woodlot Road).
- There are a number of dead trees from Southern Pine Beetle and the hazard of these dead trees and stumps to fire fighters is a concern.
- There are limited water supply/ fire hydrants for some area residents especially in the Manorville and Calverton areas.
- Residents would would like assistance with clean up of dead trees and green waste on private property.
- Residents with horses/livestock would like a comprehensive evacuation plan to be developed in order to mitigate concerns regarding access by owners to carry out horse/livestock evacuation.
- Residents would like to see fire danger signs erected including remote access electronic signs and also having fire departments use their existing electronic signs.
- Most residents would like assistance with dead tree removal and green waste cleanup.
- A few residents would be interested in an individual home assessment and maybe some funding could be used to assist them to make changes to their properties.
- The evacuation of livestock may be a possible project at a later date working with SCASPCA and possibly the N/S Horsemans Association.

APPENDIX D.
FIREFIGHTING RESOURCES

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Ridge Fire Department

	EMERGENCY: 911	**CALL SIGN:** KEF-810 **IDENT:** 5-22 **NYS FD ID:** 52089	
ADDRESSES	**Dept :** PO Box 515 Ridge, NY 11961	**Dist :** PO Box 500 Ridge, NY 119612999	
	Email :	**Email:**	
TELEPHONE NO's	**Department :** Business: (631) 924-3256	Alternate: (631) 924-3426	Fax Number: (631) 924-3760
	District : Business: (631) 924-4080	Alternate:	Fax Number: (631) 924-0001
	Chiefs : Chiefs:	Fax Number: (631) 924-3760	
FIRE STATION LOCATIONS	**HQ:** 20 Francis Mooney Drive (631) 924-3256		
	Sta 1:	**Sta 3:** 46 Panamoka Trl (631) 929-6337	
	Sta 2: Carlton Dr & Lockwood Dr (631) 924-5550	**Sta 4:**	

DISTRICT OFFICERS		
Chair	Pasquale Pirozzi Jr.	(631) 831-8672
Comm	David Hellberg II	(631) 764-7291
Comm	James Scuttina	(631) 860-3741
Comm	Jeffrey Campo	(631) 872-0114
Counsl	Lawrence M. Kenny	(631) 582-4000
Secty	Teresa Anderson	(631) 831-9211
Treas	Colleen Pearsall	(631) 764-4613

CHIEF OFFICERS		
5-22-30	Steven J. Gray	(631) 831-0984
5-22-31	Shawn Davis	(631) 831-3760
5-22-32	Michael R. Gray	(631) 774-5295
5-22-33	Louis Kaiser	(631) 774-6040

OTHER DEPARTMENT OFFICIALS		
Emerg M	John Boyd	(631) 672-2068
MedDir	Jeff Wheeler	

EQUIPMENT

Apparatus ID	Unit Type	GPM	Tank Size	Special Equipment or Type
5-22-01	Engine	2000	750	1000' 5" hose
5-22-03	Engine	2000	750	1000' 5" hose: foam
5-22-04	Rescue Truck			Hurst, air bags, light tower,
5-22-05	Tanker	250	4200	Sump Pump
5-22-06	Engine	2000	750	1300' 5" hose
5-22-07	Engine	1500	750	1300' 5" hose
5-22-08	Rescue Truck			Hurst tool/light tower/water rescue/airbags/4x4
5-22-09	Tower Ladder			93'93'
5-22-10	Rescue Truck			Hurst/air bags/light tower/4x4
5-22-11/12	Brush Truck	300	750	10WD 5 ton/foam
5-22-14/15	Ambulance			ALS
5-22-16/17	Ambulance			ALS
5-22-18	Fire Police			Message light board/arrow board
5-22-19	Fire Police			Fire police
5-22-2	Antique			
5-22-20	Chief Car			4x4
5-22-21/22	District Car			Spare Car
5-22-23	First Responder			ALS 4x4
5-22-24	Crown Vic			District vehicle
5-22-26	Chief			4x4
5-22-27	Chief Car			4x4
5-22-28	First Responder			ALS 4x4
5-22-29	First Responder			ALS 2WD
5-22-81/82	First Responder			Expedition - ALS 4x4
5-22-97	Rack Truck			Dump Body with lift gate
5-22-98	Pick-up Truck			District vehicle 4X4
Marine	Boat			14' Zodiac: 25hp motor

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Manorville Fire Department

	EMERGENCY: 911	**CALL SIGN:** KBQ-231 **IDENT:** 5-16 **NYS FD ID:** 52062	
ADDRESSES	**Dept :** 16 Silas Carter Road Manorville, NY 11949	**Dist :** 14 Silas Carter Road Manorville, NY 119490040	
	Email :	**Email:**	
TELEPHONE NO's	**Department :** Business: (631) 878-6614	Alternate: (631) 878-6617	Fax Number: (631) 878-6149
	District : Business: (631) 878-6614	Alternate: (631) 878-6617	Fax Number: (631) 878-6620
	Chiefs : Chiefs:		Fax Number: (631) 878-6149
FIRE STATION LOCATIONS	**HQ:** 16 Silas Carter Road (631) 878-6614		
	Sta 1: 170 Cranford Blvd, Mastic (631) 281-3688	**Sta 3:**	
	Sta 2: 40 Halsey Manor Rd, Manorville (631) 874-1059	**Sta 4:**	

DISTRICT OFFICERS		
Chair	William C. Hille	(631) 831-2331
Comm	Jimmy Newton	(631) 834-9967
Comm	Thomas Campanaro	(631) 574-7521
Comm	Dennis Hendrickson	(516) 369-7810
Comm	Thomas Costello	(631) 278-8781
Counsl	Brad Pinksy	(631) 878-6614
Sec/Tr	Donna Leotta	(631) 878-6614

CHIEF OFFICERS		
5-16-30	Salvatore D'Amato	(631) 433-9980
5-16-31	Joseph Danowski	(631) 831-2321
5-16-32	Thomas Calandra	(631) 618-1085

EQUIPMENT

Apparatus ID	Unit Type	GPM	Tank Size	Special Equipment or Type
5-16-01	Rescue Truck			Heavy rescue equipment/cold water rescue
5-16-02	Engine	1500	1200	1000' 5" hose, hurst tool
5-16-03	Rescue Pumper	1500	750	Hurst tool, 1500' 5" hose, foam
5-16-04	Aerial Ladder	2000	400	095' Ladder
5-16-06	Quint	1500	500	075',CAFS system
5-16-07	Rescue Pumper	1500	750	Hurst tool, 1500' 5" hose, foam
5-16-08	Engine	1500	1000	1200' 5" hose
5-16-09	Tanker	1500	3000	Fold-a-tank
5-16-10	Pick-up Truck			4WD, fire police, traffic control
5-16-11	Fire Police			Traffic control
5-16-12	Fire Police			Traffic control
5-16-GI 1	Brush Truck	450	700	GI-6WD
5-16-GI 2	Brush Truck	450	700	GI-6WD
5-16-GI 3	Brush Truck	400	600	GI-6WD
Polaris	Ranger 6x6			Off road, All terrain

Manorville Ambulance

	EMERGENCY: 911	**CALL SIGN:** 5-40	**IDENT:** 5-40 **NYS FD ID:**
ADDRESSES	**Dept :** PO Box 719 Manorville, NY 11949	**Dist :**	
	Email :	**Email:**	
TELEPHONE NO's	**Department :** Business: (631) 878-6333	Alternate: (631) 878-6334	Fax Number: (631) 878-3410
	District : Business:	Alternate:	Fax Number:
	Chiefs : Chiefs:	Fax Number:	
FIRE STATION LOCATIONS	**HQ:** 184 South Street (631) 878-6333		
	Sta 1: Moriches-Middle Isle Rd (631) 874-4262	**Sta 3:**	
	Sta 2:	**Sta 4:**	

DISTRICT OFFICERS

Direct	Sandy Rafuse
Direct	Arthur Abbate
Direct	Ernest Gaspari
Direct	Chris Delia

CHIEF OFFICERS

5-40-30	Lenny Schnal	lschall@manorvilleambulance.org	(631) 278-2140
5-40-31	Tricia Dunn	tdunn@manorvilleambulance.org	(631) 278-3537
5-40-32	Jim Hintze	jhintze@manorvilleambulance.org	
5-40-50	Doug Andrews	dandrews@manorvilleambulance.org	

OTHER DEPARTMENT OFFICIALS

C/Sec	Diana Langdon
R/Sec	Emma Mueller
Treas	Christine Wittschack

EQUIPMENT

Apparatus ID	Unit Type	GPM	Tank Size	Special Equipment or Type
5-40-17	Ambulance			ALS
5-40-18	Ambulance			ALS
5-40-19	Ambulance			ALS
5-40-20	MCI/Rehab Unit			BLS MCI STOCK, NON-TRANSPORTING, FF REHAB EQUIPPED
5-40-30	Chief/First Responder			BLS
5-40-31	Chief/First Responder			BLS
5-40-80	First Responder			ALS
5-40-81	First Responder			BLS
5-40-82	District Vehicle			BLS
5-40-B1	Bike			BLS
5-40-B2	Bike			BLS
Quad1	Quad			BLS
Quad2	Quad			BLS

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Brookhaven National Lab Fire Department

EMERGENCY: (631) 344-2222 **CALL SIGN:** KFW-631 **IDENT:** 5-20 **NYS FD ID:** 52482			
ADDRESSES	**Dept :** 1 W. Brookhaven Ave, Bldg 599 Upton, NY 119735000	**Dist :**	
	Email : chief@bnl.gov	**Email:**	
TELEPHONE NO's	**Department :** Business: (631) 344-2350	Alternate: (631) 344-2351	Fax Number: (631) 344-5887
	District : Business:	Alternate:	Fax Number:
	Chiefs : Chiefs: (631) 344-5476	Fax Number: (631) 344-5887	
FIRE STATION LOCATIONS	**HQ:** W Brookhaven Ave. Bldg 599 (631) 344-2350		
	Sta 1:	**Sta 3:**	
	Sta 2:	**Sta 4:**	

CHIEF OFFICERS		
5-20-30	Charles LaSalla	(631) 872-9268
5-20-31	Tim Kelly	(631) 767-9324
OTHER DEPARTMENT OFFICIALS		
5-20-50	Roy Barone	(631) 872-9261
5-20-51	Marcel Rosenfeld	(631) 767-0357
5-20-52	Allen Licata	(631) 872-5274
5-20-53	Mike Hickey	(631) 295-0057

EQUIPMENT

Apparatus ID	Unit Type	GPM	Tank Size	Special Equipment or Type
5-20-01	Ladder Truck	2000	300	95'Mid Mount
5-20-02	Engine	1500	500	700' 5" hose/TIC/fast pak
5-20-03	Brush Truck			300 Gallon 4x4 w/foam system
5-20-04	Rescue Truck			Confined space rescue & HazMat equip/heavy rescue/rope rescue
5-20-05	Command Post			Mobile command post
5-20-06	HazMat Trailer			Level A&B suits/decon equip/mitigation equip
5-20-07	F-450			Towing vehicle/small spill response
5-20-08	Spill Trailer			Speedy dry/absorb pads/socks/special absorb/major spill response
5-20-09	F-150			Patrol vehicle
5-20-10	Van			Passengers=8
5-20-11	Kubota			4WD for off road EMS
5-20-16	Ambulance			BLS
5-20-17	Ambulance			BLS

APPENDIX E.
WILDFIRE FIRE RISK AND HAZARD SEVERITY FORM
NFPA 1144

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Wildfire Fire Risk and Hazard Severity Form NFPA 1144

Means of Access						
Ingress and Egress	**Points**					
Two or more roads in and out	0					
One road in and out	7					
Road Width						
>24 feet	0					
>20 feet, <24 feet	2					
<20 feet	4					
Road Conditions						
Surfaced road, grade <5%	0					
Surfaced road, grade >5%	2					
Nonsurfaced road, grade <5%	2					
Nonsurfaced road, grade >5%	5					
Other than all season	7					
Fire Access						
<300 feet with turnaround	0					
>300 feet with turnaround	2					
<300 feet with no turnaround	4					
>300 feet with no turnaround	5					
Street Signs						
Present–reflective	0					
Present–nonreflective	2					
Not present	5					
Vegetation (fuel models)						
Predominant veg						
Light–1,2,3	5					
Medium–5,6,7,8,9	10					
Heavy–4,10	20					
Slash–11,12,13	25					
Defensible Space						
>100 feet around structure	1					
>70 feet, <100 feet around structure	3					
>30 feet, <70 feet around structure	10					
<30 feet around structure	25					
Topography within 300 Feet of Structures						
Slope						
<9%	1					
10% to 20%	4					
21% to 30%	7					
31% to 40%	8					
>41%	10					
Additional Rating Factors (rate all that apply)						
Additional Factors						
Topographic features	0–5					
History of high fire occurrence	0–5					
Severe fire weather potential	0–5					
Separation of adjacent structures	0–5					

Roofing Assembly						
Roofing						
Class A	0					
Class B	3					
Class C	15					
Unrated	25					
Building Construction						
Materials (predominant)						
Non-combustible siding, eaves, deck	0					
Non-combustible siding/combustible desk	5					
Combustible siding and deck	10					
Building Set-back						
>30 feet to slope	1					
<30 feet to slope	5					
Available Fire Protection						
Water Sources						
Hydrants 500 gpm, <1,000 feet apart	0					
Hydrants 250 gpm, <1,000 feet apart	1					
Nonpressurized, >250 gpm/2 hrs	3					
Nonpressurized, <250 gpm/2hrs	5					
Water unavailable	10					
Organized Response						
Station <5 miles from structure	1					
Station >5 miles from structure	3					
Fixed Fire Protection						
NFPA sprinkler system	0					
None	5					
Placement of Gas and Electric Utilities						
Utilities						
Both underground	0					
One above, one below	3					
Both above ground	5					

Totals for Home or Subdivision					

Hazard Rating Scale
<40 Low
>40 Moderate
>70 High
>112 Extreme

APPENDIX F.
EXAMPLE LIVESTOCK EVACUATION PLAN

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EXAMPLE LIVESTOCK EVACUATION PLAN TEMPLATE

ORGANIZATION

GENERAL PRINCIPALS

1. Designate holding area locations for large animals.
2. Receive written access on private property granted from residents.
3. Collect all data-phone, map, who to call, where to house/shelter animals, where to park trailers
4. Provide all above information to person in authority for evacuation.

A. Shelter Command Center Coordinator

1. Animal Control Officer will be the single point of contact for management decisions in responding to the needs of all animals during an emergency or disaster.
    - Ensure large animal corrals are in working order.
    - Provide support services for volunteers.
    - Maintain communication with Police, Fire Department, Mayor, Animal Control, volunteers and field animal shelter.
    - Coordinate volunteers sign in and tasks.
    - Communicate with media-radio, TV
2. Main Volunteer - If needed, Animal Control Officers shall designate a volunteer or volunteers, if required to help. That person will help implement the staging, opening of holding pens, coordinate volunteers.
    - Identify all animals with registration/intake form. A digital photo might be helpful.
        - Attach intake form to cage or pen.
    - Evaluate animal's immediate needs and carry out if possible.
    - Provide food and water.
    - Ensure safe and secure containment.
    - Euthanasia –coordinate with a veterinarian.
    - Assign all tasks including those of volunteers.

B. Set up staging area

1. Area for trailer personnel to gather and take directions as to which homes or areas they are to go to evacuate animals.
2. Have on board, the granting authority to gain access in a mandatory evacuation.

3. Have with trailers, tools, halters, and paper work to identify home/animals
4. Volunteers who remove animals from private property must leave notice as to where animals will be taken

C. Holding areas

1. Will be opened by Animal Control Officer
2. Small animal pens, crates shall be staged where they are visible to the volunteers
3. Will be staffed by on site volunteers
    - feed, water, pens, lights
4. Determine a veterinarian to be on call

D. Release Procedure

1. The [designated authority] has the authority to release animals
2. Owner must sign release form after providing proof of ownership
    - Owner's driver license or State ID
    - Proof of ownership (Animal Control to determine requirements)

E. Maintain list of volunteers who have trailers/list trailer capacity

F. Maintain list of large and small animal owners who agree to evacuation of their animals

G. Provide Training/Seminars

1. How to handle animals and how to transport animals during emergencies.

SHELTER SET-UP

GENERAL PRINCIPALS

1. Move the animals from danger to designated areas -if needed, in county and state facilities. If owners bring in their animals they are responsible for feeding and watering all their animals at the Field Shelter.
2. Set up a command center and ensure to establish contact and coordination of all intake and releases of animals.

A. Field Shelter

Checklist for set up of Field Shelter

Provide the following if required:

- Information Table
  - First stopping point for everyone entering the Field Shelter area. Volunteers at this location direct people to where they can get the services they need.
- Animal Intake Area
  - Where paperwork is completed on all incoming animals. The animals are identified and ID is placed on their stalls.
- Stalls, pens and crates
  - Where animals are housed until they are reclaimed. Areas must be designated for dogs, cats, livestock, and all other animals. Large animals shall be taken [Name of shelter/Arena] or other designated areas in the County. A large scale evacuation may require coordination and evacuation to county and state facilities.
- Medical Care
  - Where all animals are treated for minor injuries. Seriously injured animals may be treated elsewhere depending on available resources. It is especially important to keep animals suspected to have contagious diseases, separate from the rest of the population.
- Animal Care
  - Animal supplies are kept for the animals –Supplies should include feeding dishes, buckets, litter boxes, litter, scoops, manure forks, cages, halters and lead ropes , collars and identification tags, muzzles, leashes, newspaper, towels, blankets, tarps, trash bags and any other needed items.
  - Provide alfalfa or grass hay.
- Dead Animals
  - Dead animals must be kept in corrals until proper authorities can come to remove them. Cover large animals with tarps.
- Volunteer Information and Sign In
  - After volunteers report sign in, they should be assigned tasks.
- Rescue Equipment Storage-if available
  - Volunteers are responsible for providing their own "go kits". Go kits are defined as the equipment necessary to effect rescue and service in their specified area of expertise.
- Parking
  - Designated areas for volunteers and visitors to the Field Shelter. Effort should be made if possible, to not disturb adjacent residents or businesses.
- Human First Aid
  - First Aid should be provided by qualified personnel.
- Garbage Area
  - Designated area for bagged garbage until it is picked up by the proper authority.
- Volunteer Groups/Guidelines-Ensure that all volunteers are covered by liability insurance

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APPENDIX G.
FUNDING OPPORTUNITIES

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FUNDING OPPORTUNITIES

The following section provides information on funding opportunities for conducting wildfire mitigation projects.

I. Federal Funding Information

Source: Predisaster Mitigation Grant Program
Agency: Department of Homeland Security (DHS) Federal Emergency Management Agency (FEMA)
Website: http://www.fema.gov/government/grant/pdm/index.shtm
Description: The DHS includes FEMA and the U.S. Fire Administration. FEMA's Federal Mitigation and Insurance Administration is responsible for promoting predisaster activities that can reduce the likelihood or magnitude of loss of life and property from multiple hazards, including wildfire. The Disaster Mitigation Act of 2000 created a requirement for states and communities to develop predisaster mitigation plans and established funding to support the development of the plans and to implement actions identified in the plans. This competitive grant program, known as PDM, has funds available to state entities, tribes, and local governments to help develop multihazard mitigation plans and to implement projects identified in those plans.

Source: Funding for Fire Departments and First Responders
Agency: DHS, U.S. Fire Administration
Website: http://www.usfa.dhs.gov/fireservice/grants/
Description: Includes grants and general information on financial assistance for fire departments and first responders. Programs include the Assistance to Firefighters Grant Program, Reimbursement for Firefighting on Federal Property, State Fire Training Systems Grants, and National Fire Academy Training Assistance.

Source: Conservation Innovation Grants (CIG)
Agency: National Resource Conservation Service
Website: http://www.nm.nrcs.usda.gov/programs/cig/cig.html
Description: CIG State Component. CIG is a voluntary program intended to stimulate the development and adoption of innovative conservation approaches and technologies while leveraging federal investment in environmental enhancement and protection, in conjunction with agricultural production. Under CIG, Environmental Quality Incentives Program (EQIP) funds are used to award competitive grants to non-federal governmental or nongovernmental organizations, tribes, or individuals. CIG enables the Natural Resources Conservation Service (NRCS) to work with other public and private entities to accelerate technology transfer and adoption of promising technologies and approaches to address some of the nation's most pressing natural resource concerns. CIG will benefit agricultural producers by providing more options for environmental enhancement and compliance with federal, state, and local regulations. The NRCS administers the CIG program. The CIG requires a 50/50 match between the agency and the applicant. The CIG has two funding components: national and state. Funding sources are available for water resources, soil resources, atmospheric resources, and grazing land and forest health.

Source: Volunteer Fire Assistance
Agency: U.S. Forest Service
Website: http://www.fs.fed.us/fire/partners/vfa/
Description: U.S. Forest Service funding will provide assistance, through the states, to volunteer fire departments to improve communication capabilities, increase wildland fire management training, and purchase protective fire clothing and firefighting equipment. For more information, contact your state representative; contact information can be found on the National Association of State Foresters website.

Source: Catalog of Federal Funding Sources for Watershed Protection
Agency: N/A
Website: http://cfpub.epa.gov/fedfund/
Examples of the types of grants found at this site are:

- Native Plant Conservation Initiative: http://www.nfwf.org/AM/Template.cfm?Section=Browse_All_Programs&TEMPLATE=/CM/ContentDisplay.cfm&CONTENTID=3966
- Targeted Watershed Grants Program, http://www.epa.gov/owow/watershed/initiative/
- Predisaster Mitigation Program, http://www.fema.gov/government/grant/pdm/index.shtm
- Environmental Education Grants, http://www.epa.gov/enviroed/grants_contacts.html

Source: Firewise Communities
Agency: Multiple
Website: http://www.firewise.org
Description: The Wildland/Urban Interface Working Team (WUIWT) of the National Wildfire Coordinating Group is a consortium of wildland fire organizations and federal agencies responsible for wildland fire management in the United States. The WUIWT includes the U.S. Forest Service, Bureau of Indian Affairs, BLM, U.S. Fish and Wildlife Service, National Park Service, FEMA, U.S. Fire Administration, International Association of Fire Chiefs, National Association of State Fire Marshals, National Association of State Foresters, National Emergency Management Association, and National Fire Protection Association. Many different Firewise Communities activities are available help homes and whole neighborhoods become safer from wildfire without significant expense. Community cleanup days, awareness events, and other cooperative activities can often be successfully accomplished through partnerships among neighbors, local businesses, and local fire departments at little or no cost. The Firewise Communities recognition program page (http://www.firewise.org/usa) provides a number of excellent examples of these kinds of projects and programs.

The kind of help you need will depend on who you are, where you are, and what you want to do. Among the different activities individuals and neighborhoods can undertake, the following actions often benefit from some kind of seed funding or additional assistance from an outside source:

- Thinning/pruning/tree removal/clearing on private property—particularly on very large, densely wooded properties
- Retrofit of home roofing or siding to non-combustible materials
- Managing private forest
- Community slash pickup or chipping

- Creation or improvement of access/egress roads
- Improvement of water supply for firefighting
- Public education activities throughout the community or region

Some additional examples of what communities, counties, and states have done can be found in the National Database of State and Local Wildfire Hazard Mitigation Programs at http://www.wildfireprograms.usda.gov. You can search this database by keyword, state, jurisdiction, or program type to find information about wildfire mitigation education programs, grant programs, ordinances, and more. The database includes links to local websites and e-mail contacts.

Source: Ready-Set-Go Grants
Website: http://www.wildlandfirersg.org/
Description:
Mitigation Grants: The grants are awarded in quantities of up to $5,000 to assist departments and emergency service agencies in the purchase or rental of equipment or other costs to implement or enhance community fuels mitigation programs within their jurisdiction. Applications should be submitted by July 31, 2016.

Outreach Grants: The grants are awarded in quantities of up to $1,000 to assist departments and emergency service agencies with the cost of outreach materials and events to promote community wildfire readiness and preparedness. Applications should be submitted by July 31, 2016.

Source: The National Fire Plan (NFP)
Website: http://www.forestsandrangelands.gov/
Description: Many states are using funds from the NFP to provide funds through a cost-share with residents to help them reduce the wildfire risk to their private property. These actions are usually in the form of thinning or pruning trees, shrubs, and other vegetation and/or clearing the slash and debris from this kind of work. Opportunities are available for rural, state, and volunteer fire assistance.

Source: Staffing for Adequate Fire and Emergency Response (SAFER)
Agency: DHS
Website: http://www.firegrantsupport.com/safer/
Description: The purpose of SAFER grants is to help fire departments increase the number of frontline firefighters. The goal is for fire departments to increase their staffing and deployment capabilities and ultimately attain 24-hour staffing, thus ensuring that their communities have adequate protection from fire and fire-related hazards. The SAFER grants support two specific activities: (1) hiring of firefighters and (2) recruitment and retention of volunteer firefighters. The hiring of firefighters activity provides grants to pay for part of the salaries of newly hired firefighters over the five-year program. SAFER is part of the Assistance to Firefighters Grants and is under the purview of the Office of Grants and Training of the DHS.

Source: The Fire Prevention and Safety Grants (FP&S)
Agency: DHS
Website: http://www.firegrantsupport.com/fps/

Description: The FP&S are part of the Assistance to Firefighters Grants and are under the purview of the Office of Grants and Training in the DHS. FP&S offers support to projects that enhance the safety of the public and firefighters who may be exposed to fire and related hazards. The primary goal is to target high risk populations and mitigate high incidences of death and injury. Examples of the types of projects supported by FP&S include fire-prevention and public-safety education campaigns, juvenile fire-setter interventions, media campaigns, and arson prevention and awareness programs. In fiscal year 2005, Congress reauthorized funding for FP&S and expanded the eligible uses of funds to include firefighter safety research and development.

Source: Title III Rural School Funds
Agency: USDA Forest Service
Website: http://www.fs.usda.gov/main/pts/countyfunds
Description: The Secure Rural Schools Act (SRS Act) was reauthorized by section 524 of P.L. 114-10 and signed into law by the President on April 16, 2015. This reauthorization extended the date by which title III projects must be initiated to September 30, 2017, and the date by which title III funds must be obligated to September 30, 2018. Counties seeking funding under Title III must use the funds to perform work under the Firewise Communities program.

Counties applying for Title III funds to implement Firewise activities can assist in all aspects of a community's recognition process, including conducting or assisting with community assessments, helping the community create an action plan, assisting with an annual Firewise Day, assisting with local wildfire mitigation projects, and communicating with the state liaison and the national program to ensure a smooth application process. Counties that previously used Title III funds for other wildfire preparation activities such as the Fire Safe Councils or similar would be able to carry out many of the same activities as they had before. However, with the new language, counties would be required to show that funds used for these activities were carried out under the Firewise Communities program.

Source: Federal Excess Personal Property
Agency: USFS
Website: http://www.fs.fed.us/fire/partners/fepp/
Description: The Federal Excess Personal Property (FEPP) program refers to Forest Service-owned property that is on loan to State Foresters for the purpose of wildland and rural firefighting. Most of the property originally belonged to the Department of Defense (DoD). Once acquired by the Forest Service, it is loaned to State Cooperators for fire fighting purposes. The property is then loaned to the State Forester, who may then place it with local departments to improve local fire programs. State Foresters and the USDA Forest Service have mutually participated in the FEPP program since 1956.

Source: State Farm Safe Neighbors Grant
Agency: State Farm
Website: https://www.statefarm.com/about-us/community/education-programs/grants-scholarships/company-grants
Description: State Farm funding is directed at:

- Auto and roadway safety
- Teen Driver Education

- **Home safety and fire prevention**
- **Disaster preparedness**
- **Disaster recovery**

Source: DEC Volunteer Fire Assistance Grants
Agency: New York State Department of Environmental Conservation
Website: http://www.dec.ny.gov/regulations/2364.html
Description: The Volunteer Fire Assistance Grant program is funded by the U.S. Forest Service and administered by the New York Department of Environmental Conservation (The Department). The Department received an appropriation of more than $400,000 for the 2016 federal fiscal year. Fire departments eligible to apply may receive grant funding up to $1,500 for the purchase of firefighting equipment. Fire departments are required to equally match (50/50) the amount of the grant award. As an example, a fire department is required to spend up to $3,000 on the purchase of approved firefighting equipment in order to be reimbursed an equal grant amount up to $1,500. The application deadline is May 31, 2016.

Source: Rural Fire Assistance (RFA)
Agency: USDI – U.S. Fish and Wildlife Service
Website: http://www.nifc.gov/rfa.
Description: The RFA program provides funds for RFDs that Protect rural, wildland-urban interface communities; play a substantial cooperative role in the protection of federal lands; are cooperators with the Department of the Interior (USDI) managed lands through cooperative agreements with the USDI, or their respective state, tribe or equivalent; are less than 10,000 in population. The required cost share amount for the recipient RFD will not exceed 10 percent of the amount awarded. The RFD must demonstrate the capability to meet cost share requirements Cooperator contribution may be contributed as in-kind services. Cooperator contribution may exceed, but not amount to less than 10 percent. Examples of in-kind services may include but are not limited to: facility use incurred by and RFD for hosting training courses, travel and per diem costs incurred by an RFD when personnel attend training courses, and administration costs related to purchasing RFA equipment and supplies. Finding or in-kind resources may not be derived from other federal finding programs.

Source: New York Critical Infrastructure Grant Program
Agency: New York State Office of Homeland Security and Emergency Services
Website: **http://www.dhses.ny.gov/oct/**
Description: Grants are available to ensure that the New York State is providing tools and opportunities to support the vision and major mission areas of the New York State Homeland Security Strategy. This grant program supports three of the five mission areas: prevention, protection and mitigation. The grant funds actions to reduce the overall risk to critical infrastructure. Applicant must be coordinated with at least two agencies with prevention and/or protection responsibilities- law enforcement, fire department, emergency management and/or public works. Applicants situated in Suffolk County are eligible. Eligible applicants may request up to $50,000 which will be allocated competitively.

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APPENDIX H.
EXCERPT FROM THE LONG ISLAND PINE BARRENS PROTECTION ACT

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Excerpt from NY Environmental Conservation Law Article 57
Long Island Pine Barrens Maritime Reserve Act of 1990
as amended by the Long Island Pine Barrens Protection Act of 1993
and amended further as noted.

13. "Development" shall mean the performance of any building activity or mining operation, the making of any material change in the use or intensity of use of any structure or land and the creation or termination of rights of access or riparian rights. Without limitation, the following activities or uses shall be taken for the purposes of this article to involve development as defined in this subdivision:

    (a) a change in type of use of a structure or land or, if the ordinance or rule divides uses into classes, a change from one class of use designated in an ordinance or rule to a use in another class so designated;

    (b) a material increase in the intensity of use of land or environmental impacts as a result thereof;

    (c) commencement of mining, excavation or material alteration of grade or vegetation on a parcel of land excluding environmental restoration activities;

    (d) material alteration of a shore, bank or flood plain of a river, stream, lake, pond, or artificial body of water;

    (e) re-establishment of a use which has been abandoned for one year;

    (f) departure from the normal use for which development permission has been granted, or material failure to comply with the conditions of an ordinance, rule or order granting the development permission under which the development was commenced or is continued.

    The following operations or uses do not constitute development for the purposes of Article 57-0107(13):

    (i) public improvements undertaken for the health, safety or welfare of the public. Such public improvements shall be consistent with the goals and objectives of this article, and shall include, but not be limited to, maintenance of an existing road or railroad track;

    (ii) work by any utility not involving substantial engineering redesign for the purpose of inspection, maintenance or renewal on established utility rights-of-way or the likes, and any work pertaining to water supply for the residents of Suffolk county;

    (iii) work for the maintenance, renewal, replacement, reconstruction, improvement, or alteration of any existing structure or additions to an existing residence or residential property owned by an association formed for the common interest in real property;

    (iv) the use of any structure or land devoted to dwelling uses for any purposes customarily incidental and otherwise lawful;

(v) the use of any land for the purpose of agriculture or horticulture;

(vi) work by an utility performed for the purpose of public health, safety, or welfare and consistent with the goals and objectives of this article;

(vii) existing or expanded recreational use consistent with the purposes of this article including scouting activities, the maintenance or expansion of facilities associated with or necessary for such scouting activities including, but not limited to, the addition, modification, expansion or replacement of structures necessary for such activities and such clearing as may be reasonably required for the maintenance or expansion of scouting activities;

(viii) a change in use of land or structure from a use within a class specified in an ordinance or rule to another use in the same class;

(ix) residential development on any subdivision, residential clustered development, land division or site plan which has received preliminary or final approval on or before June first, nineteen hundred ninety- three, providing the lots to be built upon conform to the lot area requirements of the current zoning, are subject to the three year exemption contained in section two hundred sixty-five-a of the town law, or are subject to an exemption from an upzoning adopted by a town board;

(x) in the core preservation area, construction of one single family home and customary accessory uses thereto on those parcels identified in the comprehensive land use plan adopted by the commission in June of nineteen hundred ninety-five and as amended on February twenty-first, two thousand one;

(xi) in the compatible growth area, construction of single family homes and customary accessory uses thereto on any lot held on June 1, 1993 in ownership singly and separately from adjacent lots;

(xii) in the compatible growth area, continuation of existing non-conforming uses, and activities permitted by special permit or special exception, including renewals of said special permits or exceptions;

(xiii) in the compatible growth area, land divisions or subdivisions in the compatible growth area consisting of five or fewer residential lots which conform to the lot area requirement of the existing zoning for the subject parcel;

(xiv) in the compatible growth area, renovations, reconstructions, additions or extensions to existing commercial or industrial uses providing the addition or extension conforms to the uses permitted in the zoning district in which said parcel is located and which does not increase existing square footage by more than twenty-five percent; or

(xv) in the core preservation area, the state or public corporation projects on parcels identified in the comprehensive land use plan adopted by the commission in June of nineteen hundred ninety-five, as amended on February twenty-first, two thousand one and October twentieth, two thousand four.

Development as designated in an ordinance, rule, or development permit includes all other development customarily associated with it unless otherwise specified.

APPENDIX I.
HOMEOWNERS GUIDE

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RIDGE-MANORVILLE-CALVERTON CWPP HOMEOWNERS GUIDE

This guide has been developed to address site-specific information on wildfire for the Ridge, Manorville and Calverton communities. In public meetings and written comments, residents expressed a need for better information on reducing wildfire risk and what to do in the event of a wildfire. This document was developed to meet these expressed community needs, as well as to fulfill requirements for the Community Wildfire Protection Plan. This guide 1) suggests specific measures that can be taken by homeowners to reduce structure ignitability and 2) enhances overall preparedness in the planning area by consolidating preparedness information from several local agencies and departments. Homeowners need to check first with local Town, County and State agencies for ordinances and regulations related to vegetation clearing restrictions, before clearing and removing vegetation to create a defensible space around a structure.

BEFORE THE FIRE—PROTECTION AND PREVENTION

REDUCING STRUCTURE IGNITABILITY

Structural Materials

Roofing—The more fire-resistant the roofing material, the better. The roof is the portion of the house that is most vulnerable to ignition by falling embers, known as firebrands. Metal roofs afford the best protection against ignition from falling embers. Slate or tile roofs are also non-combustible, and Class-A asphalt shingles are recommended as well. The most dangerous type of roofing material is wood shingles. Removing debris from roof gutters and downspouts at least twice a year will help to prevent fire, along with keeping them functioning properly.

Siding—Non-combustible materials are ideal for the home exterior. Preferred materials include stucco, cement, block, brick, and masonry.

Windows—Double-pane windows are most resistant to heat and flames. Smaller windows tend to hold up better within their frames than larger windows. Tempered glass is best, particularly for skylights, because it will not melt as plastic will.

Fencing and trellises—Any structure attached to the house should be considered part of the house. A wood fence or trellis can carry fire to your home siding or roof. Consider using nonflammable materials or use a protective barrier such as metal or masonry between the fence and the house.

If you are designing a new home or remodeling your existing one, do it with fire safety as a primary concern. Use nonflammable or fire resistant materials and have the exterior wood treated with UL-approved fire-retardant chemicals. More information on fire-resistant construction can be found at http://www.firewise.org.

SCREEN OFF THE AREA BENEATH DECKS AND PORCHES

The area below an aboveground deck or porch can become a trap for burning embers or debris, increasing the chances of the fire transferring to your home. Screen off the area using screening with openings no larger than one-half inch. Keep the area behind the screen free of all leaves and debris.

FIREWOOD, KINDLING, AND OTHER FLAMMABLES

Although convenient, stacked firewood on or below a wooden deck adds fuel that can feed a fire close to your home. Be sure to move all wood away from the home during fire season. Stack all firewood uphill, at least 30 feet and preferably 100 feet from your home.

When storing flammable materials such as paint, solvents, or gasoline, always store them in approved safety containers away from any sources of ignition such as hot water tanks or furnaces. The fumes from highly volatile liquids can travel a great distance after they turn into a gas. If possible, store the containers in a safe, separate location away from the main house.

CHIMNEYS AND FIREPLACE FLUES

Inspect your chimney and damper at least twice a year and have the chimney cleaned every year before first use. Have the spark arrestor inspected and confirm that it meets the latest safety code. Your local fire department will have the latest edition of National Fire Prevention Code 211 covering spark arrestors. Make sure to clear away dead limbs from within 15 feet of chimneys and stovepipes

FIREPLACE AND WOODSTOVE ASHES

Never take ashes from the fireplace and put them into the garbage or dump them on the ground. Even in winter, one hot ember can quickly start a grass fire. Instead, place ashes in a metal container, and as an extra precaution, soak them with water. Cover the container with its metal cover and place it in a safe location for a couple of days. Then either dispose of the cold ash with other garbage or bury the ash residue in the earth and cover it with at least 6 inches of mineral soil.

PROPANE TANKS

Your propane tank has many hundreds of gallons of highly flammable liquid that could become an explosive incendiary source in the event of a fire. The propane tank should be located at least 30 feet from any structure. Keep all flammables at least 10 feet from your tank. Learn how to turn the tank off and on. In the event of a fire, you should turn the gas off at the tank before evacuating, if safety and time allow.

SMOKE ALARMS

A functioning smoke alarm can help warn you of a fire in or around your home. Install smoke alarms on every level of your residence. Test and clean smoke alarms once a month and replace batteries at least once a year. Replace smoke alarms once every 10 years.

FIRE-SAFE BEHAVIOR

- If you smoke, always use an ashtray in your car and at home.
- Store and use flammable liquids properly.
- Keep doors and windows clear as escape routes in each room.

DEFENSIBLE SPACE

The removal of dense, flammable foliage from the area immediately surrounding the house reduces the risk of structure ignition and allows firefighters access to protect the home. The pruning and limbing of trees along with the selective removal of trees and shrubs is recommended to create a minimum defensible space area of 30 feet. Steep slopes require increased defensible space because fire can travel quickly uphill.

Within the minimum 30-foot safety zone, plants should be limited to fire-resistant trees and shrubs. Focus on fuel breaks such as concrete patios, walkways, rock gardens, and irrigated garden or grass areas within this zone. Use mulch sparingly within the safety zone, and focus use in areas that will be watered regularly. In areas such as turnarounds and driveways, nonflammable materials such as gravel are much better than wood chips or pine needles.

Vegetative debris such as dead grasses or leaves provide important erosion protection for soil but also may carry a surface fire. It is simply not feasible to remove all the vegetative debris from around your property. However, it is a good idea to remove any accumulations within the safety zone and extending out as far as possible. This is particularly important if leaves tend to build up alongside your house or outbuildings. Removing dead vegetation and leaves and exposing bare mineral soil are recommended in a 2-foot-wide perimeter along the foundation of the house. Also, be sure to regularly remove all dead vegetative matter including grasses, flowers, and leaf litter surrounding your home and any debris from gutters, especially during summer months. Mow the lawn regularly and promptly dispose of the cuttings properly. If possible, maintain a green lawn for 30 feet around your home.

All trees within the safety zone should have lower limbs removed to a height of 6–10 feet. Remove any branches within 15 feet of your chimney or overhanging any part of your roof. Ladder fuels are short shrubs or trees growing under the eaves of the house or under larger trees. Ladder fuels carry fire from the ground level onto the house or into the tree canopy. Be sure to remove all ladder fuels within the safety zone first. The removal of ladder fuels within about 100 feet of the house will help to limit the risk of crown fire around your home. More information about defensible space is provided at http://www.firewise.org.

FIRE RETARDANTS

For homeowners who would like home protection beyond defensible space and fire-resistant structural materials, fire-retardant gels and foams are available. These materials are sold with various types of equipment for applying the material to the home. They are similar to the substances applied by firefighters in advance of wildfire to prevent ignition of homes. Different products have different timelines for application and effectiveness. The amount of product needed is based on the size of the home, and prices may vary based on the application tools. Prices range from a few hundred to a few thousand dollars. An online search for "fire blocking

gel" or "home firefighting" will provide a list of product vendors. Residents should research and consider environmental impacts of chemicals.

ADDRESS POSTING

Locating individual homes is one of the most difficult tasks facing emergency responders. Every home should have the address clearly posted with numbers at least three inches high. The colors of the address posting should be contrasting or reflective. The address should be posted so that it is visible to cars approaching from either direction.

ACCESS

Unfortunately, limited access may prevent firefighters from reaching many homes in the planning area. Many of the access problems occur at the property line and can be improved by homeowners. First, make sure that emergency responders can get in your gate. This may be important not only during a fire but also to allow access during any other type of emergency response. If you will be gone for long periods during fire season, make sure a neighbor has access, and ask them to leave your gate open in the event of a wildfire in the area.

Ideally, gates should swing inward. A chain or padlock can be easily cut with large bolt cutters, but large automatic gates can prevent entry. Special emergency access red boxes with keys are sold by many gate companies but are actually not recommended by emergency services. The keys are difficult to keep track of and may not be available to the specific personnel that arrive at your home. An alternative offered by some manufacturers is a device that opens the gate in response to sirens. This option is preferred by firefighters but may be difficult or expensive to obtain.

Beyond your gate, make sure your driveway is uncluttered and at least 12 feet wide. The slope should be less than 10%. Trim any overhanging branches to allow at least 13.5 feet of overhead clearance. Also make sure that any overhead lines are at least 14 feet above the ground. If any lines are hanging too low, contact the appropriate phone, cable, or power company to find out how to address the situation.

If possible, consider a turnaround within your property at least 45 feet wide. This is especially important if your driveway is more than 300 feet in length. Even small fire engines have a hard time turning around and cannot safely enter areas where the only means of escape is by backing out. Any bridges must be designed with the capacity to hold the weight of a fire engine.

NEIGHBORHOOD COMMUNICATION

It is important to talk to your neighbors about the possibility of wildfire in your community. Assume that you will not be able to return home when a fire breaks out and may have to rely on your neighbors for information and assistance. Unfortunately, it sometimes takes tragedy to get people talking to each other. Don't wait for disaster to strike. Strong communication can improve the response and safety of every member of the community.

PHONE TREES

Many neighborhoods use phone trees to keep each other informed of emergencies within and around the community. The primary criticism is that the failure to reach one person high on the tree can cause a breakdown of the system. However, if you have willing and able neighbors, particularly those that are at home during the day, the creation of a well-planned phone tree can often alert residents to the occurrence of a wildfire more quickly than media channels. Talk to your neighborhood association about the possibility of designing an effective phone tree.

NEIGHBORS IN NEED OF ASSISTANCE

Ask mobility-impaired neighbors if they have notified emergency responders of their specific needs. It is also a good idea for willing neighbors to commit to evacuating a mobility-impaired resident in the event of an emergency. Make sure that a line of communication is in place to verify the evacuation.

ABSENTEE OWNERS

Absentee owners are often not in communication with their neighbors. If a home near you is unoccupied for large portions of the year, try to get contact information for the owners from other neighbors or your neighborhood association. Your neighbors would probably appreciate notification in the event of an emergency. Also, you may want to contact them to suggest that they move their woodpile or make sure that the propane line to the house is turned off.

HOUSEHOLD EMERGENCY PLAN

A household emergency plan does not take much time to develop and will be invaluable in helping your family deal with an emergency safely and calmly. One of the fundamental issues in the event of any type of emergency is communication. Be sure to keep the phone numbers of neighbors with you rather than at home.

It is a good idea to have an out of state contact, such as a family member. When disaster strikes locally, it is often easier to make outgoing calls to a different area code than local calls. Make sure everyone in the family has the contact phone number and understands why they need to check in with that person in the event of an emergency. Also, designate a meeting place for your family. Having an established meeting site helps to ensure that family members know where to go, even if they can't communicate by phone.

CHILDREN

Local schools have policies for evacuation of students during school hours. Contact the school to get information on how the process would take place and where the children would likely go.

The time between when the children arrive home from school and when you return home from work is the most important timeframe that you must address. Fire officials must clear residential areas of occupants to protect lives and to allow access for fire engines and water drops from airplanes or helicopters. If your area is evacuated, blockades may prevent you from returning home to collect your children. It is crucial to have a plan with a neighbor for them to pick up your children if evacuation is necessary.

PETS AND LIVESTOCK

Some basic questions about pets and livestock involve whether you have the ability to evacuate the animals yourself and where you would take them. Planning for the worst-case scenario may save your animals. An estimated 90% of pets left behind in an emergency do not survive. Don't expect emergency service personnel to prioritize your pets in an emergency. Put plans in place to protect your furry family members.

PETS

Assemble a pet disaster supply kit and keep it handy. The kit should contain a three-day supply of food and water, bowls, a litter box for cats, and a manual can opener if necessary. It is also important to have extra medication and medical records for each pet. The kit should contain a leash for each dog and a carrier for each cat. Carriers of some kind should be ready for birds and exotic pets. In case your pet must be left at a kennel or with a friend, also include an information packet that describes medical conditions, feeding instructions, and behavioral problems. A photo of each pet will help to put the right instructions with the right pet.

In the event of a wildfire you may be prevented from returning home for your animals. Talk to your neighbors and develop a buddy system in case you or your neighbors are not home when fire threatens. Make sure your neighbor has a key and understands what to do with your pets should they need to be evacuated.

If you and your pets were evacuated, where would you go? Contact friends and family in advance to ask whether they would be willing to care for your pets. Contact hotels and motels in the area to find out which ones accept pets. Boarding kennels may also be an option. Make sure your pets' vaccinations are up-to-date if you plan to board them.

Once you have evacuated your pets, continue to provide for their safety by keeping them cool and hydrated. Try to get your pets to an indoor location rather than leaving them in the car. Do not leave your pets in your vehicle without providing shade and water. It is not necessary to give your pets water while you are driving, but be sure to offer water as soon as you reach your destination.

LIVESTOCK

Getting livestock out of harm's way during a wildfire is not easy. You may not be able or allowed to return home to rescue your stock during a wildfire evacuation. Talk to your neighbors about how you intend to deal with an evacuation. If livestock are encountered by emergency responders, they will be released and allowed to escape the fire on their own. Make sure your livestock have some sort of identification. Ideally, your contact information should be included on a halter tag or ear tag so that you could be reached if your animal is encountered.

If you plan to evacuate your livestock, have a plan in place for a destination. Talk to other livestock owners in the area to find out whether they would be willing to board your stock in the event of an emergency. Often in large-scale emergencies, special

accommodations can be made at fair and rodeo grounds, but personal arrangements may allow you to respond more quickly and efficiently.

If you do not own a trailer for your horses or other livestock, talk to a neighbor who does. Find out whether they would be willing to assist in the evacuation of your animals. If you do own a trailer, make sure it is in working condition with good, inflated tires and functioning signal lights. Keep in mind that even horses that are accustomed to a trailer may be difficult to load during an emergency. Practicing may be a good idea to make sure your animals are as comfortable as possible when being loaded into the trailer.

HOUSE AND PROPERTY

Insurance companies suggest that you make a video that scans each room of your house to help document and recall all items within your home. This video can make replacement of your property much easier in the unfortunate event of a large insurance claim. See more information on insurance claims in the "After the Fire" section below.

PERSONAL ITEMS

During fire season, items you would want to take with you during an evacuation should be kept in one readily accessible location. As an extra precaution, it may be a good idea to store irreplaceable mementos or heirlooms away from your home during fire season.

It is important to make copies of all important paperwork, such as birth certificates, titles, and so forth, and store them somewhere away from your home, such as in a safe deposit box. Important documents can also be protected in a designated firesafe storage box within your home.

IN THE EVENT OF A FIRE

NOTIFICATION

In the event of a wildfire, announcements from the local Emergency Management office will be broadcast over local radio and television stations. Media notification may be in the form of news reports or the Emergency Alert System (EAS). On television, the emergency management message will scroll across the top of the screen on local channels. The notice is not broadcast on non-local satellite and cable channels.

One good way to stay informed about wildfire is to use a National Oceanic and Atmospheric Administration weather alert radio. The radios can be purchased at most stores that carry small appliances, such as Target, Sears, or Radio Shack. The radio comes with instructions for the required programming to tune the radio to your local frequency. The programming also determines the types of events for which you want to be alerted. The weather alert radio can be used for any type of large incident (weather, wildfire, hazardous materials, etc.), depending on how it is programmed. Local fire personnel can assist with programming if needed.

WHEN FIRE THREATENS

Before an evacuation order is given for your community, there are several steps you can take to make your escape easier and to provide for protection of your home. When evaluating what to do as fire threatens, the most important guideline is: DO NOT JEOPARDIZE YOUR LIFE.

Back your car into the garage or park it in an open space facing the direction of escape. Shut the car doors and roll up the windows. Place all valuables that you want to take with you in the vehicle. Leave the keys in the ignition or in another easily accessible location. Open your gate.

Close all windows, doors, and vents, including your garage door. Disconnect automatic garage openers and leave exterior doors unlocked. Close all interior doors as well.

Move furniture away from windows and sliding glass doors. If you have lightweight curtains, remove them. Heavy curtains, drapes, and blinds should be closed. Leave a light on in each room.

Turn off the propane tank or shut off gas at the meter. Turn off pilot lights on appliances and furnaces.

Move firewood and flammable patio furniture away from the house or into the garage.

Connect garden hoses to all available outdoor faucets and make sure they are in a conspicuous place. Turn the water on to "charge," or fill your hoses and then shut off the water. Place a ladder up against the side of the home, opposite the direction of the approaching fire, to allow firefighters easy access to your roof.

EVACUATION

When evacuation is ordered, you need to go ***immediately***. Evacuation not only protects lives, it also helps to protect property. Some roads are too narrow for two-way traffic, especially with fire engines. Fire trucks often can't get into an area until the residents are out. Also, arguably the most important tool in the WUI toolbox is aerial attack. Airplanes and helicopters can be used to drop water or retardant to help limit the spread of the fire, but these resources cannot be used until the area has been cleared of civilians.

Expect emergency managers to designate a check-out location for evacuees. This process helps to ensure that everyone is accounted for and informs emergency personnel as to who may be remaining in the community. Every resident should check out at the designated location before proceeding to any established family meeting spot.

A light-colored sheet closed in the front door serves as a signal to emergency responders that your family has safely left. This signal saves firefighters precious time, as it takes 12–15 minutes per house to knock on each door and inform residents of the evacuation.

AFTER THE FIRE

RETURNING HOME

First and foremost, follow the advice and recommendations of emergency management agencies, fire departments, utility companies, and local aid organizations regarding activities following the wildfire. Do not attempt to return to your home until fire personnel have deemed it safe to do so.

Even if the fire did not damage your house, do not expect to return to business as usual immediately. Expect that utility infrastructure may have been damaged and repairs may be necessary. When you return to your home, check for hazards, such as gas or water leaks and electrical shorts. Turn off damaged utilities if you did not do so previously. Have the fire department or utility companies turn the utilities back on once the area is secured.

INSURANCE CLAIMS

Your insurance agent is your best source of information as to the actions you must take in order to submit a claim. Here are some things to keep in mind. Your insurance claim process will be much easier if you photographed your home and valuable possessions before the fire and kept the photographs in a safe place away from your home. Most if not all of the expenses incurred during the time you are forced to live outside your home could be reimbursable. These could include, for instance, mileage driven, lodging, and meals. Keep all records and receipts. Don't start any repairs or rebuilding without the approval of your claims adjuster. Beware of predatory contractors looking to take advantage of anxious homeowners wanting to rebuild as quickly as possible. Consider all contracts very carefully, take your time to decide, and contact your insurance agent with any questions. If it appears to be a large loss, consider whether you should hire a public adjuster that is licensed by the state department of insurance who will represent and advocate for you as the policyholder in appraising and negotiating the claimant's insurance claim to ensure you get the best outcome and recovery from your insurance company. Most public adjusters charge a small percentage of the settlement that is set by the state and primarily they appraise the damage, prepare an estimate and other claim documentation, read the policy of insurance to determine coverages, and negotiate with the insurance company's claims handler.

POST-FIRE REHABILITATION

Homes that may have been saved in the fire may still be at risk from flooding and debris flows. Burned Area Emergency Rehabilitation (BAER) teams are inter-disciplinary teams of professionals who work to mitigate the effects of post-fire flooding and erosion. These teams often work with limited budgets and manpower. Homeowners can assist the process by implementing treatments on their own properties as well as volunteering on burned public lands to help reduce the threat to valuable resources. Volunteers can assist BAER team members by planting seeds or trees, hand mulching, or helping to construct straw-bale check dams in small drainages.

Volunteers can help protect roads and culverts by conducting storm patrols during storm events. These efforts dramatically reduce the costs of such work as installing trash racks, removing culverts, and re-routing roads.

Community volunteers can also help scientists to better understand the dynamics of the burned area by monitoring rain gauges and monitoring the efficacy of the installed BAER treatments.