



BRISTOL



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Community Resilience Building Summary of Findings

June 2023



City of Bristol, Connecticut

Community Resilience Building

Summary of Findings

Overview

The need for municipalities, regional planning organizations, academic institutions, corporations, states, and federal agencies to increase resilience to extreme weather events and a changing climate is strikingly evident amongst communities across the state of Connecticut. Relatively recent events such as Super Storm Sandy, severe winter storms (2013 & 2015), COVID-19 pandemic, and Tropical Storm Isaias have reinforced this urgency and compelled leading communities like the City of Bristol to proactively collaborate on planning and mitigating risks. Ultimately, this type of leadership is to be commended because it will reinforce the strengths and reduce the vulnerability of people, infrastructure, and ecosystems and serve as a model for other communities in Connecticut, New England, and the nation.

Recently, the City of Bristol embarked on certification with Sustainable CT. As part of that certification, The Nature Conservancy (TNC) and Sustainable CT provided the City with a community-driven process to assess current hazard and climate change impacts and to generate prioritized solutions to improve resilience and sustainability. In June 2023, Bristol's Core Team helped organize a Community Resilience Building workshop facilitated by TNC in partnership with Sustainable CT and Second Nature. The core directive of this effort was the engagement with and between community members to define strengths and vulnerabilities and the development of agreeable, priority resilience actions for the City of Bristol.

The Bristol Community Resilience Building Workshop's central objectives were to:

- Define top local, natural, and climate-related hazards of concern.
- Identify existing and future strengths and vulnerabilities.
- Identify and prioritize actions for the City.
- Identify opportunities to collaboratively advance actions to increase resilience in accord with residents and organizations from across the City, and beyond.

The City of Bristol employed an “anywhere at any scale”, community-driven process called Community Resilience Building (CRB) (www.CommunityResilienceBuilding.org). The CRB’s tools, reports, other relevant planning documents, and local maps were integrated into the workshop process to provide both decision-support and visualization around shared issues and existing priorities across Bristol. The Bristol Plan of Conservation and Development (2015) and the Naugatuck Valley Council of Governments Hazard Mitigation Plan Update – Bristol Annex (2021) were particularly instructive as references. Using the CRB process - rich with information, experience, and dialogue - the participants produced the findings presented in this summary report. This Summary of Findings includes an overview of the top hazards, current concerns and challenges, existing strengths, and proposed actions to improve Bristol’s resilience to hazards and climate change today, and in the future.

The Summary of Findings transcribed in this report, like any that concern the evolving nature of risk assessment and associated action, is proffered for comments, corrections, and updates from workshop attendees and other stakeholders alike. The leadership displayed by the City of Bristol on community resilience building will benefit from the continuous participation of all those concerned.

Summary of Findings

Top Hazards and Vulnerable Areas for the Community

Prior to the CRB Workshop, the Bristol CRB Core Team identified the top hazards for the City. The hazards of greatest concern included extreme weather events (hot and cold), hurricanes and tropical storms, and flooding from rivers and streams as well as from stormwater runoff. Additional hazards highlighted by participants during the CRB workshop included drought, infectious disease outbreaks resulting in public health emergencies, and Nor’easters and blizzards during the fall and spring months. These hazards have direct and increasing impacts on the infrastructure, environment, and residents of and visitors to Bristol. These effects are seen in residential areas, natural areas (rivers, streams, wetlands, parks, preserves), roads, bridges, businesses, public transportation, municipal facilities, churches, social support services, health care systems, arts and culture, and other critical infrastructure and community assets within Bristol.

Current Concerns and Challenges Presented by Hazards

The City of Bristol has several concerns and faces multiple challenges related to the impacts of natural hazards and climate change. In the last decade, Bristol has experienced a series of highly disruptive and damaging weather events including Tropical Storm Irene (August 2011), Storm Alfred (October 2011), Super Storm Sandy (October 2012), winter Nor'easter Nemo (February 2013), Tropical Storm Isaias (July 2020), and other less impactful but more frequent events. Impacts from Irene included inland flooding with wind damage. Sandy caused additional inland flooding across low lying portions of Bristol. Storms Alfred and Nemo respectively dropped several feet of snow on the City knocking out power and isolating residents and neighborhoods for periods of 72 hours or more. The magnitude and intensity of these events and others across Connecticut have increased awareness of natural hazards and climate change, while motivating communities such as Bristol to proactively improve their overall resilience.

This series of extreme weather events demonstrates that the impacts from hazards are diverse. In Bristol this ranges from riverine flooding of critical infrastructure, bridges, roads, and low-lying areas; localized flooding from stormwater runoff during intense storms and heavy precipitation events; road closures due to flooding; and property damage from trees, wind, snow, and ice. Longer periods of elevated heat, particularly in July and August, have raised concerns about vulnerable segments of the population including elderly, disabled, and/or isolated residents. The combination of these issues presents a challenge to preparedness and mitigation priorities and requires comprehensive, yet tailored actions for various locations and/or areas across the City of Bristol.

The workshop participants were generally in agreement that Bristol is experiencing more intense and frequent storm events and heat waves. Additionally, there was a general concern about the increasing challenges of being prepared for the worst-case scenarios (e.g., major thunderstorms and hurricanes (Cat-3 or above)) particularly in the late summer and in the fall/winter months when more intense storms coincide with colder weather (i.e., snow/ice storms, Nor'easters, blizzards). The impact of the current COVID-19 pandemic was raised by workshop participants as well.

Specific Categories of Concerns and Challenges

As in any community, Bristol is not uniformly vulnerable to hazards and climate change. Certain locations, assets, and populations have been and will be affected to a greater degree than others. Workshop participants identified the following items as their community's key areas of concern and challenges across several broad categories.

Municipal Functions, Operations, & Growth:

- High quality and dedicated services available for the unhoused population in the City results in adjoining municipalities redirecting individuals in need to Bristol, causing even greater strain on Bristol's existing support systems and networks.
- Aging demographic places more and more pressure on City departments and associated non-profit organizations.
- Ever-increasing demand for affordable housing that outstrips availability results in long waiting lists with the Bristol Housing Authority. This situation was exacerbated by the COVID-19 pandemic.
- Bristol has two population census tracks that are in the 93rd and 94th percentile for asthma rates coupled with high percentiles for low income and life expectancy.
- Concerns about the impacts on air quality due to the location of the Covanta waste to energy plant located in Bristol although the plant does provide economic benefit to the City from revenue generated.
- Growing frustration regarding the less than adequate cell phone coverage across Bristol amongst an increasing number of residents and business owners.
- City has over 900 acres of agricultural fields and grasslands that are vulnerable to drought conditions.
- Bristol-Burlington Health District (BBHD) is struggling due to the lack of access to equipment and financial limitations to conduct tasks that the Connecticut Department of Energy and Environmental Protection (DEEP) used to fulfill before reducing services such as air quality testing as well as tests to determine the level of chemical and radioactive exposure among residents. BBHD would rather do the testing in-house if equipment could be provided versus having to contract out to private companies to handle public health and safety situations.
- Mental health issues are a significant challenge across all demographics in the City.
- Homelessness issues are both chronic and short term due to condemnation of housing because of code violations resulting in evictions.
- Veteran population is higher in Bristol than in other comparable cities.

Specific Categories of Concerns and Challenges (cont'd)

- Opioid and overall substance abuse issues are on the rise including overdose situation among residents and non-residents in Bristol.
- High percentage of the residents in Bristol are senior citizens who have associated concerns about health and safety especially during weather events when family and social networks may be inaccessible.
- Significant non-English speaking populations in Bristol.
- Despite ongoing revitalization of the downtown area, there are limited attractions to help capture economic and social benefits to residents and visitors.
- Transportation for senior citizens is limited with options such as Dial-a-Ride that only provide (for a fee) transportation within the city limits, which can be an issue if residents have doctor's appointments outside of the City.
- Reluctance from the business community and individual owners to develop business continuity plans to assist with recovery efforts after major disasters. Small businesses do not have the capacity to work on developing continuity plans.
- New convention center and hotel are getting very little to no publicity.
- Handicapped seniors with mobility issues have trouble getting to and from services because of difficulties finding transportation. Ride services such as Uber will often decline rides to these individuals.

Emergency Management & Preparedness:

- Many critical facilities in Bristol (e.g., Fire Station #5) have antiquated (greater than 10 years old) and minimal back-up emergency power generation capacity.
- Recent major storm events have resulted in power loss and cell phone service interruptions that have impacted the ability of staff to respond in a coordinated way to provide services plus associated impacts to transportation networks.
- Thirty-two repetitive loss properties within the City of Bristol.
- October Nor'easters have the proven ability to block or retard access to the hospital and main highways which can present a life-or-death scenario during times of major storms.
- Recent tornado had a significant impact on property within the specific area impacted.
- Cell tower was compromised during Storm Isaias leaving emergency managers and Department of Transportation officials with only radio devices to communicate which created a great deal of confusion and miscommunication during response efforts.

Specific Categories of Concerns and Challenges (cont'd)

- Concerns about the Bristol Library losing power and the impacts that would have on the community given that the facility does not currently have alternative back-up power generation capability.
- City awaiting updates to the Federal Emergency Management Agency's (FEMA) flood maps which may result in an expansion or shifting of the special flood hazard areas. This may result in the need for additional homeowners to acquire national flood insurance, which may cause a public outcry about the expense of flood insurance.
- Flooding can and has cut off the southern side of the City from the northern end which requires the pre-placement of emergency services and equipment within the southern side to ensure adequate emergency responses for residents.
- Lack of fire hydrants in the upper end of Route 6 and Cedar Lake Area. Mutual aid agreements are in place for fire suppression but is not a permanent solution in this area.
- Ongoing challenges with finding additional volunteers for the Bristol Citizens Emergency Response Team (CERT).
- Reliance on technology to relay emergency information places those with internet and social media challenges at a disadvantage with possible life-threatening consequences.
- Local newspapers have become less available and visible within the community which has impacted seniors who traditionally rely on this type of media to receive and share information.
- The age of residents utilizing the emergency shelters is shifting upwards to people in their 70s with 8-11 evictions happening per week in Bristol. The cost of rent for available units is rapidly becoming unaffordable for seniors living solely on social security income. Waiting lists for housing options are increasing as well with close to a ten year wait for Section 8 housing.
- Downtown area of Bristol is within the FEMA 100-year flood zone.
- High cost of clean up after emergency events is having an impact on operating budgets across various departments in the City.
- Impacts to the City from the 1955 floods serve as a stark reminder of the potential magnitude of damage from major storms and a benchmark for emergency management planning.
- Flood insurance costs continue to increase placing additional financial burdens on working families with homes located in high-risk areas.

Specific Categories of Concerns and Challenges (cont'd)

Roads, Bridges, Road Networks, & Dams:

- Thirty-one dams in Bristol with three rated as “significant high hazard” dams (Reservoir #1, Jalcan Lake Dam, Page Park Dam) with a high probability of impacts to downstream critical facilities in the event of catastrophic failure.
- Flooding of state and municipal roads is a very notable and ongoing issue, particularly for roadways adjoining the Pequabuck River.
- Concerns exist about routine and ongoing flooding at Rockwell Park, Memorial Boulevard, Broad Street, King Street, and the intersection of Middle Street and King Street, among other locations in Bristol.
- Inability to raise the new bridge elevation to help mitigation flooding on two bridges on Fredrick Street and Louisiana Avenue. The City was unable to navigate the regulatory process – particularly from the Army Corps of Engineers - to allow for greater bridge elevation to accommodate higher floods so the City had to rebuild the two bridges at the same elevation as previous.

Stormwater System, Waste Systems, & Drinking Water Supply:

- Relatively high amounts of impervious surfaces across Bristol, which can result in increased volumes of stormwater runoff in certain areas.

Watersheds, Wetlands, Rivers, Open Space, & Trees:

- Stream and river inspection surveys for river blockages and flooding issues have revealed encampments with people effectively living in high hazard areas directly along waterways known to experience flooding.
- Concerns about the likely impacts to businesses from flooding along the Pequabuck River as well as the release of manufacturing and industrial chemicals and contaminants into local waterways.
- Significant deposition of sediment in rivers from upstream erosion resulting in less storage capacity in the river of flood waters which increases flooding of adjoining streets, homes, and businesses.
- Ongoing access challenges for residents into and around public parks due to mobility issues prevalent among seniors.

Current Strengths and Assets

Just as certain locations, facilities, and populations in Bristol stand out as particularly vulnerable to the effects of hazards and climate change, other features are notable assets for Bristol's resilience building. Workshop participants identified the following items as their community's key strengths and expressed interest in centering them as the core of future resilience building actions.

Municipal Functions, Operations, & Growth:

- Clearly, the responsive and committed engagement exhibited by leadership, staff, volunteers, and residents is a very appreciated strength within and across Bristol. Ongoing collaboration between municipal staff, committee/commission/board volunteers, business community, faith-based organizations, non-profit organizations, adjoining municipalities, Council of Governments, and various state-wide organizations (i.e., Sustainable CT, The Nature Conservancy), among others, on priorities identified herein will help advance comprehensive, cost-effective, community resilience-building actions.
- Community was repeatedly described as one that pulls together in times of need and helps one another (i.e., "All Heart City")
- Strong network of interconnected non-profit and faith-based organizations across Bristol that routinely assist as well as in times of community crisis. Networks provide food, shelter, and comfort for community members in need.
- Committed engagement by Bristol's leadership in the Naugatuck Valley Council of Governments work and planning for the region.
- Ongoing renovation of City Hall with Police Station upgrades next in line which speaks to the emphasis by the City on upkeep and improvements of critical facilities.
- High quality municipal services provided to residents which represents a great deal of value for the amount of taxes collected.
- Redevelopment project underway to bring mixed retail/residential opportunities to the downtown area (Central Square).
- Active Boards and Commissions in Bristol with routine and full participation by community volunteers.

Current Strengths and Assets (cont'd)

- Low impact development regulations created and enforced that decrease the impact of development and help to increase the amount of affordable housing in Bristol.
- City website has tools for residents to report issues that are then reviewed by and responded to by city staff including illegal littering, park issues, and street sign installation requests, among others. Tools help to inform city staff about issues important for the communities served.
- Lake Compounce and ESPN are community assets in Bristol that attract tourists and provide local employment opportunities.
- Little league tournaments bring people into Bristol which provide economic benefits and is a source of pride for residents.
- Ongoing educational programs offered by the City to younger kids about recycling and the use of green stormwater management approaches such as rain gardens.
- Municipal Center, Town Hall, Senior Center, and Library were all important facilities during the COVID-19 pandemic including vaccination stations and as meeting places that assisted with the exchange of timely and important information.
- Bristol-Burlington Health District (BBHD) with 51 employees provide nurses and dental hygienists in all Bristol Schools which helps with the identification of public health issues early on in Bristol's younger populations. Early intervention by BBHD staff also helps to reduce health issues as student age and become adults.
- Bristol-Burlington Health District has community health workers that strive to identify barriers and help residents navigate through those barriers for the provision of equitable access to care including those individuals that are unhoused as well as people with substance abuse issues and/or mental health issues.
- Bristol Health Hospital is easily accessible for most residents in Bristol and across the region.
- Bristol has a robust adult education program for the learning of the English language.
- City has worked with the local farming community to strategically locate farmers markets near areas in Bristol that have limited access to grocery stores or other sources of healthy food (i.e., "We are trying to mitigate impacts of food deserts in Bristol.").

Current Strengths and Assets (cont'd)

- Affordable housing plan revealed that there is currently 15% affordable housing in Bristol, which exceeds the 10% quota requested by the state of Connecticut.
- City is adding new market rate apartments that will hopefully help lower overall market rates and help to increase the affordability of housing for existing and new residents. Recent projects have specifically designed apartments to accommodate the needs of senior citizens.
- Bristol is a relatively large city for Connecticut, though it is somewhat isolated due to limited access to the highway (Interstate 84), with a small town feel where the community knows each other and is tightly connected.
- Cohesiveness and availability of municipal staff that provide assistance when asked and work well with other existing support networks within Bristol.
- Despite the aging demographic trend across many cities in Connecticut, Bristol does have a diverse group of younger people and families moving into the City. Issues of sustainable and affordable housing demand versus availability are increasing, however.
- Senior Center has over 5,000 active members who help seniors in the community with many issues and concerns as well as connecting those in need with various support programs including help with housing, nutrition, financial planning, Medicare/Medicaid, and exercise regimes.
- Public Works Department and the Water Department are held in high regard and are very much appreciated for their care and responsiveness to the needs of residents in Bristol.
- Community garden plots at the Senior Center are fully subscribed due to high demand amongst residents looking to grow their own healthy food.
- Senior Center provides farmers market coupons to the public for use at local farmers markets which are open for six months a year in Bristol.
- Eastern Little League Facility hosts annual tournaments that attracts thousands of visitors to the City.
- Large number of events held around the City on weekends that help to build community including the West End Association's event in August and Mum Festival in September, to name a few.

Current Strengths and Assets (cont'd)

- Bristol School system is strong, community-oriented, and very supportive of building community through engagement and education pursuits. Recent examples include the opening of the new fine arts center with a theater at the Bristol Arts Magnet School where positive community events are hosted that highlight the talents of students in Bristol.
- Significant historical resources are present in Bristol including Memorial Boulevard, Carousel Museum, American Clock and Watch Museum, Sports Hall of Fame, and Lake Compounce, among others.
- Recent renovation of City Hall (\$60M) to bring the building into the 21st century.
- Robust redevelopment projects completed or ongoing in downtown Bristol including a senior assisted living facility, new housing facility, and the Wheeler Clinic headquarters, which is a renowned mental health facility. Projects such as these will help to reinvigorate downtown by bringing in more people to work, shop, and visit.
- Availability of walk-in clinics for people without homes or on the brink of homelessness with facilities such as laundry and showers to accommodate needs of patrons as well as outreach workers that relay further information about other health and safety services available through various avenues in Bristol.

Emergency Management & Preparedness:

- State Animal Rescue Team (SART) is fully integrated into the Bristol Citizen Emergency Response Team (CERT) operations to help ensure people and their pets are properly cared for during major events.
- Fire House #2 has back-up power generation capability in place and functional.
- Senior Center is primary shelter center with emergency power in place plus showers and full kitchen for residents seeking aid during major events. West Bristol K-8 School serves as back-up shelter for overflow from primary shelter.
- Bristol Library serves as a critical heating and cooling center resource as well as charging station and place for the exchange of information about emergency status and community updates. Senior Center is not as centrally located as the Library which gets used primarily for these purposes during emergency situations.

Current Strengths and Assets (cont'd)

- Provision of the Student Tools for Emergency Planning (STEP) for young students in the Bristol school district that teaches them how to plan for emergencies in hopes of transferring knowledge to parents and family members at home. Bristol CERT started this STEP program through FEMA and has provided it to three elementary schools and currently looking at other opportunities (i.e., Bristol Boys and Girls Club).
- Bristol-Burlington Health District provided contact tracing and masks during the COVID-19 pandemic as well as engaging community organizations to help make the public health system and network of care in Bristol as robust as possible.
- Plans in place to develop a new Emergency Operations Center (EOC) above the Police Department.
- Emergency responders including representation from Police, Fire, and Emergency Management Services are held in high regard across Bristol for being responsive to the needs of their community during times of crisis.
- Emergency management efforts and protocols have adapted to the fact that a river runs through the middle of Bristol and during major floods can cut off one side of the City from the other. This has included pre-positioning first responders and equipment on both sides of the river in advance of major flooding events.

Roads, Bridges, Road Networks, & Dams:

- Public Works Department has done an effective job at plowing the roads during storms as well as ensuring proper drainage and other road system safety considerations are in place. Ongoing roadway maintenance has been attended to per the roadway rating of around 80 with the ability of the Department to secure consistent funding for upkeep of the road network in Bristol. Between 11 and 15 miles of municipal roads are repaved each year including updates to associated stormwater drainage systems. City is 27 square miles and has 235 miles of municipal roads.
- Strong coordination and communication between the municipal paving program and the energy utilities servicing Bristol which helps to minimize potential impacts to residents and reduce redundancies in work conducted.

Current Strengths and Assets (cont'd)

- Initial discussions with third party vendor to start a new program to increase the quantity of recycled materials in the asphalt road mix to help lower the heat retention of the asphalt and therefore help reduce heat islands across the City.
- Connecticut Department of Transportation leading the West End Project which is being paid for through a \$8 million dollar grant to realign the Route 72/69 intersection, improve parking options, and increase the amount of greenspace in this specific road corridor.
- Multiple bridge replacement and improvement projects have been completed in Bristol in recent years.
- Active and ongoing infrastructure projects that are integrating advanced measures and design to accommodate growing concern such as stormwater runoff and tree limb management.
- Careful planning and design are brought into every infrastructure upgrade and improvement project that require accommodating health and safety considerations as well as enhancements to the environment through nature-based solutions where appropriate.
- Projects are underway to install sidewalks from the park to the downtown areas as well as the installation of bike lanes.

Stormwater System, Waste Systems, & Drinking Water Supply:

- Water Pollution Control Facility has a microgrid in place and is operational.
- Solid and effective educational program in place for teaching kids about wastewater treatment processes and facilities.
- Bristol Zoning Commission is in the process of developing regulations to increase water quality associated with the stormwater management system, which may include the installation of green stormwater infrastructure to reduce impacts with natural solutions such as bioswales.
- Active MS4 program in place as well as other efforts such as ongoing efforts to separate sewer from stormwater management system, routine catch basin cleaning, and a study of outfalls in both wet and dry weather.

Current Strengths and Assets (cont'd)

Watersheds, Wetlands, Rivers, Open Space, & Trees:

- Bristol has approximately 800 acres of public lands with over 50% of residents living within 10 minutes of a public park or amenity.
- Pigeon Hill Preserve is a recent open space acquisition by the City which also crosses over into Burlington.
- Bristol Inland Wetland Commission is currently remapping all inland wetlands in Bristol which will help with specificity in planning for natural resources.
- Well maintained and beloved park system in Bristol that brings residents and visitors together to enjoy family gatherings and recreational opportunities.



Credit: City of Bristol



Credit: City of Bristol



Credit: Wikipedia

Recommendations to Improve Resilience

A common theme among workshop participants was the need to continue community-based planning efforts focused on developing adaptive measures to reinforce Bristol's strengths and reduce vulnerability to extreme weather, climate change, and other common concerns raised. To that end, the workshop participants helped to identify several priority topics requiring more immediate and/or ongoing attention including:

- **Long-term vision and growth** (i.e. sustainable growth, volunteerism, conservation and recreation, economic development, affordable housing, health and safety);
- **Infrastructure improvements** (i.e. roads/bridges/culverts, green stormwater infrastructure/management systems, riverine flood infrastructure, transportation);
- **Quality of life improvements** (i.e. parks and recreation, accessibility, sustainability, health & safety, economic prosperity, housing, education, elderly, transportation);
- **Emergency management** (i.e. communications, outreach, education, continuation of services, business recovery, evacuation, vulnerable populations).

In direct response, the Community Resilience Building workshop participants developed the following actions and identified (but not ranked) them as priority or as additional actions. Mitigation actions from the Bristol Hazard Mitigation Plan Annex (2021) are provided in Appendix A for cross-reference with actions presented herein. Maps provided during the CRB Workshop, gathered from the Bristol Hazard Mitigation Plan and Plan of Conservation and Development (2015), are provided in Appendix B.

Priority Actions

- Develop a comprehensive, cross-department/whole city master plan for dealing with riverine flooding issues including the strengthening of riparian buffers, ecological education of residents and business owners, and installation of additional natural flood storage areas and green stormwater infrastructure (i.e., bioswales, rain gardens, etc.) to help retain and reduce runoff from flowing into adjoining rivers and streams.

Priority Actions (cont'd)

- Acquire repetitive loss properties and convert areas to public amenities that also help trap and store flood waters (i.e., floodplain/storage park).
- Continue and improve upon conversations and dialogue between the City and organizations to ensure residents are fully aware, educated, and prepared to respond safely to major storm events across Bristol.
- Continue to respond to those experiencing homelessness and mental health issues as well as those with prior convictions and/or evictions by developing a housing program(s) that provide more avenues and access to long-term housing solutions in Bristol. Look to develop a model program(s) for the many other municipalities in Connecticut faced with similar housing affordability and access challenges for residents. This may include transitional housing in the downtown area near the Library.
- Explore in partnership with the Naugatuck Valley Council of Governments ways to increase the affordability of rental units for working people and families in Bristol and throughout the region. Attention should be directed towards ways to help potential renters with high financial barriers associated with escalating security deposits.
- Seek out ways to immediately increase the number of apartments for working people and families to help reduce an exodus to elsewhere.
- Look to change zoning regulations in the City to allow for seniors to rent out individual rooms as well as acceptability of accessory dwelling units in hopes of creating more access to and availability of affordable housing.
- Identify opportunities for the City to support tenants and landlords with upgrades to buildings to make them more sustainable, durable, and resilient.
- Regularly revisit and revise as needed the mitigation projects identified in the Bristol Hazard Mitigation Plan including a semi-annual review by multiple Departments (see Appendix A).

Priority Actions (cont'd)

- Develop a cross-department, mental health master plan and subsequent implementation program for Bristol that involves numerous stakeholders including the Mayor's Office, Library, Parks and Recreation Department, Bristol-Burlington Health District, various aligned commissions and task forces, and all appropriate community-based, non-profit and faith-based organizations, among others.
- Continue to work to improve the reach and effectiveness of emergency communications so that every resident is given the opportunity to voluntarily receive critical information during major events.
- Potentially work on building on existing Alert Center via Bristol Cares to help broaden the reach and depth of awareness about ongoing emergency preparedness activities at the household level.
- Continue to coordinate with Connecticut Transit to improve the number of bus routes and coverage for Bristol bus riders.
- Explore opportunities for additional funding to assist the Dial-a-Ride program to extend the range of service out beyond the city limits.
- Continue the City's legacy of renovating older building and bring them up to code with the added need to ensure city-owned facilities are also resilient to projected impacts of climate change.
- Continue to monitor and clean up excessive debris accumulation along rivers on a regular and ongoing basis to prevent flooding from debris dams. Look to set up community-based clean-ups of rivers which will help to foster a sense of ownership of flood risk and solutions among residents. In addition, work more closely with the Farmington River Watershed Association on clean-ups and ecological restoration of waterways in Bristol.

Priority Actions (cont'd)

- Work to educate homeowners with property adjoining natural waterways on the ecological damage caused by the dumping of yard waste and leaf litter into streams and rivers in hopes encouraging alternatives means of disposing of the debris.



Credit: TripAdvisor



Credit: Bristol Health



Credit: World Atlas

Additional Actions

- Cross-reference actions generated through the Bristol Community Resilience Building process with mitigation actions (see Appendix A for list of mitigation actions) identified in the recently updated Bristol Hazard Mitigation Plan (2021).
- Enhance the alert level of residents and businesses located in proximity to known hazardous areas as well as offer ways for community members to take positive, risk-reducing steps in the neighborhoods.
- Increase awareness among residents of proper and responsible ways to manage household recycling materials as well as household chemicals and potentially hazardous materials if not disposed of correctly.
- Create a unified notification system for residents that standardizes all of the existing systems across the City to help ensure critical information is shared and received more broadly.
- Review and supplement as needed the welcome packets for new residents to ensure emergency preparedness and ways to receive alerts are emphasized.
- Continue to enhance monthly Bristol Cares meetings to enable more groups to participate and get engaged. Look to expand the regularly scheduled meeting to include a quarterly community-wide forum for residents which would increase access to meetings and services for more people in need across Bristol.
- Establish the Homeless and Hunger Task Force as a formal city board or commission.
- Identify critical facilities without back-up generators or with outdated generators and work to secure new generators for those facilities over next five years.
- Work to upgrade and maintain dams in Bristol with a priority placed on dams with the highest hazard rating by the state.
- Develop a Pequabuck River flood management plan per the recent state funding.

Additional Actions (cont'd)

- Install fire hydrants in areas with insufficient fire suppression resources at Cedar Lake.
- Work to help alleviate food insecurity in Bristol by continuing the efforts by Bristol CERT to distribute food to residents in need.
- Secure back-up power generators for the Bristol Library to ensure this critical community hub can provide services in the event of power outages.
- Conduct outreach and educational awareness for affected residents on the updated FEMA Special Flood Hazard Maps when released. Set up and run information exchange forum for resident and business owners when the updated flood maps are published so that affected individuals and properties are fully informed.
- Ensure that the BBHD obtains specialized equipment to identify and manage air quality conditions as well as chemical, radioactive, and biological concerns among residents and neighborhoods in Bristol more effectively.
- Look to educate State Representatives on the issues, concerns, and opportunities for Bristol to serve as a model for other communities across Connecticut.
- Target and advance urban forestry initiative via the potential launch of a new Urban Canopy Program to help improve air quality in areas with low tree equity scores.
- Increase access to internet connectivity in the downtown area and within public spaces such as parks to help increase access and reduce barriers for all residents.
- Explore in partnership with the Naugatuck Valley Council of Governments the potential for Bristol to enroll in FEMA's Community Rating System, which will help reduce the cost of national flood insurance for those households in a floodplain who are required to carry this type of insurance.
- Continue to work with the Chamber of Commerce to support the development of business continuity plans for small-scale businesses in the City.

CRB Workshop Participants: Department/Organization

City of Bristol – City Council
City of Bristol – Department of Public Works
City of Bristol – Police Department
City of Bristol – Fire Department
City of Bristol – Emergency Management
City of Bristol – Citizens Emergency Response Team
City of Bristol – Planning & Land Use Department
City of Bristol – Parks & Recreation
City of Bristol – Department of Aging
City of Bristol – Board of Education – Facilities & Grounds
City of Bristol – Economic and Community Development
City of Bristol – Housing Authority
City of Bristol – Diversity Council
City of Bristol – Commission for Persons with Disabilities
City of Bristol – Energy Commission
City of Bristol – Homeless & Hunger Task Force
City of Bristol – Resident
Bristol Library
Bristol – Burlington Health District
Veterans Strong Community Center
Salvation Army Bristol
Bristol Boys & Girls Club
St. Vincent de Paul Mission
Naugatuck Valley Council of Governments

Bristol CRB Core Project Team

David Oaks – City Facilities – Department of Public Works – City of Bristol

Online CRB Workshop Facilitation Team

The Nature Conservancy – Adam Whelchel, Ph.D. (Lead Facilitator)

Sustainable CT – Jessica LeClair (Small Group Facilitator)

Second Nature – Cami Sockow (Small Group Facilitator)

Sustainable CT – Torin Radicioni (Workshop IT & Logistics Manager)

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Sustainable CT – Dorothy Piszczek (Scribe)

Sustainable CT – Inez Ortiz (Scribe)

Sustainable CT – Cole Burnham (Scribe)

Recommended Citation

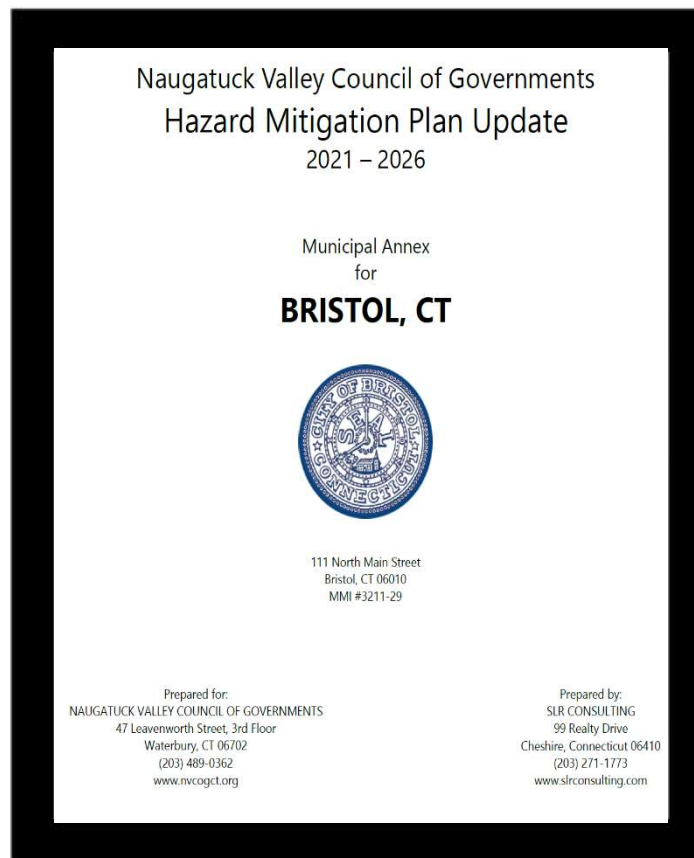
City of Bristol Online Community Resilience Building Process - Summary of Findings Report. (2023). Community Resilience Building Program. The Nature Conservancy and Sustainable CT. Bristol, Connecticut.

Acknowledgements

Special thanks to the City leadership, staff, and community members for their willingness to embrace the process in hopes of a more resilient future for Bristol. This online Community Resilience Building Workshop was made possible in large part through the dedicated contribution of the facilitation team members who skillfully conducted the Bristol Community Resilience Building process in close partnership with the City's CRB Core Project Team.

Appendix A

City of Bristol Mitigation Action Plan and Actions* Section 10



***Gathered from Naugatuck Valley Council of Governments Hazard Mitigation Plan Update – City of Bristol Annex (2021).**

Action BRL-01	
<p>Take one of the following actions that will mitigate natural hazard risks while also meeting Sustainable CT objectives:</p> <ol style="list-style-type: none"> 1. Disseminate a toolkit for pre-disaster business preparedness. 2. Revise regulations to promote Low Impact Development. 3. Include the goals of this Hazard Mitigation Plan, and at least three other sustainability concepts, in your next POCD update. 	
Lead	Plan
Cost	\$0 - \$25,000
Funding	OB, CT DEEP, Sustainable CT
Timeframe	2022
Priority	High

Action BRL-02	
<p>Remain engaged with FEMA and the State during the Farmington River Watershed flood map updates. Review draft maps and provide comments to FEMA.</p>	
Lead	Plan, FS, NFIP Coordinator
Cost	\$0 - \$25,000
Funding	OB, FEMA Grant, CT DEEP
Timeframe	2022
Priority	High

Action BRL-03	
Contact the owners of Repetitive Loss Properties and nearby properties at risk to inquire about mitigation undertaken and suggest options for mitigating flooding in those areas. This should be accomplished with a letter directly mailed to each property owner.	
Lead	EM, Plan, FS
Cost	\$0 - \$25,000
Funding	OB
Timeframe	2022
Priority	High

Action BRL-04	
Work with CT DEEP to complete a formal validation of the Repetitive Loss Property list and update the mitigation status of each listed property.	
Lead	EM, Plan, FS
Cost	\$0 - \$25,000
Funding	OB, CT DEEP
Timeframe	2022
Priority	High

Action BRL-05	
Revise the subdivision / zoning code to include explicit policies for low-impact development, in order to reduce stormwater runoff and downstream flood levels.	
Lead	Planning
Cost	\$0 - \$25,000
Funding	OB, CT DEEP
Timeframe	2022
Priority	High

Action BRL-06	
Fully incorporate the provisions of the DEEP model flood regulations into the local flood damage prevention regulations (or ordinance), including but not limited to the required design flood elevations for the first floor, building electrical systems, and building mechanical systems.	
Lead	Plan, FS, NFIP Coordinator
Cost	\$0 - \$25,000
Funding	OB, FEMA Grant, CT DEEP
Timeframe	2022
Priority	Med

Action BRL-07	
Increase Substantial Damage and Substantial Improvement lookback periods to two or more years.	
Lead	Plan, FS, NFIP Coordinator
Cost	\$0 - \$25,000
Funding	OB, FEMA Grant, CT DEEP
Timeframe	2022
Priority	Med

Action BRL-08	
Coordinate with CT SHPO to conduct outreach to owners of historic properties to educate them on methods of retrofitting historic properties to be more hazard-resilient while maintaining historic character.	
Lead	Plan, HC/HDC
Cost	\$0 - \$25,000
Funding	OB, CT SHPO
Timeframe	2022
Priority	Low

Action BRL-09	
Use the CT Toxics Users and Climate Resilience Map to identify toxic users located in hazard zones within your community. Contact those users to inform them about the CT DEEP small business chemical management initiative.	
Lead	EM, FS
Cost	\$0 - \$25,000
Funding	CT DEEP
Timeframe	2022
Priority	Low

Action BRL-10	
Coordinate with CT SHPO to conduct historic resource surveys, focusing on areas within natural hazard risk zones (flood zones, wildfire hazard zones, steep slopes) to support the preparation of resiliency plans across the state.	
Lead	Plan, HC/HDC
Cost	\$0 - \$25,000
Funding	OB, CT SHPO
Timeframe	2022 – 2023
Priority	Low

Action BRL-11	
Join FEMA's Community Rating System at Class 8	
Lead	Public Works
Cost	\$25,000 - \$50,000
Funding	OB, CT DEEP
Timeframe	2022 – 2023
Priority	Med

Action BRL-12	
Update the City's official Inland Wetlands Map.	
Lead	Plan, IWWC
Cost	\$25,000 - \$50,000
Funding	OB, CT DEEP
Timeframe	2022 – 2023
Priority	Med

Action BRL-13	
Develop a coordinated Pequabuck River flood management plan to provide dam operators guidance on how to manage dams to reduce peak flows and mitigate downstream flooding. This action can build on meetings with Bristol Water Department and New Britain Water Department regarding pre-storm releases.	
Lead	Public Works, Water Dept.
Cost	\$25,000 - \$50,000
Funding	OB, CT DEEP
Timeframe	2022 – 2024
Priority	Med

Action BRL-14	
Complete a re-write of the City's Zoning Regulations to include Low Impact Development provisions and rules to meet MS4 compliance.	
Lead	Plan
Cost	\$50,000 - \$100,000
Funding	FEMA Grant, CT DEEP
Timeframe	2022 – 2024
Priority	Med

Action BRL-15	
Acquire more mobile emergency light towers.	
Lead	EM
Cost	\$25,000 - \$50,000
Funding	OB, CT DEMHS
Timeframe	2022 – 2024
Priority	Low

Action BRL-16	
Perform a registration drive to encourage signups for CT Alerts Emergency Notification System	
Lead	Emergency Management
Cost	\$25,000 - \$50,000
Funding	OB, CT DEMHS
Timeframe	2022 – 2024
Priority	Low

Action BRL-17	
Complete application to DEMHS/FEMA to obtain Flood Mitigation Assistance for the acquisition and demolition of flood prone properties at 164 Central St. and 65 Memorial Boulevard, in an effort to eliminate the community's most flood prone structures, to help ease localized flooding, and to create open space in these locations. At least one of these buildings is an RLP at risk from the Pequabuck River.	
Lead	Mayor, Grants Administrator
Cost	More than \$500,000
Funding	FEMA Grant, CT DEMHS
Timeframe	2023 – 2025
Priority	High

Action BRL-18	
Install additional fire hydrants in areas with insufficient firefighting water resources; one such area is at Cedar Lake.	
Lead	Emergency Management
Cost	\$100,000 - \$500,000
Funding	CIP, FEMA Grant, FEMA AFG, CT DEEP
Timeframe	2023 – 2025
Priority	Low

Action BRL-19	
If a microgrid is determined to be feasible, design and construct a microgrid powered by a large fuel cell at "Centre Square" to power the government buildings on North Main Street (City Hall, Police Station, and Fire Department) and private developments located on Centre Square.	
Lead	EM, DPW
Cost	More than \$1 million
Funding	CIP, FEMA Grant
Timeframe	2025 – 2027
Priority	Low

Action BRL-20	
If a microgrid is determined not to be feasible, upgrade or install an additional generator at City Hall in order to provide backup power to the entire building. Begin upgrading or replacing the backup generators at the Fire Station Headquarters.	
Lead	EM, DPW
Cost	More than \$500,000
Funding	CIP, FEMA Grant
Timeframe	2025 – 2027
Priority	Low

Action BRL-21	
Begin upgrading or replacing backup generators at all City Fire Stations. Acquire a portable generator and a trailer for transportation.	
Lead	EM, DPW
Cost	More than \$1 million
Funding	CIP, FEMA Grant
Timeframe	2026 – 2027
Priority	Low

Action BRL-22	
Remove sediment from the Pequabuck River Conduit to mitigate flood risk.	
Lead	DPW, IWWC
Cost	\$50,000 - \$100,000
Funding	OB, CIP
Timeframe	2026 – 2027
Priority	Low

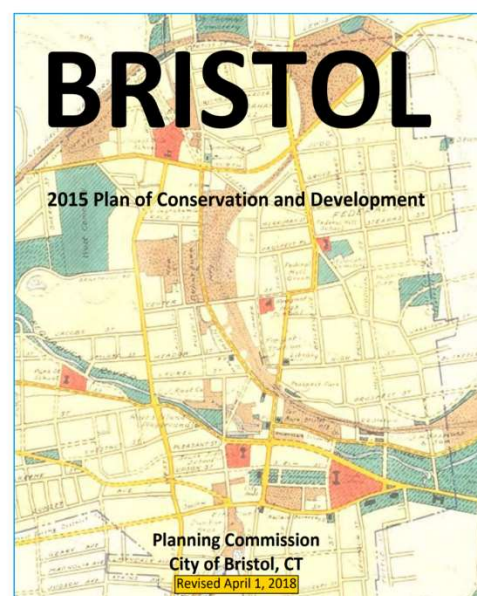
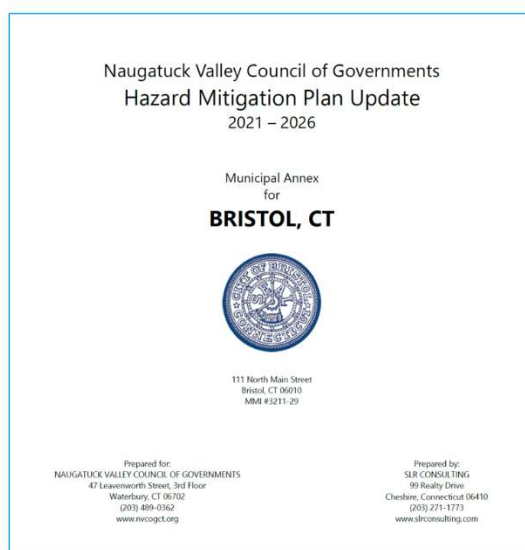
Action BRL-23	
Remove sediment from under the Frederick Street Bridge to mitigate the flood risk it poses.	
Lead	DPW, IWWC
Cost	\$50,000 - \$100,000
Funding	OB, CIP
Timeframe	2026 – 2027
Priority	Low

#	Action Description	Regional Theme	Lead Department	Cost Estimate	Potential Funding Sources	Timeframe for Completion	Weighted STAPLEE Criteria														Total STAPLEE Score
							Benefits						Costs								
							Social	Technical (x2)	Administrative	Political	Legal	Economic (x2)	Environmental	Social	Technical (x2)	Administrative	Political	Legal	Economic (x2)	Environmental	
BRL-01	Take one of the following actions that will mitigate natural hazard risks while also meeting Sustainable CT objectives: 1. Disseminate a toolkit for pre-disaster business preparedness. 2. Revise regulations to promote Low Impact Development. 3. Include the goals of this Hazard Mitigation Plan, and at least three other sustainability concepts, in your next PQCD update.	Sustainable CT	Plan	\$0 - \$25,000	OB, CT DEEP, Sustainable CT	2022	1	1	1	1	1	1	1	0	0	0	0	0	0	0	9
BRL-02	Remain engaged with FEMA and the State during the Farmington River Watershed flood map updates. Review draft maps and provide comments to FEMA.	Flood Map Updates	Plan, FS, NFIP Coordinator	\$0 - \$25,000	OB, FEMA Grant, CT DEEP	2022	1	1	1	0	1	0	1	0	0	0	-1	0	0	0	5
BRL-04	Work with CT DEEP to complete a formal validation of the Repetitive Loss Property list and update the mitigation status of each listed property.	RLP	EM, Plan, FS	\$0 - \$25,000	OB, CT DEEP	2022	1	1	1	0	1	1	0	0	0	0	0	0	0	0	7
BRL-05	Revise the subdivision / zoning code to include explicit policies for low-impact development, in order to reduce stormwater runoff and downstream flood levels.	Low Impact Development	Planning	\$0 - \$25,000	OB, CT DEEP	2022	0	1	1	1	1	1	1	0	0	0	0	0	0	0	8
BRL-06	Complete application to DEMHS/FEMA to obtain Flood Mitigation Assistance for the acquisition and demolition of flood prone properties at 164 Central St. and 65 Memorial Boulevard, in an effort to eliminate the community's most flood prone structures, to help ease localized flooding, and to create open space in these locations. At least one of these buildings is an RLP at risk from the Pequabuck River.	Acquisition & Open Space	Mayor, Grants Administrator	More than \$500,000	FEMA Grant, CT DEMHS	2023 – 2025	1	1	1	0	1	1	1	-1	0	-1	0	0	-1	0	6
BRL-07	Fully incorporate the provisions of the DEEP model flood regulations into the local flood damage prevention regulations (or ordinance), including but not limited to the required design flood elevations for the first floor, building electrical systems, and building mechanical systems.	Flood Regulations	Plan, FS, NFIP Coordinator	\$0 - \$25,000	OB, FEMA Grant, CT DEEP	2022	1	1	1	0	1	0	1	0	0	0	-1	0	0	0	5
BRL-08	Increase Substantial Damage and Substantial Improvement lookback periods to two or more years.	Flood Regulations	Plan, FS, NFIP Coordinator	\$0 - \$25,000	OB, FEMA Grant, CT DEEP	2022	1	1	1	0	1	0	1	0	0	0	-1	0	0	0	5
BRL-09	Join FEMA's Community Rating System at Class 8	CRS	Public Works	\$25,000 - \$50,000	OB, CT DEEP	2022 – 2023	1	1	0	1	1	1	0	0	0	-1	0	0	0	0	6
BRL-10	Update the City's official Inland Wetlands Map.	Study	Plan, IWWC	\$25,000 - \$50,000	OB, CT DEEP	2022 – 2023	0	1	1	0	1	1	1	0	0	0	0	0	0	0	7
BRL-11	Complete a re-write of the City's Zoning Regulations to include Low Impact Development provisions and rules to meet MS4 compliance.	Low Impact Development	Plan	\$50,000 - \$100,000	FEMA Grant, CT DEEP	2022 – 2024	0	1	1	0	1	1	1	0	0	0	0	0	0	0	7
BRL-12	Develop a coordinated Pequabuck River flood management plan to provide dam operators guidance on how to manage dams to reduce peak flows and mitigate downstream flooding. This action can build on meetings with Bristol Water Department and New Britain Water Department regarding pre-storm releases.	Dam Safety	Public Works, Water Dept.	\$25,000 - \$50,000	OB, CT DEEP	2022 – 2024	0	1	1	1	1	1	0	0	0	0	0	0	0	-1	6.5
BRL-13	Coordinate with CT SHPO to conduct outreach to owners of historic properties to educate them on methods of retrofitting historic properties to be more hazard-resilient while maintaining historic character.	Historic & Cultural Resources	Plan, HC/HDC	\$0 - \$25,000	OB, CT SHPO	2022	1	0	1	1	0	1	0	0	0	0	0	0	0	0	5
BRL-14	Use the CT Toxics Users and Climate Resilience Map to identify toxic users located in hazard zones within your community. Contact those users to inform them about the CT DEEP small business chemical management initiative.	Small Business Chemicals	EM, FS	\$0 - \$25,000	CT DEEP	2022	1	0	1	0	1	1	1	0	0	0	0	0	0	0	6
BRL-15	Install additional fire hydrants in areas with insufficient firefighting water resources; one such area is at Cedar Lake.	Wildfire Risk Reduction	Emergency Management	\$100,000 - \$500,000	CIP, FEMA Grant, FEMA AFG, CT DEEP	2023 – 2025	0	1	0	0	1	1	1	0	0	0	0	0	0	0	6
BRL-16	Coordinate with CT SHPO to conduct historic resource surveys, focusing on areas within natural hazard risk zones (flood zones, wildfire hazard zones, steep slopes) to support the preparation of resiliency plans across the state.	Historic & Cultural Resources	Plan, HC/HDC	\$0 - \$25,000	OB, CT SHPO	2022 – 2023	1	0	1	1	0	1	0	0	0	0	0	0	0	0	5
BRL-17	If a microgrid is determined to be feasible, design and construct a microgrid powered by a large fuel cell at "Centre Square" to power the government buildings on North Main Street (City Hall, Police Station, and Fire Department) and private developments located on Centre Square.	Backup Power	EM, DPW	More than \$1 million	CIP, FEMA Grant	2025 – 2027	0.5	1	1	1	0	1	0	0	0	0	0	0	-1	-1	4.5

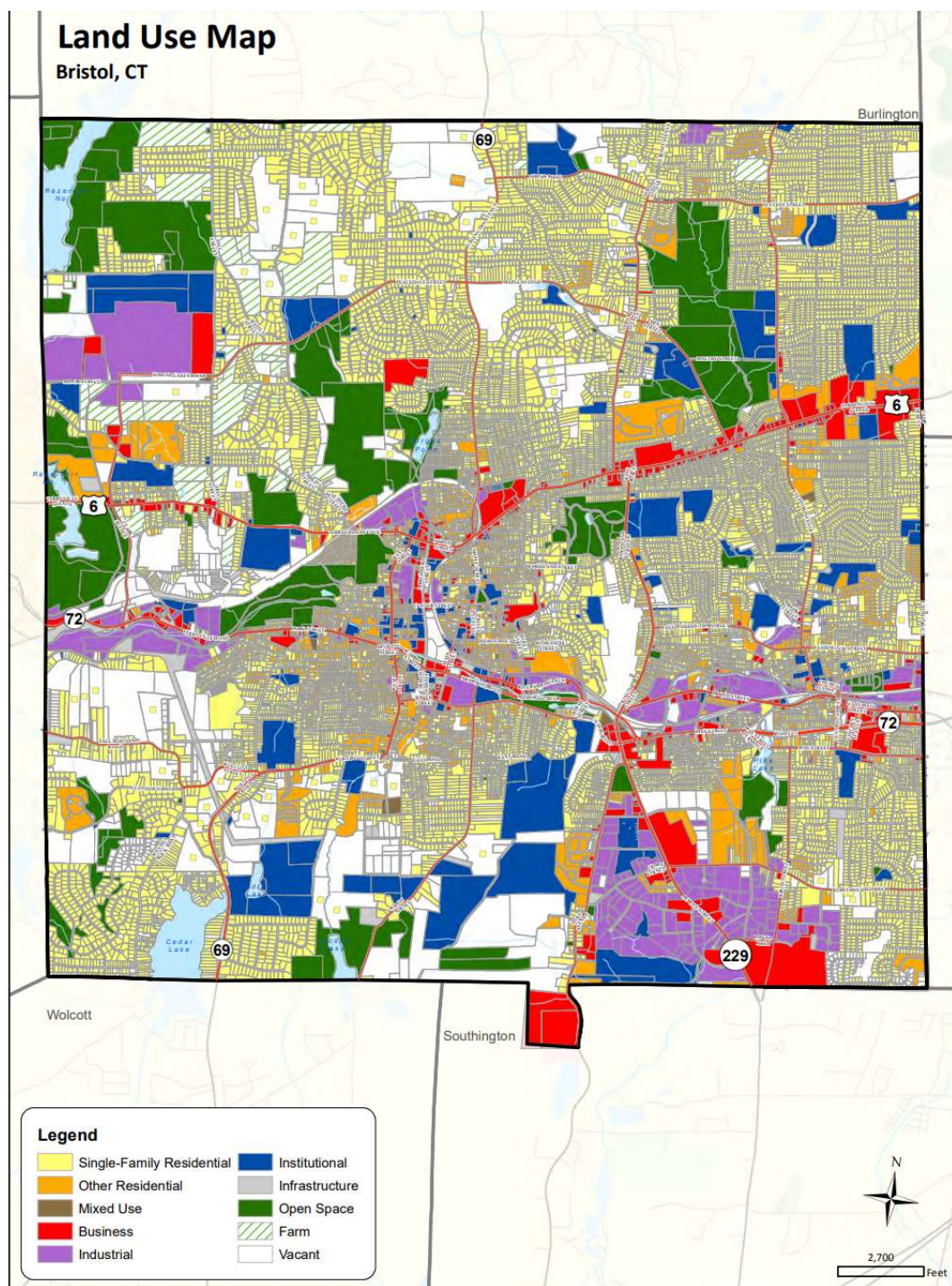
#	Action Description	Regional Theme	Lead Department	Cost Estimate	Potential Funding Sources	Timeframe for Completion	Weighted STAPLEE Criteria														Total STAPLEE Score	
							Benefits						Costs									
							Social	Technical (x2)	Administrative	Political	Legal	Economic (x2)	Environmental	Social	Technical (x2)	Administrative	Political	Legal	Economic (x2)	Environmental		
BRL-18	Acquire more mobile emergency light towers.	Emergency Response, Alerts, & Communication	EM	\$25,000 - \$50,000	OB, CT DEMHS	2022 – 2024	1	0	1	1	1	0	0	0	0	0	-1	0	0	0	0	3.5

Appendix B

Bristol Map Resource Packet* Used During Workshop

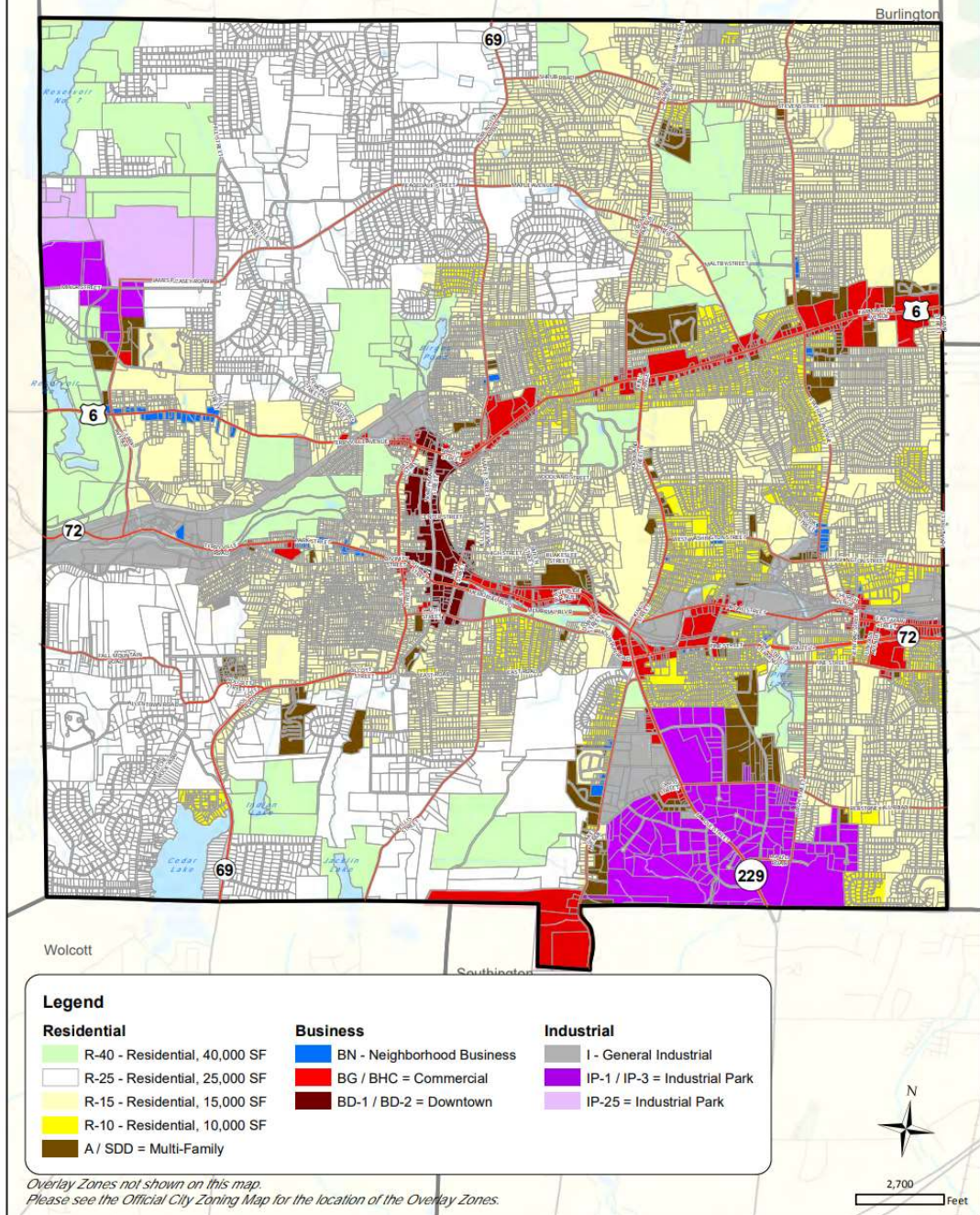


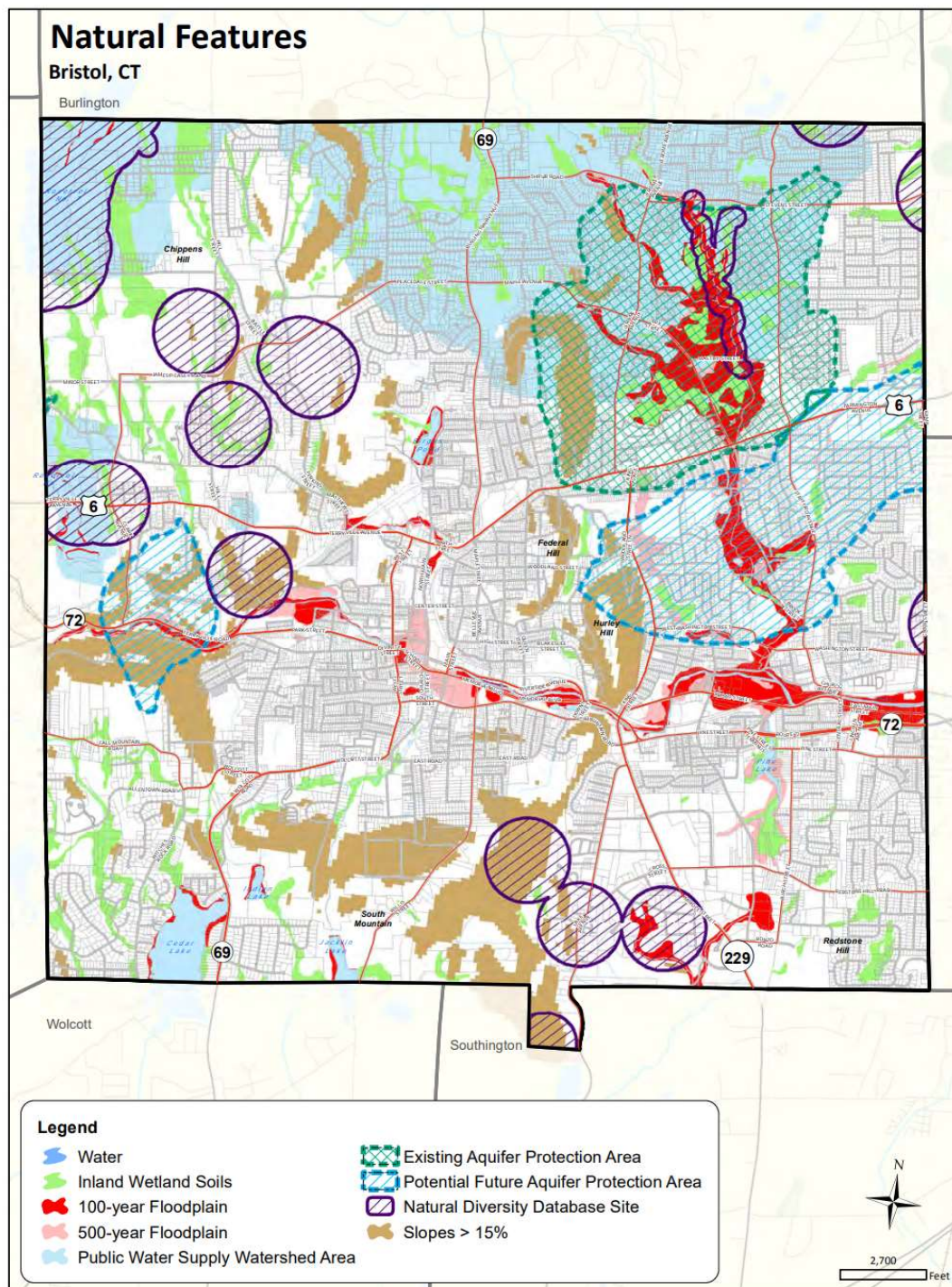
***Gathered from Bristol’s Plan of Conservation and Development (2015) and the Naugatuck Valley Council of Governments Hazard Mitigation Plan Update – Bristol Annex (2021).**

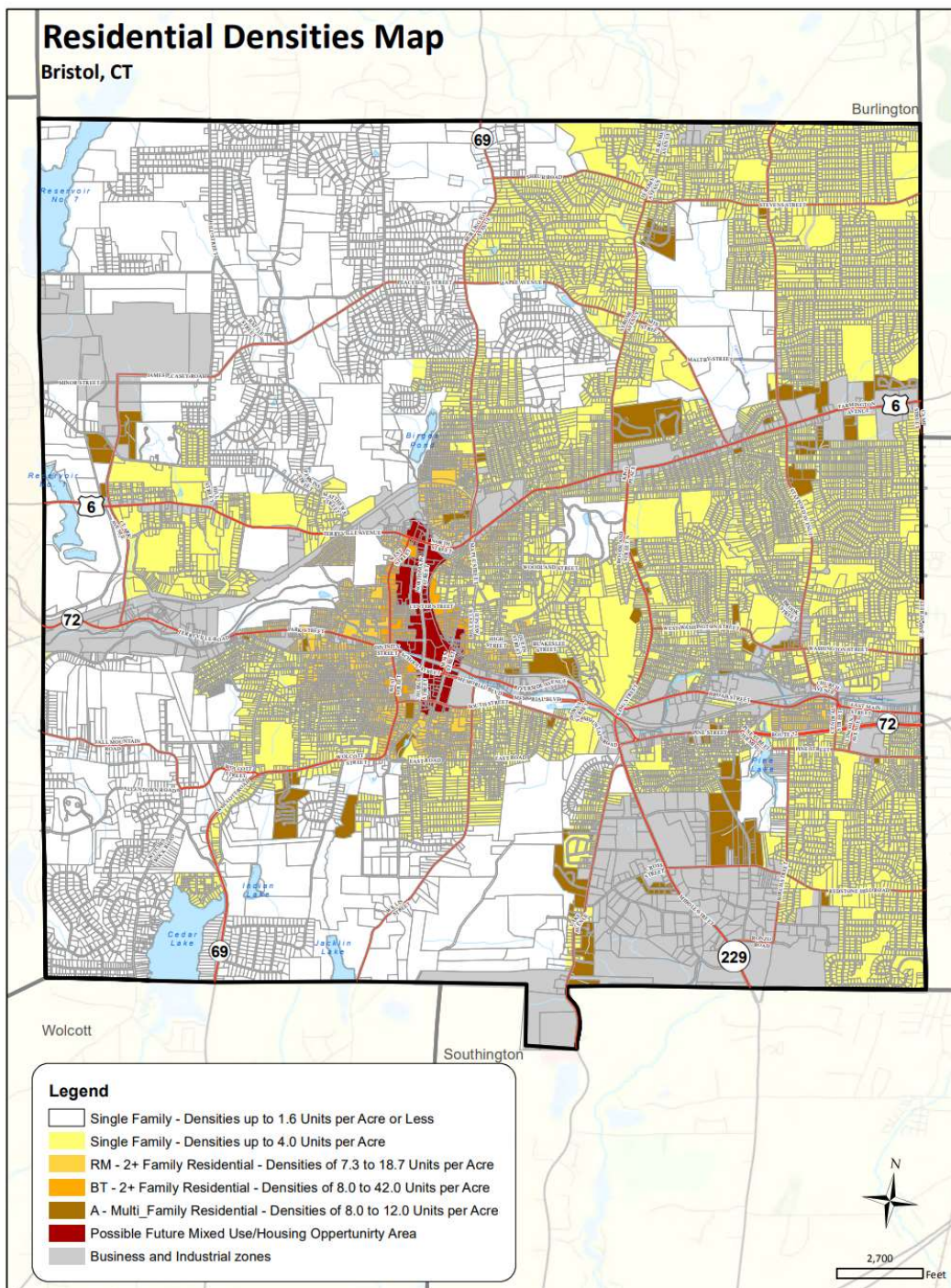


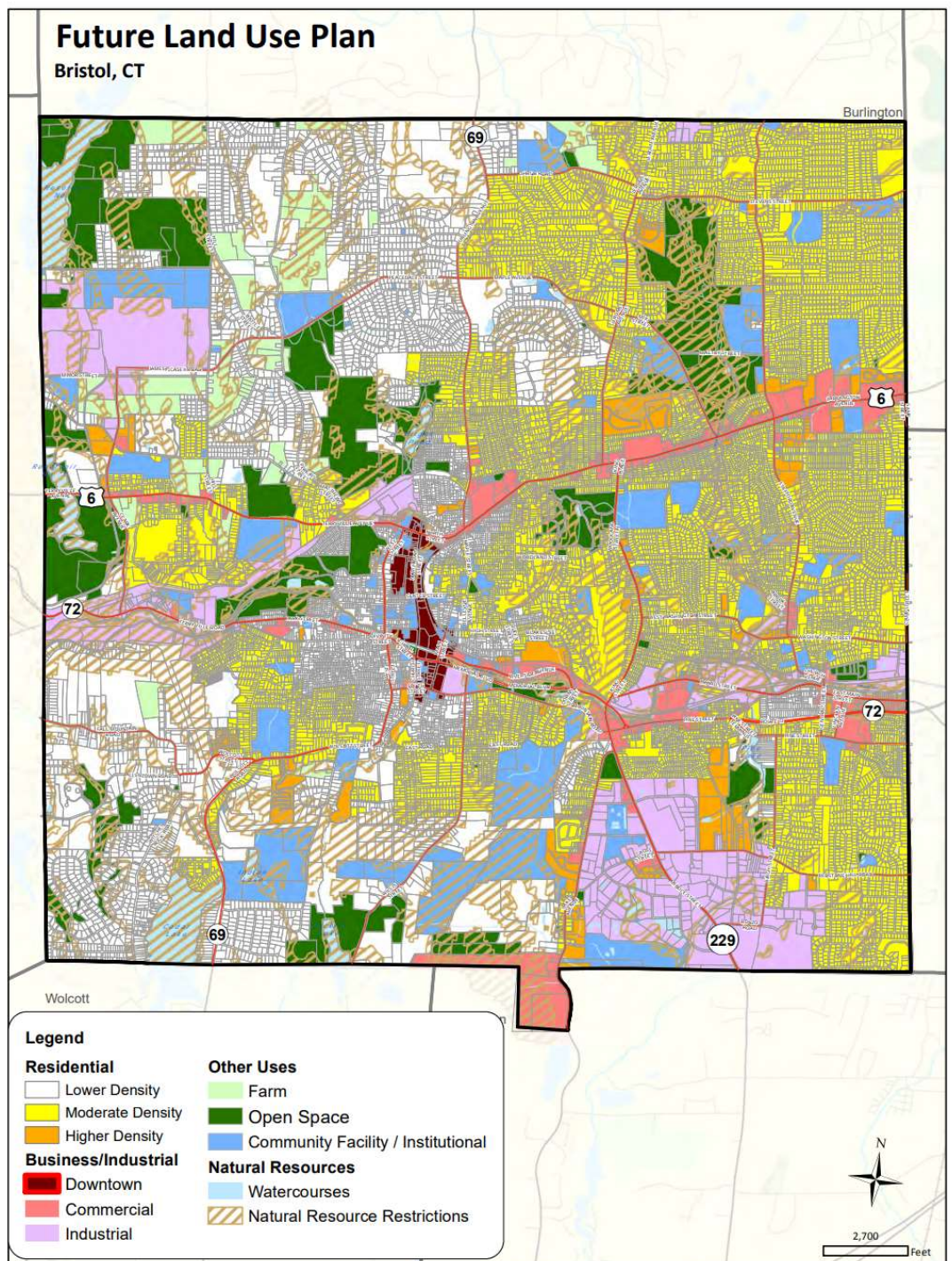
Zoning Map

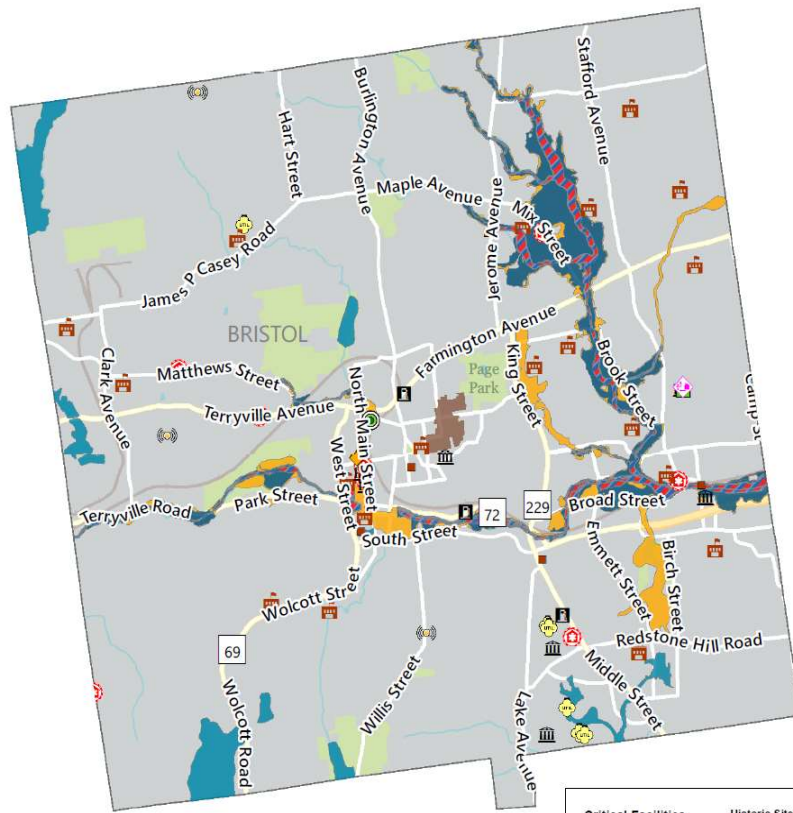
Bristol, CT











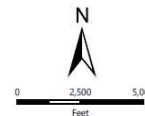
- | | |
|----------------------------|-----------------------|
| Critical Facilities | Historic Sites |
| Communications | Historic Sites |
| Community Center | NR Historic Districts |
| Emergency Response | Flood Zone |
| Fuel | A |
| Government Services | AE |
| Other | AO |
| Population Center | X: 0.2% Annual Chance |
| School | |
| Utility | |
| Vulnerable Population | |



99 REALTY DRIVE
CHESHIRE, CT 06410
203.271.1773

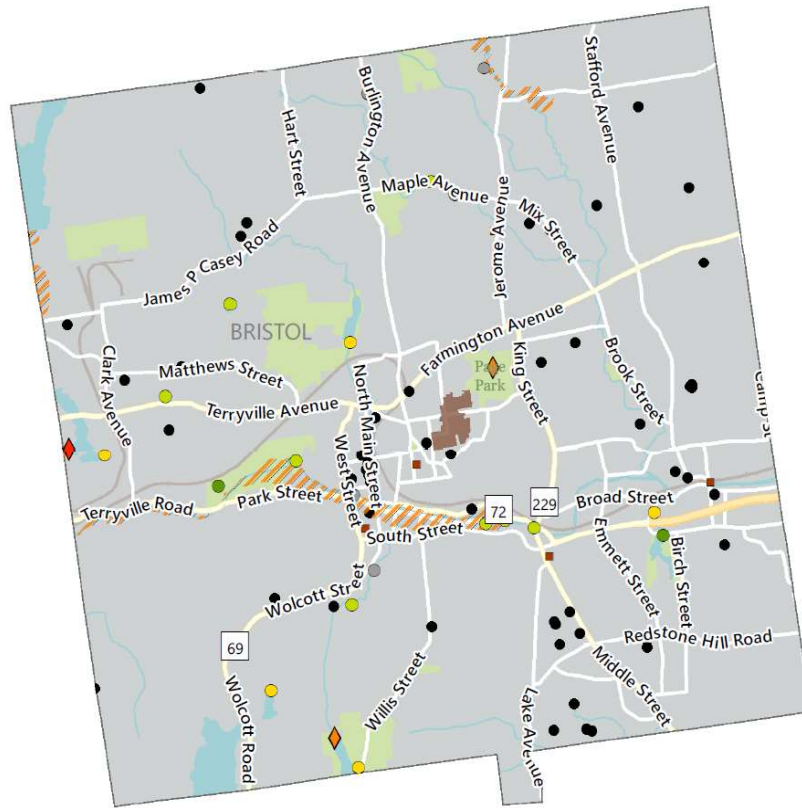
Flood Hazards in Bristol

NVCOG Hazard Mitigation Plan Update
Naugatuck Valley Council of Governments
47 Leavenworth Street, 3rd Floor
Waterbury, CT 06702



DATE 6/15/2021
PROJ. NO. 141.3211.00029

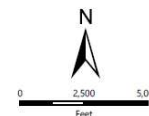
FIG. 3-1



Dam Hazard Class	Critical Facilities
Unclassified	Critical Facilities
AA - Negligible Hazard	Historic Sites
A - Low Hazard	Historic Sites
BB - Moderate Hazard	NR Historic Districts
B - Significant Hazard	
C - High Hazard	

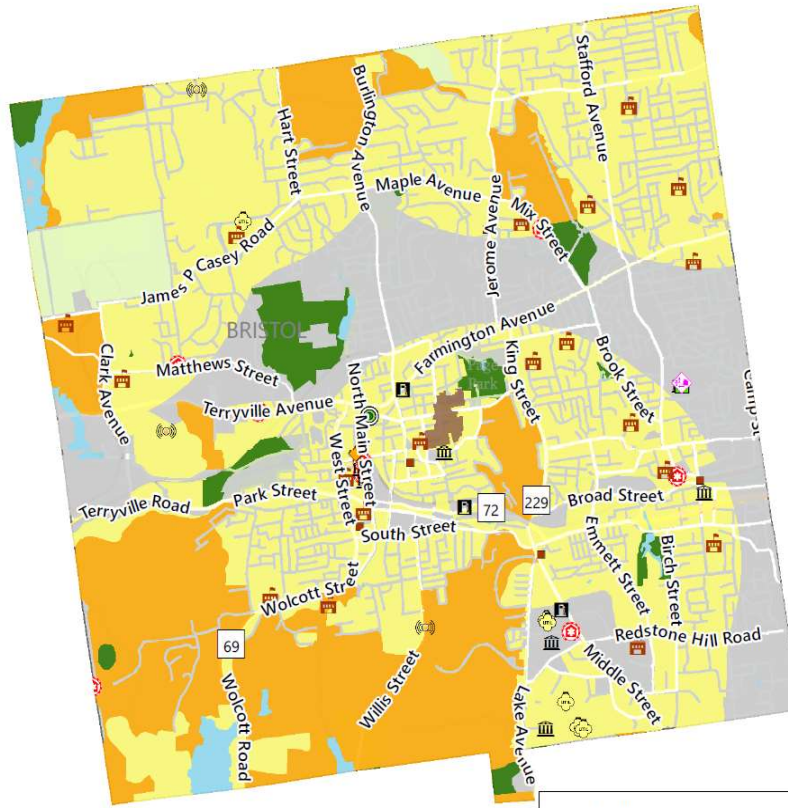
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Dam Failure Hazards in Bristol
NVCOG Hazard Mitigation Plan Update
Naugatuck Valley Council of Governments
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Waterbury, CT 06702



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PROJ. NO. 141.3211.00029

FIG. 8-1

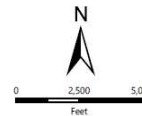


- | | |
|---|--|
| Critical Facilities
<ul style="list-style-type: none"> Communications Community Center Emergency Response Fuel Government Services Other Population Center School Utility Vulnerable Population | Historic Sites
<ul style="list-style-type: none"> Historic Sites NR Historic Districts |
| Wildland Urban Interface Type
<ul style="list-style-type: none"> Wildland-Urban Intermix Wildland-Urban Interface Vegetated: Low Housing Density Vegetated: No Housing Non-vegetated Water | |



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Wildfire Hazard in Bristol
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 Waterbury, CT 06702



DATE 6/15/2021
 PROJ. NO. 141.3211.00029

FIG. 9-1

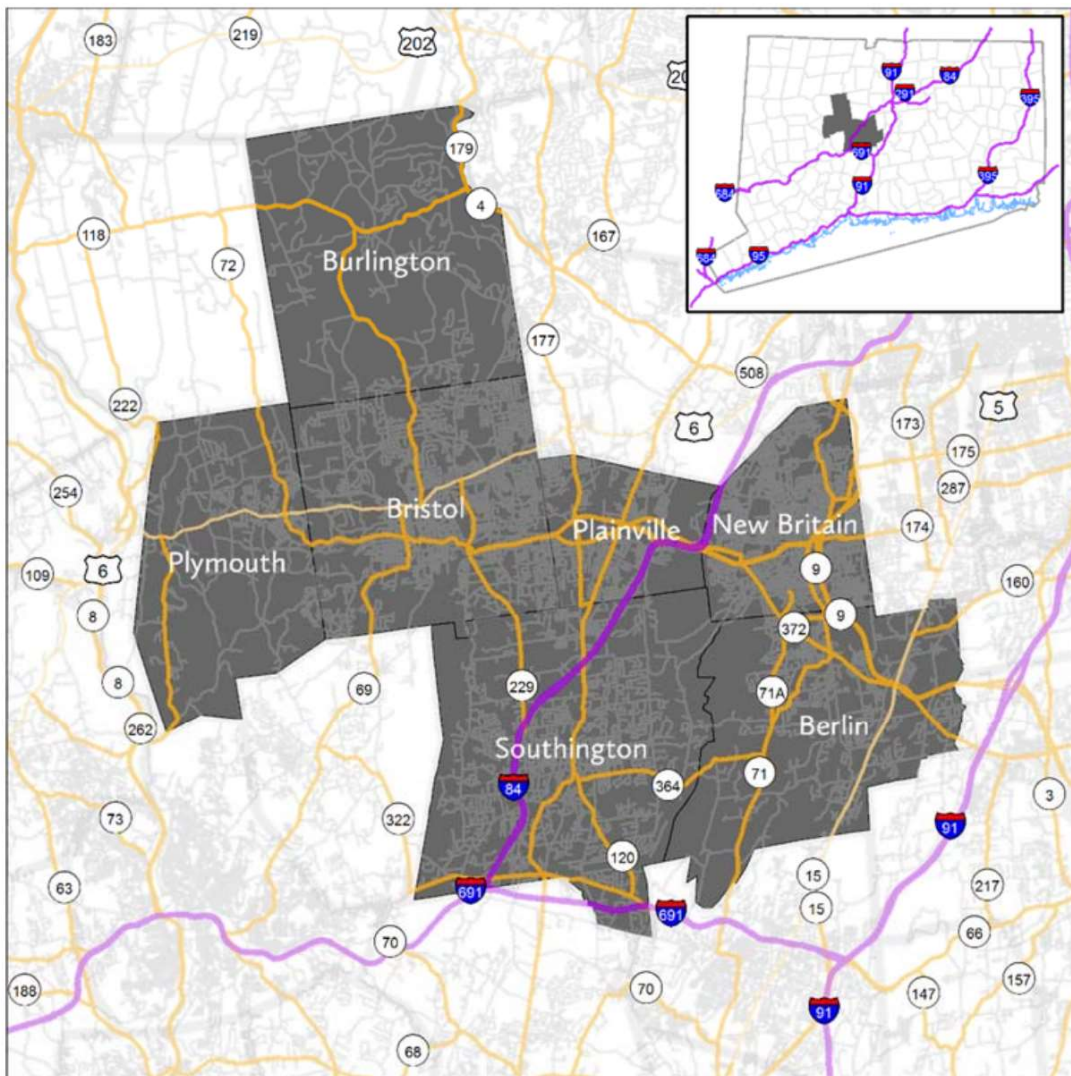
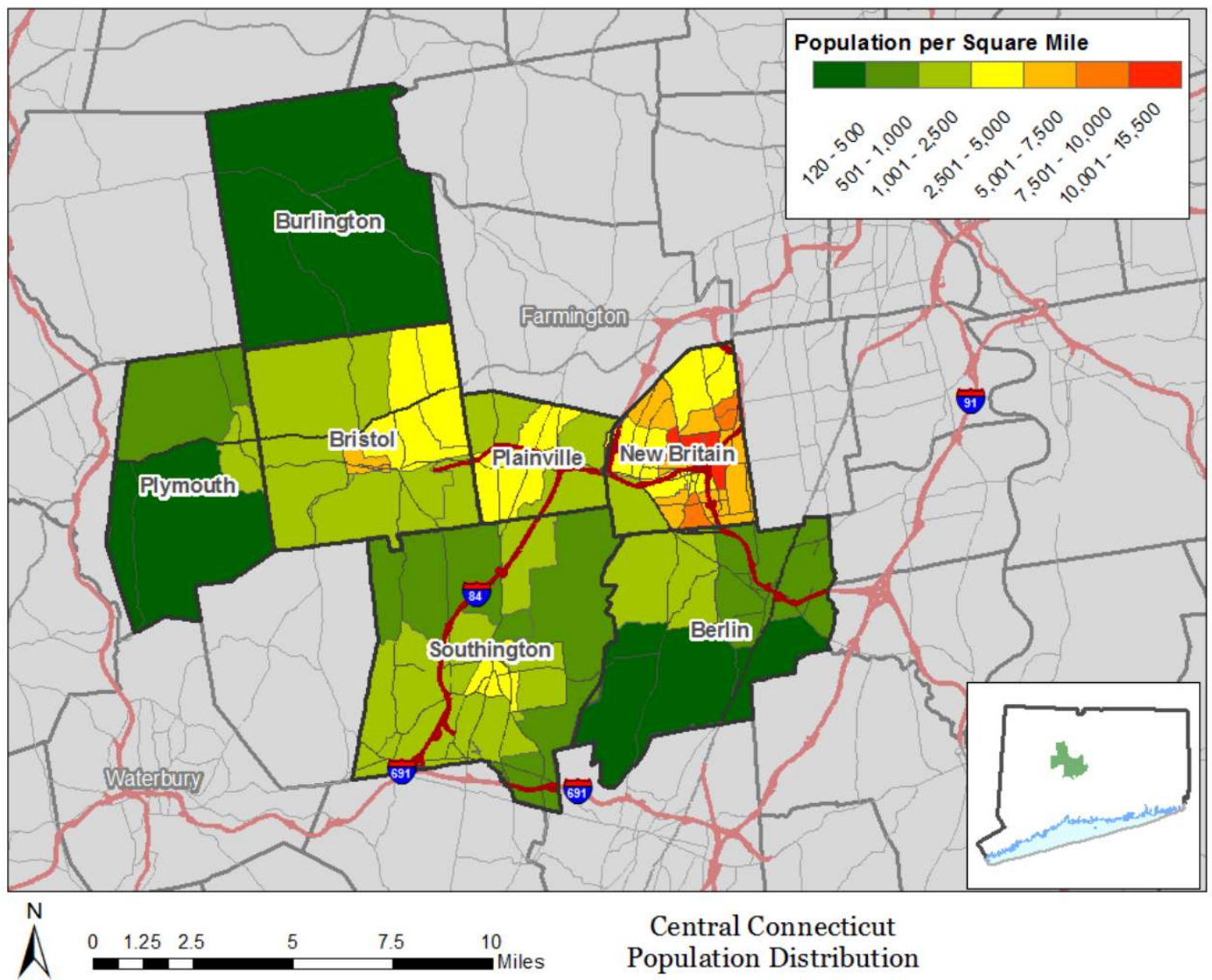
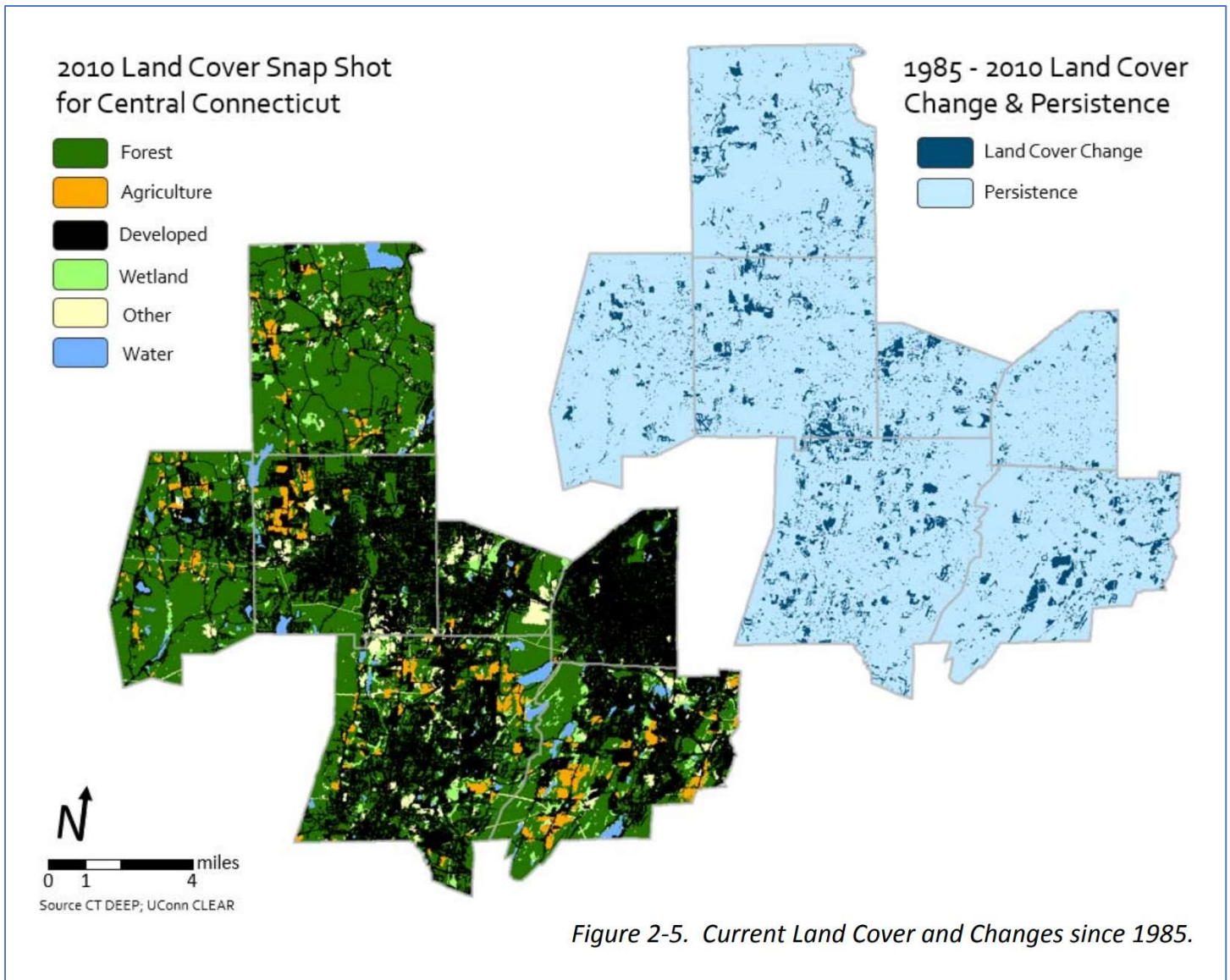


Figure 2-1. Location of Former CCRPA Communities.





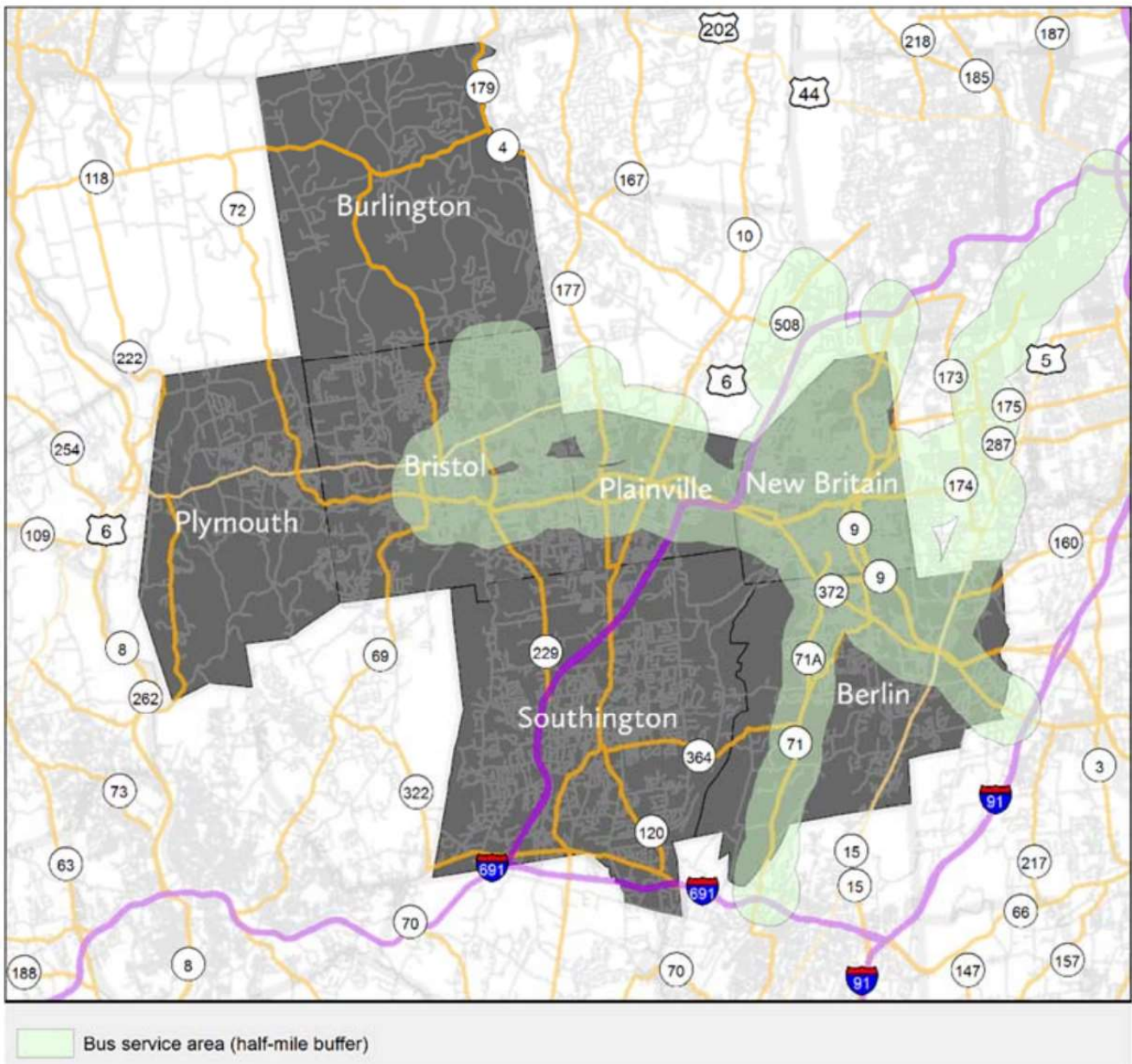


Figure 2-6. Bus Service in Former CCRPA Region.

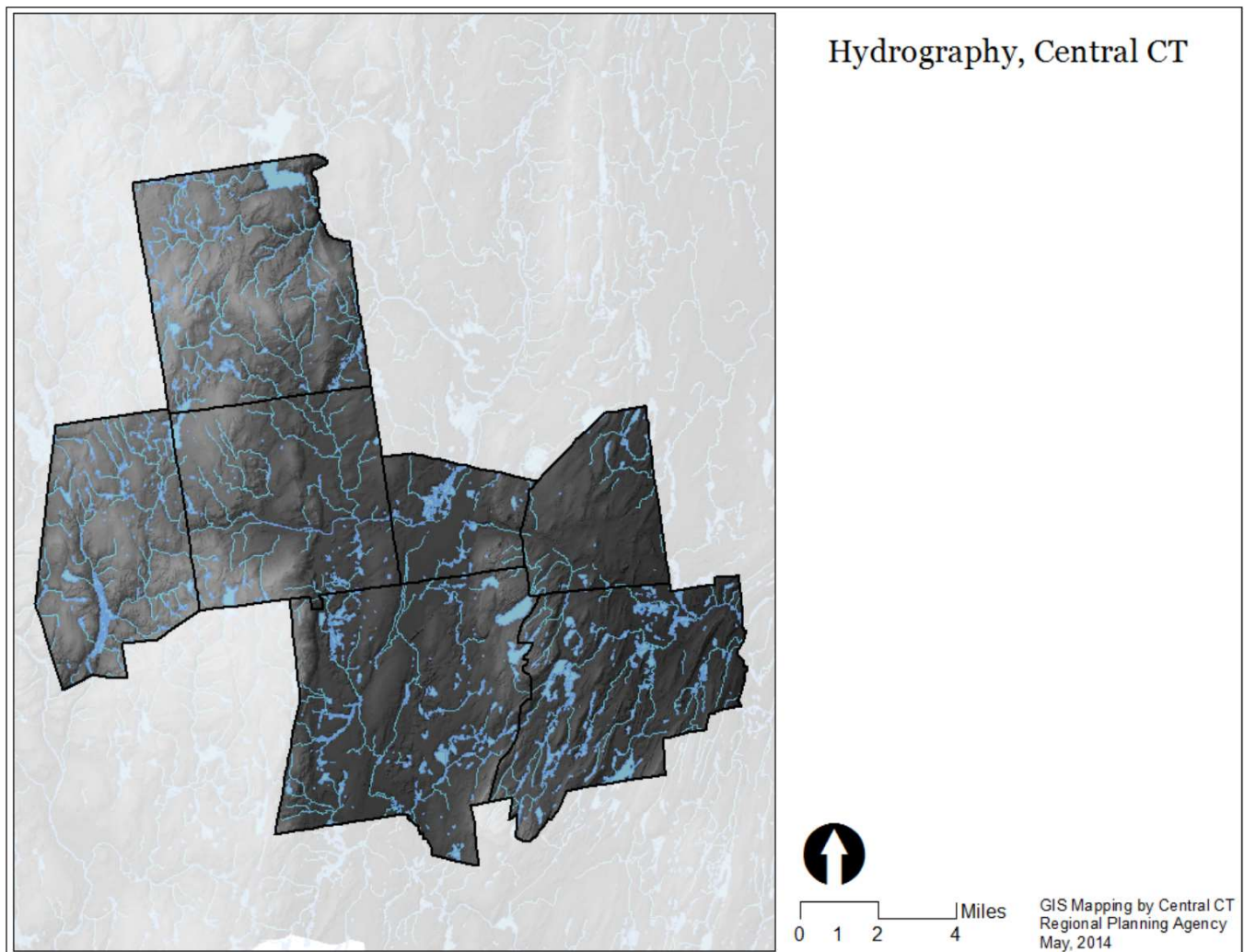


Figure 2-7. Hydrography.

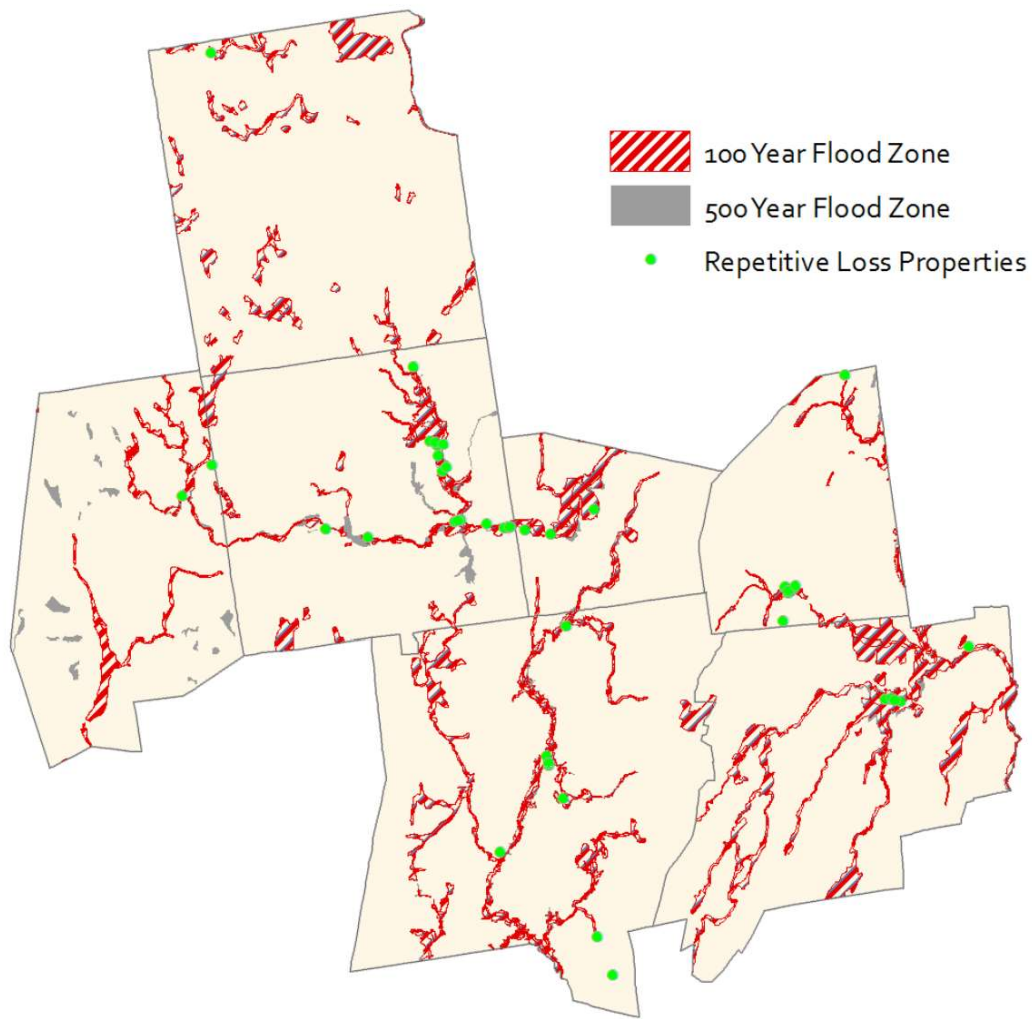


Figure 3-2 – Mapped Flood Areas and Associated Repetitive Loss Properties

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