

LOWER CONNECTICUT RIVER VALLEY COUNCIL OF GOVERNMENTS
HAZARD MITIGATION PLAN 2026 UPDATE

TOWN OF CHESTER MUNICIPAL ANNEX

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1. Contact Information

1.1 Point of Contact

Table 1.1. Town of Chester Contact Information

Information	Town of Chester
Contact Name	Cythia Lignar, First Selectwoman
Address	203 Middlesex Avenue Chester, CT 06412
Telephone	860-526-0013 x 202
Email	firstselectman@chesterct.org

1.2 Local Planning Team

The following representatives listed in Table 1.2 participated in meetings and provided input, data, and council toward the development of Volume 1 and this Chester, Connecticut Annex.

Table 1.2. Town of Chester Planning Team

Name	Title
Cythia Lignar	First Selectwoman
Cameron Evangelisti	Director of Public Works
Patricia Bandzes	Selectwoman
James Grzybowski	Emergency Management Director
Henry Krempel	Planning and Zoning
Zoe Chatfield	Zoning Comp. Officer
Richard Leighton	Fire Marshal

1.3 Lower Connecticut River Valley Council of Governments

Table 1.3. RiverCOG Contact Information

Information	RiverCOG Information
Contact Name	Margot Burns – Senior Environmental Planner
Address	RiverCOG 145 Dennison Rd. Essex, CT 06426
Telephone	(860) 581-8554 x 702
Email	mburns@rivercog.org

2. Jurisdiction Profile

2.1 Town Profile

Chester lies within Middlesex County along the west bank of the Connecticut River. It is bordered by the town of Killingworth to the west, Haddam to the north, and Deep River to the south. Across the Connecticut River to the east lie the towns of East Haddam and Lyme, which Chester is directly connected to by the Chester-Hadlyme Ferry, carrying Route 148. Figure 2.1 shows the location and corporate boundaries of Chester.

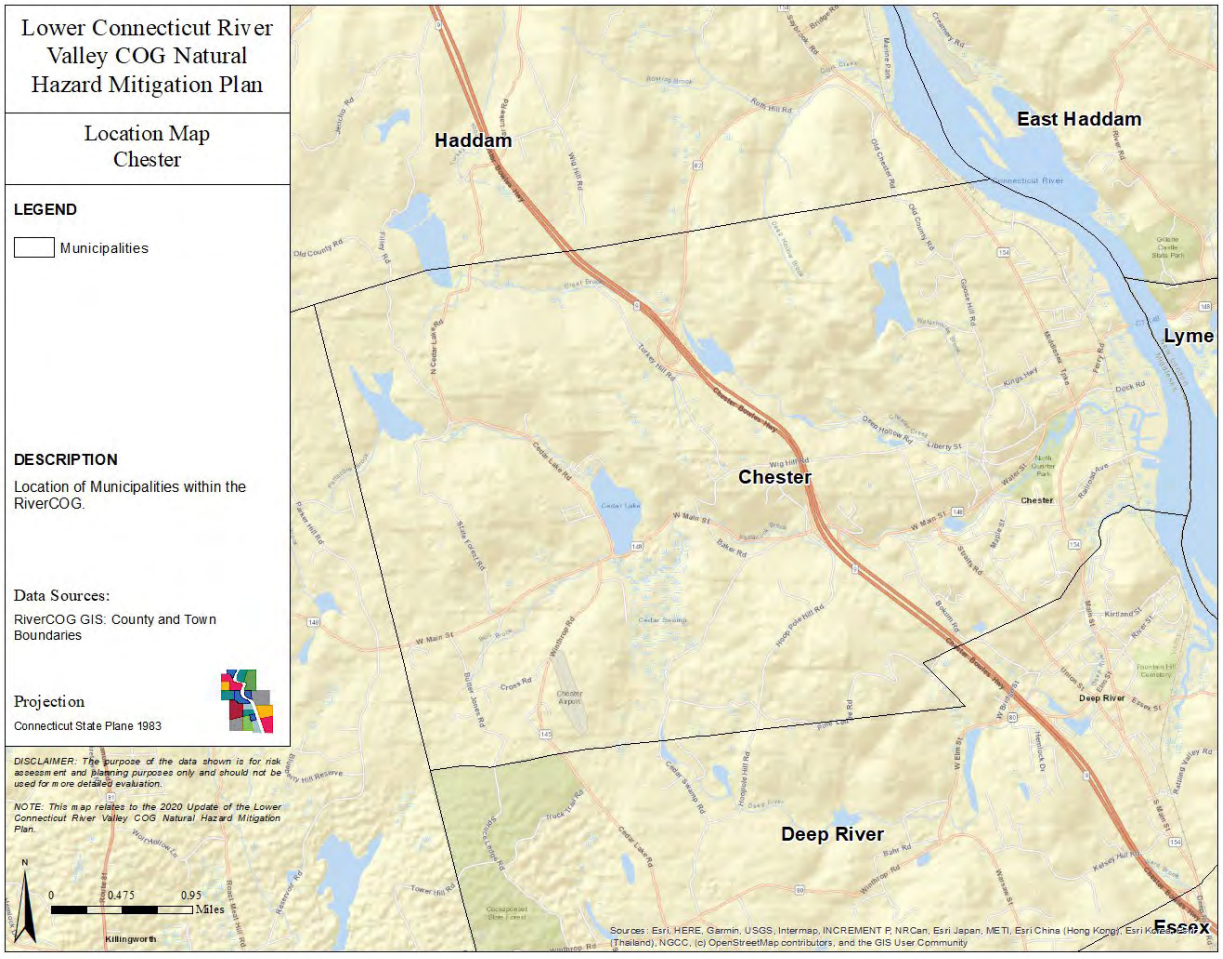


Figure 2.1. Chester Location

Chester's total area of 16.05 square miles is typified by lowland areas along the Connecticut River and rolling hills with ledge outcrops in the northeast and western areas of the town. Elevations range from less than 10 feet along Chester Creek and the Connecticut River to approximately 475 feet in

the western hills. The entire region surrounding Chester was formed by glaciation. Glacial till covers the bedrock over approximately 75 percent of the town, ranging from a depth of approximately 0–50 feet. Stratified drift consisting of sand mixed with gravel and silt covers the underlying bedrock in the remainder of the town.

Chester is a river-oriented community with several marinas, an historic ferry, and village center which attracts many visitors. The densely settled business district, Chester Center, is located at the convergence of two major streams, Pattaconk Brook and Great Brook. During the 18th and 19th centuries, Chester village center was used for shipbuilding, a point of origin for Chester products. Silting of the Chester Cove and the construction of the Middlesex Turnpike Bridge and the Valley Railroad sealed off the Cove to larger boats. During these colonial and industrial periods, dams on upland tributaries provided the source of hydro-power for many factories and mills in Chester.

A major offset to future development is the large area of state forest and water company land in Chester. Committed open space occupies 45% of the land area. Almost two thirds of the committed land is "open space," including the state forest land. Multi–family residential uses occupy less than ½ of 1% of the land area. Commercial and industrial uses are each less than 1% of the land area, and institutional uses occupy 2.3%. About 5.9% of Chester's land area is devoted to transportation use including Route 9 and other roads, the Chester Airport, and the Valley Railroad right-of-way. Figure 2.2 shows land cover in Chester.

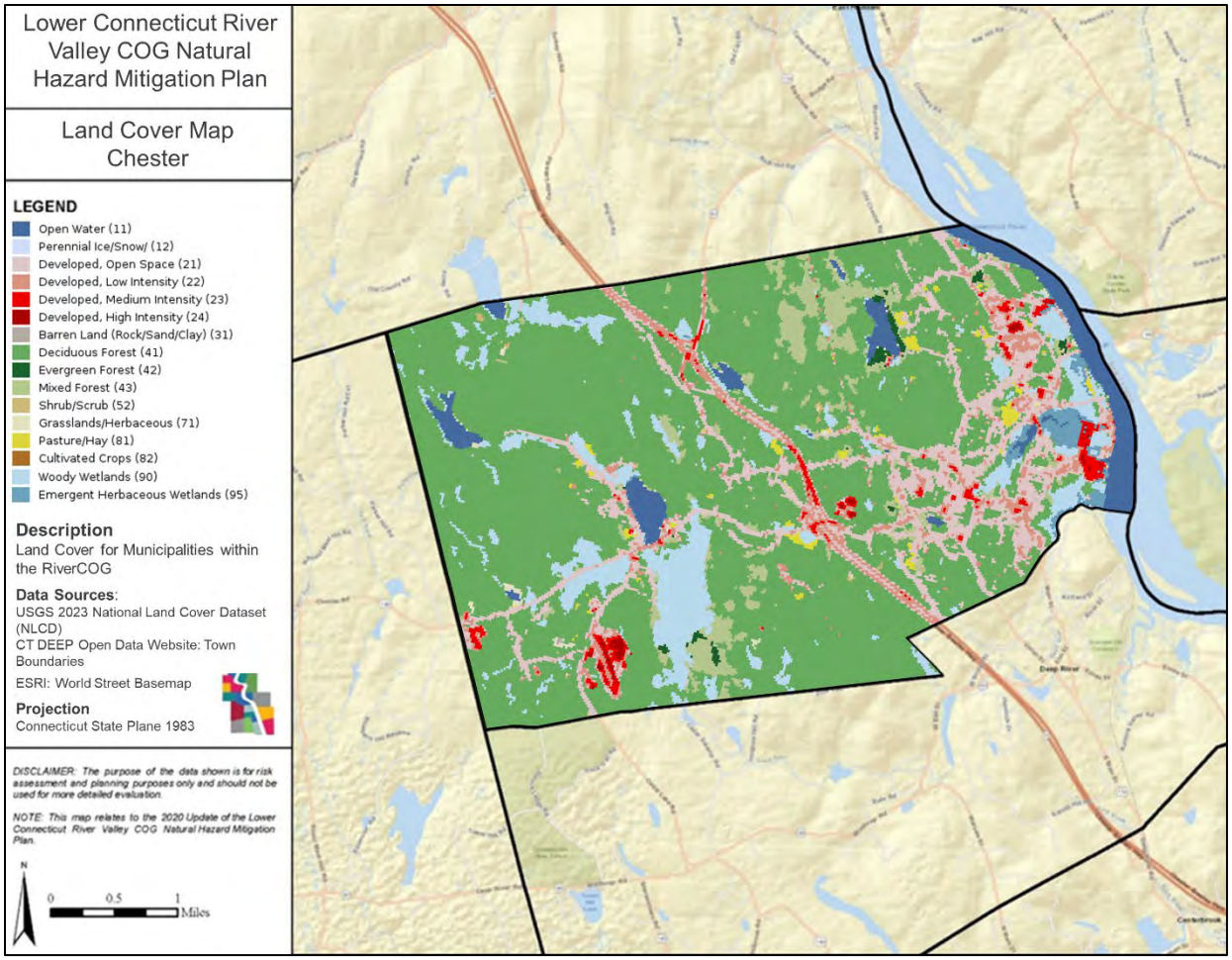


Figure 2.2. Chester Land Cover

Chester is endowed with many ecological and environmental assets, including inland wetlands, ponds, lakes, and large tracts of uninterrupted forest. Chester has focused on preserving wetlands.

Route 9, a limited access highway, runs in a north-south direction, splitting the town in half. Route 154, a major collector road, runs parallel to and east of Route 9. Route 148 runs in an east-west direction and provides access to Killingworth and the Chester-Hadlyme Ferry, providing cross river access on a seasonal basis.

The Valley Railroad operates scenic trains along the river and offers a stop at Route 148 for recreational users to access the Chester Hadlyme Ferry and Gillette Castle State Park in Hadlyme. River Valley Transit (RVT) operates two bus routes along Route 154 and Route 9 with several stops throughout town providing transportation to Middletown and the Old Saybrook train station. CT Transit operates an express bus connecting Old Saybrook and Middletown with Hartford via Route 9 with a stop at the Exit 6 commuter lot.

Chester Airport is a small, privately owned, public use airport serving approximately 20,000 aircraft operations yearly on one approximately ½ mile runway. The airport is located in the southwestern portion of Chester along Route 145.

The 2023 American Community Survey (ACS) reported a town population of 3,786 people which represents a 10.6% decrease from 2019.[1] Figure 2.3 provides a demographic profile for Chester.[2]

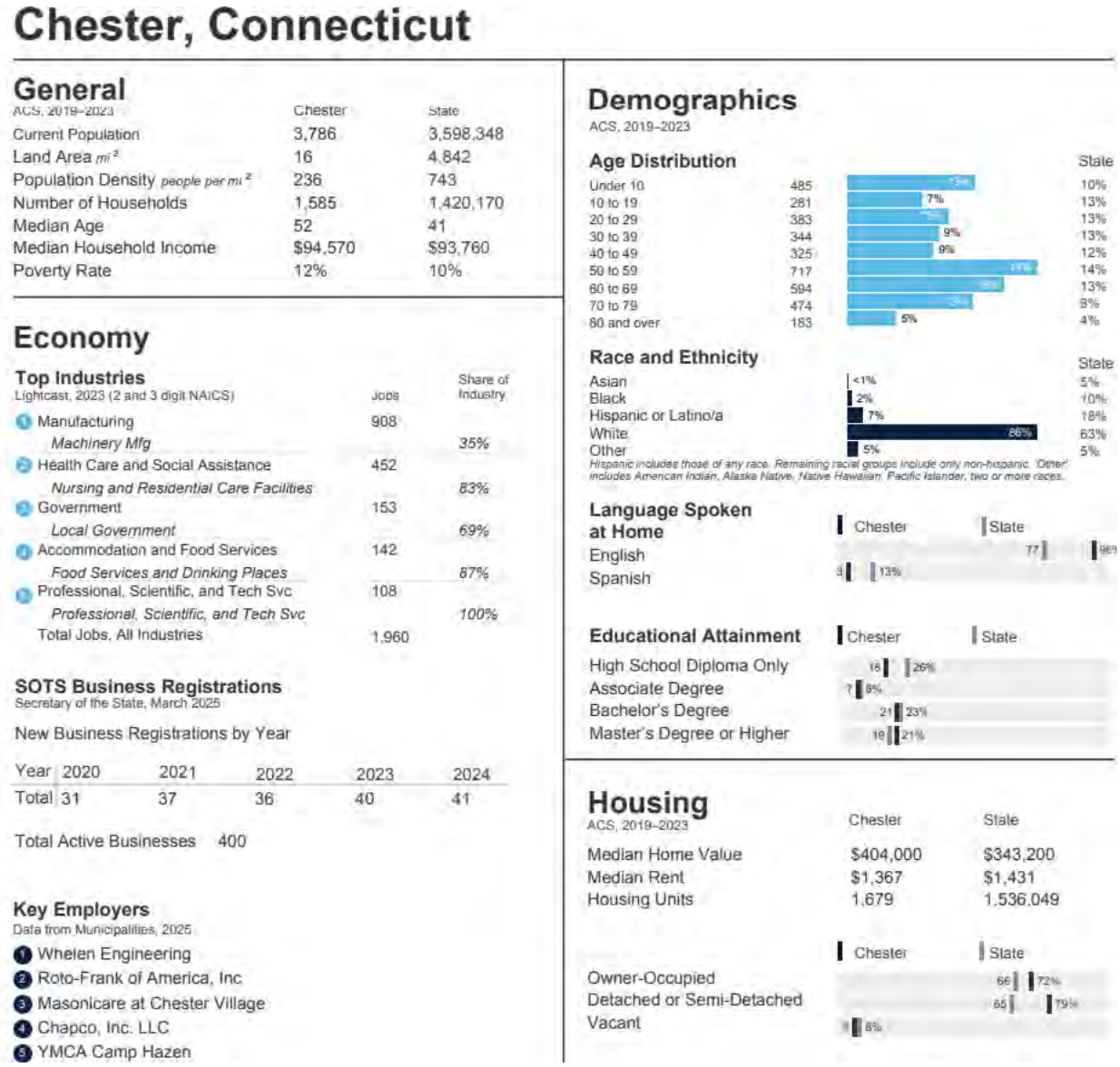


Figure 2.3. Town of Chester Demographics

[1] https://s3-us-west-2.amazonaws.com/cerc-pdfs/2025/Chester.pdf
[2] - Published on Town of Chester, CT *(Source: Connecticut Data Collaborative)*

2.2 Climate

Average weather data in Chester was sourced from the Weather Spark website (weatherspark.com).

Over the course of the year, the temperature typically varies from 23°F to 82°F and is rarely below 9°F or above 89°F. The warm season lasts for 3.4 months, from June 2 to September 15, with an average daily high temperature above 73°F. The hottest day of the year is July 20, with an average high of 82°F and low of 66°F. The cold season lasts for 3.4 months, from December 1 to March 13, with an average daily high temperature below 46°F. The coldest day of the year is January 30, with an average low of 23°F and high of 37°F.

Chester does not experience significant seasonal variation in the frequency of wet days (i.e., those with greater than 0.04 inches of liquid or liquid-equivalent precipitation). The frequency ranges from 23% to 33%, with an average value of 27%. The most rain falls during the 31 days centered around April 2, with an average total accumulation of 3.9 inches. The snowy period of the year lasts for 4.8 months, from November 15 to April 8, with a sliding 31-day liquid-equivalent snowfall of at least 0.1 inches. The most snow falls during the 31 days centered around January 27, with an average total liquid-equivalent accumulation of 0.8 inches.

The windier part of the year lasts for 6.2 months, from October 16 to April 21, with average wind speeds of more than 6.7 miles per hour. The windiest day of the year is January 30, with an average hourly wind speed of 8.5 miles per hour.

2.3 Government Style

Town government is conducted by an elected Board of Selectmen, with the position of First Selectman being full time. The legislative body is the Town Meeting. The town encourages involvement in community activities, boards, and commissions. Meeting dates are posted on the Town's web site and on the public bulletin board in the Town Hall.

2.4 Development Trends

Limited new development is possible in Chester due to a lack of available land. However, redevelopment projects are taking place along with a handful of new development projects underway:

- An appeals decision is pending for a 36 unit affordable housing development at 47 Middlesex Avenue
- An additional 16 work-art live spaces are planned for 33 Liberty Street
- A mixed-use development is planned at 100 West Main Street
- An approved 8-apartment development is pending at 9 Water Street in the location of a former bank

For the most part, these projects are not taking place in areas of risk. However, given the existing development patterns, some redevelopment will place properties at risk. One potential challenge related to redevelopment is that public water service and sewer service are not available in all parts of Chester. This may limit some redevelopment.

The new development noted has been, or is being, constructed to current building codes and zoning standards. While any new development arguably increases vulnerability to some hazards, construction to new codes and standards mitigates, to some extent, the increase in vulnerability. All new and proposed developments are located in areas where allowed by zoning. The redevelopment projects noted (e.g., former bank conversion) are anticipated to reduce vulnerability through being improved to higher codes and standards.

2.5 Town-Specific Hazard Concerns

Municipal staff reported several specific hazard concern issues, which are listed below. The information below is intended to supplement the hazard specific analysis completed in Section 2, of Volume I of this plan.

A note: To preserve the reader's ability to align RiverCOG-Level and town-level hazard identification and risk analysis, the order of the following hazards aligns with the order of hazards in Volume I. Individual towns have ranked these hazards differently. This town-level ranking can be found in Section 3.3: Hazard Risk Ranking.

2.5.1 Severe Winter Weather

Winter storms typically will impact the entire town; however, effects can vary locally depending on weather conditions (e.g., snowfall in higher elevation with rain in lower elevations near the river) or river flooding from nor'easters. Route 148 is susceptible to icing and snow-drifting when Cedar Lake is frozen, and when northwest winds are high. A winter storm in March 2018 left roughly 80% of the town roads blocked from downed trees and tree limbs.

2.5.2 Flooding

Riverine Flooding

Chester experiences riverine and flash flooding during severe rain events, mostly limited to areas near streams and dams. Flooding along the Connecticut River during spring freshets is a top concern and is worse in years with high amounts of snowfall in the northern portion of the Connecticut River Watershed. The Town also experiences tidal flooding from the Connecticut River. The core of development within Chester is in the village center near several major streams, including the confluence of Great Brook and Pattaconk Brook, which form the tributaries for Chester Creek. Many businesses are located along streams and rivers and are at risk from flooding.

The most recent severely damaging flood event of note occurred in September 2018 during a flood that affected most of Connecticut from the Fairfield area east-northeastward to the Lebanon area.

Major precipitation on top of streams that were already flowing at high stages led to flash flooding throughout the Town. Flooding may have exceeded a 500-year event in some locations in Chester. Significant damage occurred where streams are constrained or make sharp turns. All three repetitive loss (RL) properties were flooded. Liberty Street Bridge over Great Brook was severely damaged and the stream bank in that area was damaged (Figure 3.1), a propane tank was dislodged by flowing water and forced the evacuation of several businesses, and merchandise stored in basements was lost due to basement flooding.[3] Chester Creek at North Main and High Street was severely damaged. The Town applied for Public Assistance from FEMA ($91,000), as well as assistance from Federal Highway Administration ($245,000), and worked with NRCS regarding stream damage. All damage from the 2018 flood is considered complete.



Figure 2.4. Liberty Street Bridge, 2018

The Town remains very concerned about the state of multiple streams and streambanks following flooding events such as the very damaging flood event of September of 2018 and the effects of Tropical Storm Ida in 2021. Flooding that affects roadways in Chester are caused primarily by three factors: (1) low-lying elevations prone to river or stream flooding, (2) undersized culverts creating restrictions to the flow of flood waters, and (3) reduction of the cross section of stream and river channels by bridge abutment encroachment, thereby causing channel restriction in a manner like culverts.

The Town has noted that some bridges and culverts are degraded or undersized; cracked and degraded wingwalls are a concern. In recent years, CT DOT removed significant debris and sediment under and around the Water Street bridge; and reinforced the banks of Great Brook with rip rap in the Water Street bridge area (NRCS Site #5) in November 2024.

Beaver activity is a concern in Chester, as beaver dams are restricting flow in some waterbodies. Cedar Lake Watershed Commission is charged with overseeing conditions of Cedar Lake, which is part of the watershed for Chester Creek whose headwaters lay within the Cockaponset State Forest. Beavers have been a challenge. Cedar Lake has flooded West Main Street.

Ice jams are a concern along the Connecticut River. In March 2018, an ice jam event on the Connecticut River (Figure 3.2) led to five residents being stranded in two houses at the end of Dock

[3] Photo Credit: www.courant.com

Road.[4] Volunteers with the Chester Hose Company drove an M35 2½-ton cargo truck (also known as a "Deuce-and-a-half" truck), the town's only piece of equipment that could move through three feet of water, to rescue them. Town personnel have had to perform similar rescues in the past using other emergency response vehicles.



Figure 2.5. Ice Jam Flooding on Dock Road, 2018

Coastal Flooding

Much of the flooding experienced along the Connecticut River is tidally influenced and therefore may be considered coastal. For the purpose of this annex, flooding along the Connecticut River will be considered coastal whereas flooding along upper Pattaconk Creek other streams will be considered riverine. Dock Road is at a low elevation and susceptible to tidal flooding associated with the Connecticut River, isolating residential structures and two Yacht Clubs. Ferry Road and Castle View Extension (private) are the only other two roads that lead to residential properties, which have only one way in or out, and are susceptible to tidally influenced flooding. Over the last few years since the 2021 edition of this plan, new evacuation signs have been posted on Dock Road and other floodprone roads.

Sea Level Rise

Sea level rise will have long-term consequences to tidal water surface elevations of the Connecticut River, lower Chester Creek , and associated wetland systems. In the long term, changes to flood water surface elevations could be noticed. Over the five-year timeframe for this plan, changes are not likely to be noticeable. Researchers[5] in Connecticut believe that Connecticut River communities should plan for about half of the vertical sea level rise projected for Long Island Sound. In other words, the State-mandated planning threshold of 20 inches by 2050 could translate to ten inches of vertical flooding added to tidal flooding along the Connecticut River and

[4] Photo Credit: zip06.com / Lauren Gister
[5] Robert Thorson, UConn, via presentation at the UConn Law School in April 2026

lower Chester Creek by 2050. Nevertheless, over the five-year timeframe for this plan, changes in horizontal flood extents associated with this vertical increment are not likely to be noticeable.

2.5.3 Dam Failure and Overtopping

Dams are of high concern to the Town due to both their potential inability to operate effectively during flood conditions and the risk of their failure. The town of Chester has a total of 31 dams within its borders, according to the CT DEEP. Figure 2.4 shows the location of all registered dams within Chester. Moderate, Significant, and high hazard-class dams are presented in Table 2.1. Most of these dams lie along Pattaconk Brook and Great Brook, both of which flow through the downtown commercial area of Chester. Currently, the State of Connecticut owns one dam, five are owned by the town, and five are owned by the Connecticut Water Company. High to moderately high hazard dams tend to be well maintained or to have been rebuilt relatively recently. The other dams in Chester are privately owned. The dams in Town are in varying conditions of repair. To date no dams in the Town have fully breached.

Table 2.1. Moderate, Significant and High Hazard Dams, Chester, CT

CT Dam #	Dam Name	Hazard Class*	Owner
2601	DEEP HOLLOW RESERVOIR DAM	B – Moderate	Connecticut Water Company
2602	DEUSES POND DAM	BB – Significant	Connecticut Water Company
2604	SCHRIBER PARK (GREAT BROOK DAM)	BB – Significant	Town of Chester
2605	JENNINGS POND DAM	C - High	Town of Chester
2606	GRISWOLD POND #1 DAM	BB - Significant	Dennis Coleman
2607	PATTACONK DAM #3	B - Moderate	94 WEST MAIN LLC C/O TLB ARCHITECTURE
2608	GREAT BROOK DAM #1	BB - Significant	GOODSPEED OPERA HOUSE FOUNDATION
2609	GRISWOLD POND #2 DAM	BB - Significant	PAUL HENKIND
2610	UPPER POND DAM	BB -Significant	Town of Chester
2611	OLD MILL POND DAM	BB - Significant	JACQUES
2613	WATERHOUSE POND DAM	B -Moderate	Connecticut Water Company
2614	PATTACONK RESERVOIR DAM	C - High	Connecticut DEEP
2615	TURKEY HILL RESERVOIR DAM	B - Moderate	Connecticut Water Company
2628	CEDAR LAKE DAM	BB - Significant	Town of Chester

**Class A and AA dams are not listed in this table*

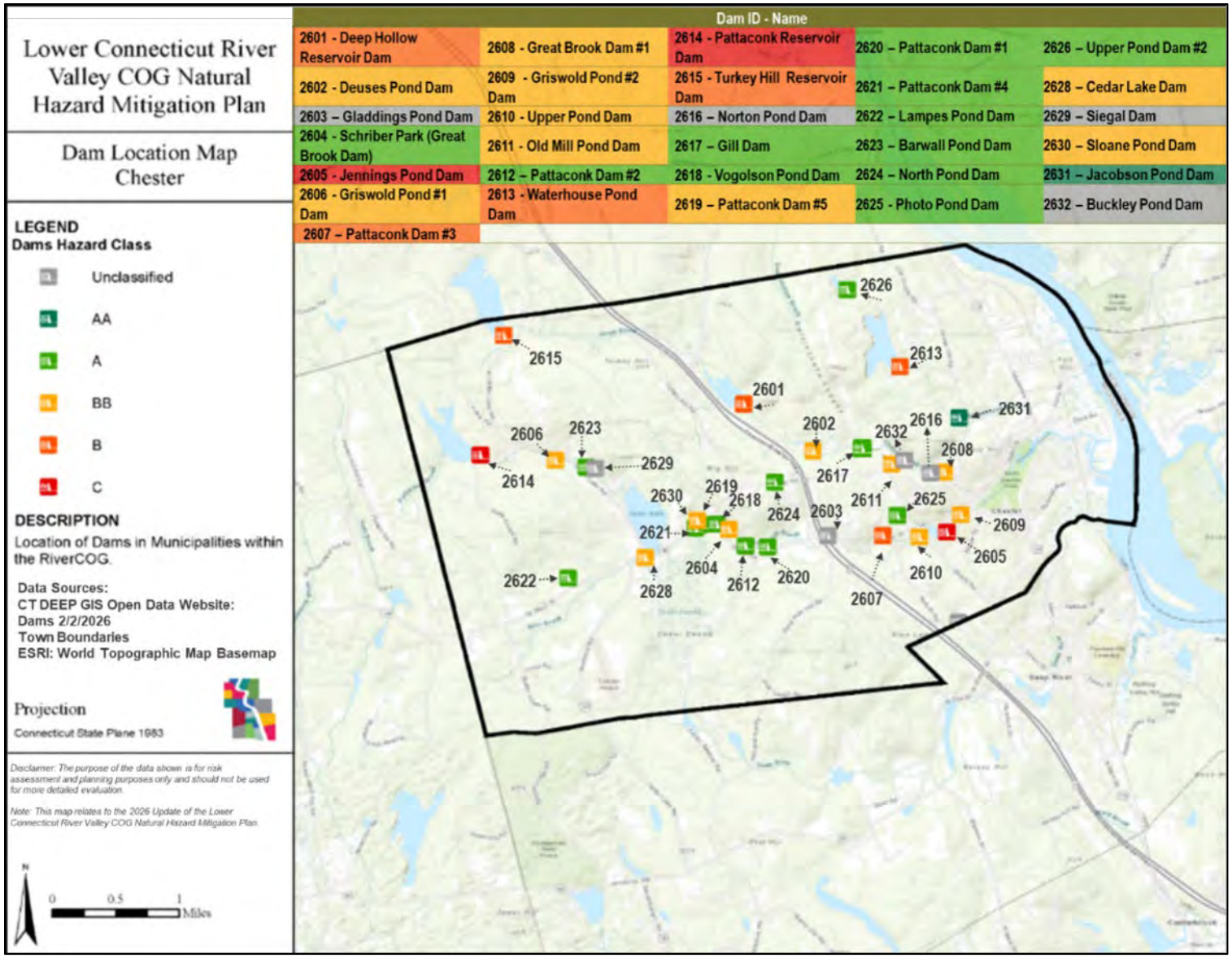


Figure 2.6. Location of Dams, Chester, CT

Town staff report that many impoundments have become filled with sediment over the years and so have limited capacity to retain water during flooding. Town staff believe that some damage during 2018 severe flooding occurred because of these poorly maintained impoundments. A privately-owned dam near Route 9, which has accumulated silt and sand from the nearby highway, was unable to hold floodwaters in 2018 and ultimately flooded several nearby properties.

The subject plan update seeks approval under Element G of the Local Plan Review Tool, for potential HHPD eligibility. Two high hazard dams are located in Chester: Jennings Pond Dam and Pattaconk Reservoir Dam. These dams were introduced and described in the multi-jurisdiction document. The Emergency Action Plans (EAP) were obtained and reviewed to understand the people, critical facilities, and community assets in the dam failure inundation areas.

- Pattaconk Reservoir Dam: The State of Connecticut owns this dam. An EAP was prepared and accepted by DEEP. Pattaconk Brook flows from the reservoir and dam.
    - According to the EAP, a "major flood caused by a breach of the dam is estimated to inundate approximately 30 homes, eight roadways, zero railroads, and three dams."
    - The EAP identified the affected roads as Cedar Lake Road, David Road, Brookside Road, Bailey Road, Nehb Road, West Main Street (State Route 148), Shailer Pond Road, and State Forest Road.
    - Cedar Lake is located downstream of the dam within the inundation area. A flood from a breach of Pattaconk Reservoir Dam is anticipated to continue downstream of Cedar Lake along a short distance of Pattaconk Brook.
    - Inundation is either not anticipated to reach Chester Center, or such inundation would not be discernible from a flood occurring at the same time along Pattaconk Brook.
    - Due to the unique topography south of Cedar Lake in the southwestern part of Chester, a flood from the breach of Pattaconk Reservoir Dam is anticipated to flow overland through an undeveloped area to the headwaters of Deep River and Shailer Pond, which is located on the Chester/Deep River town line. Inundation is either not anticipated to extend downstream along Deep River to the Town of Deep River Center; or such inundation would not be discernible from a flood occurring at the same time along Deep River.
- Jennings Pond Dam: The Town of Chester owns this dam. An EAP was prepared and accepted by DEEP. Jennings Pond is an impoundment along Pattaconk Brook, located far downstream from Pattaconk Reservoir Dam and Cedar Lake within Chester Center.
    - The mapped inundation area extends from Jennings Pond through Chester Center a short distance, ending in the vicinity of Route 154. Downstream of Route 154, the inundation area would merge with the tidally influenced flood zones associated with the Connecticut River.

- The EAP notes that "a major flood caused by a breach of the dam is estimated to inundate 35 residential properties, 25 commercial businesses, and three roadways. These homes are located generally along West Main Street, North Main Street, Main Street, Water Street, and Spring Street."
- Potentially affected critical facilities include the rear of the Chester Library property, the sewer pumping station serving Chester Center, and a transit district bus hub that serves Chester Center. While not considered critical facilities, the downtown business district could be impacted by a dam breach.

The level of detail available from the EAPs for the high hazard dams is not typically available for lower class dams, as the EAP requirements vary.

2.5.4 Thunderstorms and Severe Weather

Chester has experienced significant road blockages due to downed trees and tree limbs following winter storm and high wind events. For example, the neighborhoods just east and north of Cedar Lake have limited access and are at risk from isolation due to downed trees or limbs. An increase in the number of dead or dying trees throughout Town has presented problems during storms and high wind events. An estimated 20% of roadside trees are ash and have been damaged by the Emerald Ash Borer. In 2019, large tree limbs fell onto cars on three occasions.

The economic core of Chester is vulnerable to loss of electricity and communication services due to downed utility lines. The local energy utility, Eversource, targets its tree maintenance and trimming activities along the backbone/main trunk and distribution lines of its network at a frequency of once every four years. Chester's Tree Warden also proactively identifies dead and dying trees along Town roadways for removal for public safety. Town staff observe that the result of this change is a general decrease in the number of power outages in Town.

2.5.5 Hurricanes and Tropical Storms

Hurricanes and tropical storms will affect the entire town; however, effects will vary depending on proximity to the river. Strong winds and rain will affect the entire town while storm surges and flooding will affect river shoreline areas. Hurricane Sandy hit Chester on October 29, 2012 and Tropical Storm Irene on September 2, 2011, both of which caused significant coastal flooding, property damage, damage to homes and downed power lines resulting in week-long power outages in many cases. Keeping trees and other debris clear of powerlines and roads in town will allow for less power outages and clear evacuation routes. In addition, emergency alert systems in place will allow for early warning and proactive information for the town's residents and businesses.

The flooding from Tropical Storms Elsa, Fred, Henri, and Ida in 2021 impacted Chester to varying degrees. In particular, the remnants of Tropical Storms Ida caused notable flooding in Chester.

2.5.6 Tornado

Although relatively rare in CT, the threat of tornado could cause significant damages to life and property in the Town of Chester. Overall, residents throughout Chester are equally susceptible to the chance of a tornado occurrence. However, a strong tornado would likely cause more damage in the more densely developed Chester Center area. Other areas of town, particularly the west end of town, which tends to be less developed may not sustain as much property damage.

2.5.7 Earthquake

The entire town could be affected by an earthquake in this region; however, impacts could vary locally. While there is no record of damages in Chester from an earthquake, they have occurred in the region and have been felt locally. In Chester and the surrounding region, recorded impacts have been limited to shaking to the extent that things were knocked off shelves and people were alarmed. Structural damage has been limited to building components such as chimneys and buildings in poor repair; but failing structures have caused property damage in nearby towns.

2.5.8 Drought and Wildland Fire

As with all the towns in the region, Chester is small enough that a drought would most likely be town wide. Severe droughts are not frequently occurring natural events, but flashy droughts have been occurring with some regularity.

Under extreme drought conditions, areas of concern for wildfire include the Cockaponset State Forest located mostly in the western portion of town. Drought also can exacerbate potential for small wildfires and hinder the ability of the town to control outbreaks. Different areas throughout town are susceptible to different types of fires. Inland areas where thick forest cover is abundant is more susceptible to fires feeding on ground ladder fuels. Areas closer to the densely developed shoreline where more roads are present are more susceptible to fires feeding on surface fuels. Town staff have identified two areas in Town that would benefit from improved access to firefighting water sources: The Cedar Lake area and Inspiration Lane.

2.5.9 Extreme Temperature

Extreme cold spells do occur periodically, typically between the months of December and March. Although cold temperatures are normal during the winter months, occasionally temperatures can drop below freezing for extended periods, sometimes as low as 0°F. Low-income housing residents and the elderly in homes without sufficient heat sources are particularly vulnerable. Town officials have planned and continue to update the accommodations of shelters and warming centers in their community. Warming centers are used by those that either have insufficient heat sources or for times of power outages.

Extreme heat and heat waves are a possibility during the summer months, particularly between June and August. A heat wave in Connecticut is defined as a period where the high temperature reaches at least 90°F for three consecutive days. The elderly in homes without air conditioning are vulnerable.

Town officials have identified cooling centers for those desiring a place to go to cool off; the cooling centers are the Town Hall and fire house. These facilities operate as warming centers in the winter months.

2.5.10 Terrestrial Invasive Species

Invasive species are an emerging challenge for the Town of Chester. Terrestrial invasive species include those typically found in Connecticut. However, the Town did not identify any significant challenges that exceed those identified Statewide.

2.5.11 Aquatic Invasive Species

Aquatic invasive species include those typically found in the Connecticut River and its tributaries. Hydrilla and Water Chestnut are growing rapidly in the Chester Creek area as well as the Chester adjacent parts of the Deep River.

2.5.12 Tree Diseases and Pests

Since the 2021 plan update, the Town has removed trees that have been damaged or killed as a result of other hazards, and have also removed trees damaged by disease and pestilence such as the emerald ash borer. Lantern flies have been a critical concern since the adoption of the 2021 edition of this plan.

3. Hazard Risk

3.1 Recent Events

The most recent significant wildfire event was the Haddam wildfire in the spring of 2025. It was a vehicle fire that spread to a house and then to brush nearby. Chester provided mutual aid.

3.2 Historical Events

Table 3.1 lists the Federal Disaster declarations for Middlesex County, for which Chester requested assistance.

Table 3.1. Natural Hazard Events

Type of Event	Date	Preliminary Damage Assessment
Flood Event (DR-1904)	4/23/2010	$27,947.99
Hurricane Event (DR-4023)	09/02/2011	$55,401.96
Hurricane Event (DR-4087)	10/30/2012	$68,178
Winter Weather Event (DR-4106)	03/21/2013	$39,589.01
Flood Event (DR-4410)	12/05/2018	$128,942
Tropical Storm Isaias (DR-4580)	1/12/2021	$62,856

Tropical Storm Irene in 2011 and Hurricane Sandy in October 2012 resulted in many closed businesses and week-long school closings (and subsequent extension of the school year).

FEMA's public assistance program provides reimbursement to communities after federally declared disasters. Funding is typically for public works and public safety extraordinary expenses (overtime), administrative expenses, debris cleanup, and public damages.

Total PA reimbursements (1998 – 2025) to the community were as follows:

- Flood Events: $156,890 ($5,811 annually)
- Hurricane (Wind) Events: $186,860 ($6,905 annually)
- Winter (Snow) Storm Events: $49,589 ($1,466 annually)

Table 3.2 through Table 3.4 list PA reimbursements in Chester.

Table 3.2. Flood Event PA Reimbursements, Chester, CT

Incident	Mar-May 2010	Sep 2018
Declaration	4/23/2010	12/05/2018
Disaster No.	1904	4410
Entity	FEMA PA Reimbursement	FEMA PA Reimbursement
State	$	$
Municipal	$	$
Nonprofit	$	$
Total	**$27,948**	**$128,942**
Annualized	**$1,035**	**$4,776**

Table 3.3. Hurricane Wind Event PA Reimbursements, Chester, CT

Incident	Aug-Sep 2011 (T.S. Irene)	Oct-Nov 2012 (SuperStorm Sandy)	Jan 2021 (Tropical Storm Isaias
Declaration	9/2/2011	10/30/2012	1/12/2021
Disaster #	4023	4087	4580
Entity	FEMA PA Reimbursement	FEMA PA Reimbursement	FEMA PA Reimbursement
State	$	$	$
Municipal	$	$	$
Nonprofit	$	$	$
Total	$55,402	$68,178	$62,856
Annualized	**$2,052**	**$2,525**	**$2,328**

Table 3.4. Winter Storm PA Reimbursements, Chester, CT

Incident	Feb 2013
Declaration	3/21/13
Disaster #	4106
Entity	FEMA PA Reimbursement
State	$
Municipal	$
Nonprofit	$
Total	$39,589
Annualized	**$1,466**

3.3 Hazard Risk Ranking

Chester participated in the regional hazard ranking conducted by the Hazard Mitigation Planning Team. Table 3.5 shows the scoring for the various ranking parameters that were used. The probability of each hazard is determined by assigning a level, from unlikely to highly likely, based on the likelihood of occurrence from historical data. The total impact value includes the affected area, primary impact, and secondary impact levels of each hazard. Level of Community Concern reflects the perceived risk of each hazard as indicated by respondents to question 6 of the community survey. This question asks, "How concerned are you about each of the following hazards impacting your home, business, community, or organization?" and received 157 responses.

Each of these five criteria are assigned weights, as well as point values for each of their responses. Each level's score is reflected in the matrix. The total score for each hazard is the probability score multiplied by its importance factor times the sum of the impact level scores multiplied by their importance factors. Based on this total score, the hazards are separated into three categories based on the hazard level they pose to the communities: Significant, Moderate, Limited. Table 3.5. Hazard Ranking Parameters provides a summary of the categories used to rank the hazards and their weighted values for the Composite Hazard Risk Index.

Table 3.5. Hazard Ranking Parameters

Criteria	Weight	1 Point	2 Points	3 Points	4 Points
Hazard Probability	**2.0**	**Unlikely** Less than 1% probability in next 100 years or has a recurrence interval of greater than every 100 years.	**Somewhat** Likely Between 1 and 10% probability in next year or has a recurrence interval of 11 to 100 years.	**Likely** Between 10 and 100% probability in next year or has a recurrence interval of 10 years or less	**Highly Likely** Near 100% probability in next year or happens every year.
Impact – Affected Area	**0.8**	**Isolated** Less than 1% of area affected	**Small** Between 1 and 10% of area affected	**Medium** Between 10 and 50% of area affected	**Large** Between 50 and 100% of area affected
Impact – Primary Impact	**0.7**	**Negligible** 1 to 10% of people or property	**Limited** 10% to 25% of people or property	**Critical** 25 to 50% of people or property	**Catastrophic** >50% of people or property
Impact – Secondary Impact	**0.5**	**Negligible** No loss of function, downtime, and/or evacuations	**Limited** Minimal loss of function, downtime, and/or evacuations	**Moderate** Some loss of function, downtime, and/or evacuations	**High** Major loss of function, downtime, and/or evacuations
Level of Community Concern	**1.0**	**Low Concern**	**Moderate Concern**	**High Concern**	**-**

The hazard risk ranking generated from this exercise, along with consideration of available data, was used to prioritize the level of effort assigned to further analysis of each hazard in the vulnerability analysis and lost estimation sections. All the participating communities agreed upon the results of the hazard ranking for the overall region. Based on the results of the exercise, the hazards were ranked as follows in Table 3.5. Hazard Ranking Parameters. Chester endorsed the ranking as accurate for the Town.

Table 3.6. Summary of Potential Hazard Impacts

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
Aquatic Invasive Species	Semi-quantitative, supplemented by state and municipal figures, recommend survey	Highly Likely - 4	Large - 4	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant
Terrestrial Invasive Species	Semi-quantitative, supplemented by state and municipal figures, recommend survey	Highly Likely - 4	Large - 4	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant
Tree Infestation	Semi-quantitative, supplemented by state and municipal figures, recommend survey	Highly Likely - 4	Large - 4	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant
Hurricanes	Hazus for wind	Likely - 3	Large - 4	Critical - 3	Moderate - 3	High Concern - 3	15.8	Significant
Winter Storms (Snow, Ice, Wind, including Nor'easters)	Historic analysis for probability and annualized damages	Highly Likely - 4	Large - 4	Negligible - 1	Moderate - 3	Moderate Concern - 2	15.4	Significant

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
Flood – Riverine and Inland Flooding (Riverine, Drainage)	Hazus, SLR Overlay, FS Model Overlay, Historic data and damages for additional probability	Likely - 3	Medium - 3	Critical - 3	High - 4	High Concern - 3	15.5	Significant
Extreme Heat and Cold	Qualitative based on historic	Likely - 3	Large - 4	Negligible - 1	Limited - 2	High Concern - 3	13.9	Moderate
Severe Weather (thunderstorms, downbursts, hail, lightning)	Historic analysis for probability and annualized damages	Highly Likely - 4	Small - 2	Negligible - 1	Limited - 2	Moderate Concern - 2	13.3	Moderate
Flood – Coastal Flood (tidal aspects of Connecticut River flooding that are affected by sea level rise)	Hazus, SLR Overlay, FS Model Overlay, Historic data and damages for additional probability	Likely - 3	Medium - 3	Limited - 2	Moderate - 3	High Concern - 3	14.3	Moderate
Flooding from Dam Failure	Dam Inundation areas, Historic analysis for probability and annualized damages	Unlikely - 1	Medium - 3	Critical - 3	High - 4	High Concern - 3	11.5	Limited

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
Wildfire	Historic analysis for probability and annualized damages	Likely - 3	Small - 2	Critical - 3	Moderate - 3	Moderate Concern - 2	13.2	Moderate
Tornadoes	Historic analysis for probability and annualized damages - pulling in surrounding counties	Likely - 3	Isolated - 1	Catastrophic - 4	Limited - 2	Moderate Concern - 2	12.6	Moderate
Earthquakes	Hazus, 3 scenarios	Somewhat Likely - 2	Small - 2	Catastrophic - 4	High - 4	Low Concern - 1	11.4	Limited
Drought	Historic analysis for probability and annualized damages - some qualitative	Likely - 3	Medium - 3	Negligible - 1	Limited - 2	Low Concern - 1	11.1	Moderate

3.3.1 National Flood Insurance Program (NFIP) Participation

Overall, the NFIP has 46 policies in force in Chester, providing approximately $18 million in coverage, with paid losses to date totaling $644,994.

Repetitive Loss Property Detail

Since the beginning of the NFIP in 1979, four properties, two commercial and two residential, have been listed as repetitive loss properties (RLPs) with three being in Flood Zones along inland streams and one being in the Flood Zone along the Connecticut River. One is a Severe Repetitive Loss (SRL) building that has experienced four claims totaling $39,471. The remaining three have had two losses each $129,196.

Town staff note that there are many properties that have been repeatedly flooded, but either do not hold flood insurance policies or do not make flood insurance claims, and so are not on the official list of RLPs.

4. Capability Assessment

4.1 Critical Facilities

Public and private utility facilities are vital to maintaining or restoring normal services to areas of town before, during, and after a natural disaster. Sanitary sewer service is provided throughout the town by the Chester WPCA. Public water systems located in the town are owned and operated by Connecticut Water Company and small community system providers. Electricity is provided by Eversource. There is no natural gas system in Chester. Public and private utility facilities are subject to the same loss of power, potable water, communications, and accessibility as is the community they serve. Figure 4.1 shows the location of critical facilities in Chester which are identified at the regional level.

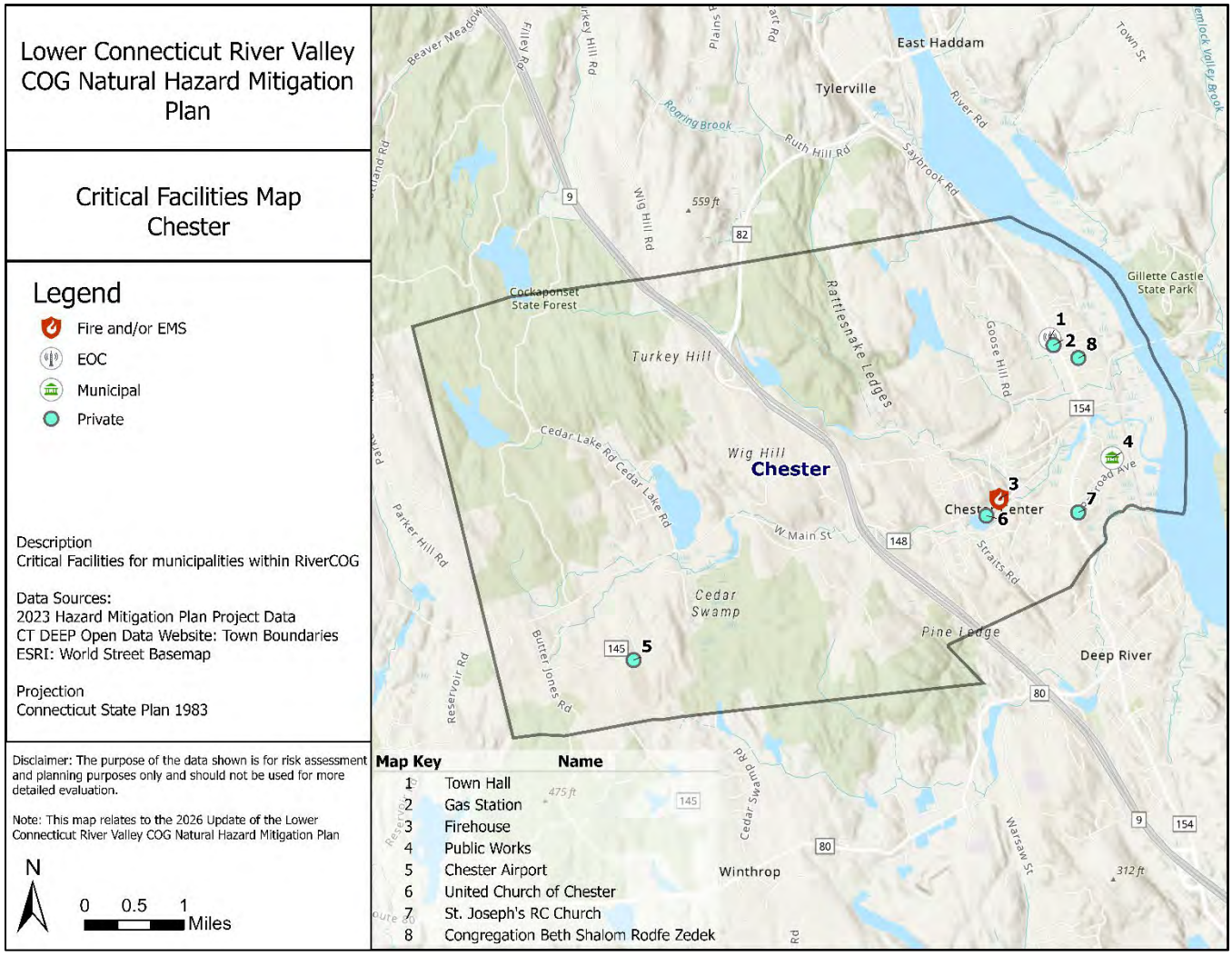


Figure 4.1. Location of Critical Facilities in Chester

*The three mapped care facilities were not listed by the town as critical facilities but are included in a state dataset of critical facilities.

Chester has an airport. The airport is used as a regional distribution center by the National Guard. The Whelen Engineering Co Inc facility at the Chester airport is no longer identified as a municipal shelter. There are now no emergency shelters located in Chester, although there are two regional shelters located nearby. They are the John Winthrop Middle School and Haddam Killingworth High School. The Chester Elementary School has a hook-up for a portable generator but does not have a permanent generator onsite; the building lacks the capacity to become a local emergency shelter.

In Chester, structures or facilities that produce, use, or store highly volatile, flammable, explosive, toxic, or water-reactive materials may only exist primarily in the Research and Light Manufacturing Districts along Route 145 and Route 154. These areas are mostly outside of the 100-year floodplain. West Main Street Services, Inc. (100 West Main Street) was identified in the previous plan as the main source of fuel for emergency vehicles in Chester; however, this station is no longer selling fuel, and is de-listed as a critical facility.

One nursing home facility and one independent living facility are located in Town. These facilities are likely to contain occupants that may not have sufficient mobility to evacuate during a major hazard event and may require additional emergency services. All facilities with available GIS data were mapped in Figure 4.1. Note that there are two school facilities included in the table below that are regional shelters, not located in Chester. They are also not included on the map.

The Chester Local Planning Team noted the following updates to critical facilities since the 2021 plan update:

- The Town Hall and Fire House are now cooling centers and warming centers, depending on the weather.
- Emergency Operations Center (EOC) is the Town Hall, and Firehouse is the back up EOC.

Table 4.1 lists critical facilities identified by the Town.

Table 4.1. Critical Facilities

Facility	Type	Address	Flood Zone	Generator	Notes
Town Hall	Municipal Primary EOC Cooling center	203 Middlesex Turnpike	No	Yes	Generator only maintain IT operations Has a Solar Installation
Chester Public Library	Heating and cooling center	21 West Main	No	No	The Town can deploy a portable generator as needed
Firehouse	Emergency Response Secondary EOC Cooling center	6 High Street	No, but close proximity to AE 100-year	Yes	Has a Solar installation

Facility	Type	Address	Flood Zone	Generator	Notes
John Winthrop Middle School*	Primary Shelter	1 Winthrop Rd, Deep River	No, but close proximity to AE 100-year, access may be impeded	Yes	Regional Shelter located out of Town (not included on map)
Public Works	Municipal	16 Grote Road	No	Yes	Has a 1,000-gallon diesel fuel tank
Chester Elementary School	Municipal	23 Ridge Rd	No	Hookup for Portable Generator	Has a Solar Installation
Gas Station	Essential Services	201 Middlesex Turnpike	No	No	Primary source of fuel for emergency vehicles
Chester Airport	Transportation	61 Winthrop Rd	No	No	
United Church of Chester	Community Center Comfort Station	29 W Main St	No	No	Town maintains agreement to operate space as comfort station as needed
Congregation Beth Shalom Rodfe Zedek	Community Center Comfort Station	55 E Kings Hwy	No	Yes	Town maintains agreement to operate space as comfort station as needed
Sewer Pumping Stations*	Sewer	4 Water Street	Yes – some	Some	
River Valley Transit Center	Transportation	20 Water Street	AE and Floodway	No	

*Not mapped due to location being in another community (John Winthrop Middle School) or not included in available GIS data (sewer pumping stations).

4.2 Critical Facility Assessment from Sustainable and Resilient Communities Planning Support

The critical facilities located in Chester (all of those above, except for the middle school) were evaluated through a scoring process for the Climate Vulnerability Assessment funded by the Connecticut Sea Grant's Sustainable and Resilient Communities (SRC) program. The work was completed in 2026. Ranked scores were assigned to each category of flood characterization tool as follows:

Table 4.2. Flood Susceptibility, Vulnerability, and Risk Scoring Rubric

FEMA Flood Zone	Flood CCVI Score	Flood Susceptibility Score	Hurricane Surge Zone
1 = none 2 = close to A zone 3 = 0.2% 4 = A or AE 5 = AE and floodway	1 = low 2 = low/mod 3 = mod 4 = mod/high 5 = high	1 = none 2 = mod 3 = mod/high 4 = mod/very high 5 = very high	1 = none 2 = cat 4 3 = cat 3 4 = cat 2 5 = cat 1

The table below summarizes the scores.

Table 4.3. Flood Susceptibility, Vulnerability, and Risk Scores for Critical Facilities

Facility	Address	FEMA Flood Zone	Flood CCVI Score	Flood Susceptibility Score	Hurricane Surge Zone	Flood Summary Score
Town Hall	203 Middlesex Turnpike	No	Low-Moderate	NA	NA	5
Chester Public Library	21 West Main	No	Low-Moderate	Moderate to High	NA	7
Firehouse	6 High Street	No, but close proximity to AE	Moderate-High	Moderate to High	NA	10
Public Works	16 Grote Road	AE and 0.2%	Moderate	Moderate to Very High	Cat 1-4	16
Chester Elementary School	23 Ridge Rd	No	Moderate	NA	NA	6
Gas Station	201 Middlesex Turnpike	No	Low-Moderate	NA	NA	5
Chester Airport	61 Winthrop Rd	No	Moderate	Moderate to High	NA	8
United Church of Chester*	29 W Main St	No	Moderate	Moderate to High	NA	8
Congregation Beth Shalom Rodfe Zedek*	55 E Kings Hwy	No	Low	Moderate	NA	5
Sewer Pumping Stations (one selected)	**4 Water Street**	**Yes – AE and Floodway**	**Moderate to High**	**Very High**	**Cat 1-2**	19
River Valley Transit Center	**20 Water Street**	**AE and Floodway**	**Moderate**	**Very High**	**Cat 1-3**	18

Critical facilities in bold text were selected for additional analysis due to their relatively high summary scores. Field survey was completed as part of the study, and recommendations were developed to reduce flood damage at the sewer pumping station and transit center. Furthermore, a subset of the critical facilities were carried forward to a scope development for future study funded by FEMA, DCRF, or CIRCA.

4.3 Municipal Capabilities

The Town of Chester has a variety of natural hazard mitigation capabilities, including local regulations and ordinances, operational protocols, and emergency response capabilities. Following is a list of some highlighted capabilities identified by municipal staff.

4.3.1 Regulations and Ordinances

Chester implements the State Building and Fire Codes, as well as a local Flood Code, for all new construction and substantial improvements. Chester reviews its land use regulations on an annual basis.

Chester participates in and is committed to continuing participation in the National Flood Insurance Program (NFIP). The most recent FEMA Flood Insurance Study for the community, which identifies Special Flood Hazard Areas (SFHA), is dated February 6, 2013. Within the Chester Flood Plain Regulation (Section 100 of the Chester Zoning Regulations), the Subdivision Regulations and the Building Code, there are standards and criteria designed to meet NFIP requirements that govern the location and elevation of structures, construction methods, and the placement or removal of fill. For construction within the SFHA, the Zoning Enforcement Officer, Building Official and Town Engineer review and issue a flood permit and conduct follow-up inspections to confirm compliance with the permit. The Flood Plain Management Ordinance also applies to substantial improvements to existing structures located in SFHAs. Substantial improvements are defined as “any combination of repairs, reconstruction, alteration, or improvements to a structure taking place within a ten-year period, in which the cumulative cost equals or exceeds 50% of the market value of the structure.” Within A Zones in the SFHAs, all new construction and substantial improvements require that structures be elevated above the base flood elevation while in V Zones structures must be elevated above base flood elevations and have foundations that are open to flood water flow or have breakaway walls that will fail under minimal flood conditions.

Section 5.12 of the Chester Subdivision Regulations requires that all subdivision applications be reviewed by the Chester Hose Company and the Chester Fire Marshal to ensure water supply meets requirements as set forth in National Fire Protection Association (NFPA) Standard 1141 (Standards for Fire Protection in Planned Building Groups) and National Fire Protection Association (NFPA) Standard 1231 (Water Supplies For Suburban and Rural fire fighting).

4.3.2 Operations and Procedures

The Town of Chester has the capacity to develop grant applications and has done so successfully in the past.

The Board of Selectmen, Public Works, and Town Engineer are responsible for prioritizing maintenance and upgrade needs. The Town uses best management practices as described in the Connecticut DEEP Storm Water Management Guidelines, on a case-by-case basis as advised by a professional engineer.

Chester has a large tree-maintenance budget (around $110,000 a year) to deal with the large number of dead or dying trees in Town. The tree budget is several times larger than the average budget of similarly-sized towns; however, it has decreased slightly from $140,000 in 2020-2021. The local electric utility Eversource targets its trimming and maintenance activities along the main trunk lines of its energy distribution system.

Town staff are able to assist and support private property owners with applications for hazard mitigation grants, as well as with other opportunities for private property hazard mitigation.

Chester staff have noted that the Town of Essex has agreed to allow a US Coastguard icebreaker to utilize its dock. It is expected that the presence of this ship will benefit Chester, as well, with regard to controlling ice jams on the Connecticut River.

4.3.3 Emergency Response Capabilities

Chester maintains a Local Emergency Operations Plan (LEOP) last updated in 2025. This plan addresses haul-out and securing of boats, giving priority to public safety vessels. The Town is exploring locations to establish a “place of refuge” for out-of-town and state-operated vessels.

Following the flooding in September 2018, Chester developed a post-disaster recovery and reconstruction plan (DRP). The DRP includes plans to restore infrastructure and public services that are impacted by a hazard event, and to establish a “rainy day” fund.

The primary sources for emergency vehicle fuel are the 1,000-gallon diesel fuel tank located at the Public Works Facility, and the gas station (operated by Mobil) at 201 Middlesex Turnpike (adjacent to Town Hall). The gas station does not have emergency generator capabilities. The Public Works Department maintains an agreement with Zanardi Oil to provide emergency fuel when needed. A portable generator is housed at the Public Works Facility. The elementary school has a hookup for a portable generator.

The Department of Public Works maintains a fleet of trucks and other snow removal equipment and monitors weather forecasts during the winter months to mobilize in advance of storms. Only during extreme conditions, such as the February 2013 Blizzard, does the DPW have difficulty keeping roads open.

Chester has Emergency Action Plans on file from the Connecticut Water Company for three of their dams in Town.

The Town of Chester has found its wildland fire suppression capabilities to be satisfactory. The Town has dry hydrants and cisterns installed in key locations. The Town has Mutual Aid agreements with all neighboring towns for coverage in the event of a large fire. Ladder trucks can be brought in from Middletown Fire Department and South District Fire as well if needed. The Fire Department/ Chester Hose Company is purchasing a water tanker to assist in quick access to water, especially on the west side of Town.

The Town has signed onto a regional school disaster recovery plan focused on getting students back into classes during extended recovery periods.

The Town supports the RVT transportation System to facilitate the movement of individuals without personal means of transportation prior to natural hazard events.

The Town frequently assesses its capabilities to assist residents with access and functional needs. The Town's capabilities in this area include Functional Needs Planning, notification of certain residents with functional and access needs prior to forecast hazard events, and welfare checks. In addition, the nursing and care facilities have emergency operations plans in place as required by the Department of Public Health. Both facilities are also equipped with a back-up generator in the event of power failure. Table 4.2, Table 4.3, and Table 4.4 list legal, regulatory, technical, administrative and financial capabilities that support hazard mitigation.

Table 4.4. Legal and Regulatory Capability

Table 4.2.a. Codes, Ordinances & Requirements

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Building Code	Yes	Yes	No	Yes	All municipalities enforce the State Building Code
Zoning Code	Yes	No	No	No	
Subdivisions	Yes	No	No	No	
Post Disaster Recovery	Yes	No	No	No	
Real Estate Disclosure	Yes	No	No	Yes	State requirement
Growth Management	No	No	No	No	
Site Plan Review	Yes	No	No	No	
Special Purpose (flood management, critical areas)	Yes	Yes	No	Yes	State flood management statutes and regulations

Table 4.2.b. Planning Documents

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
General Plan	Yes	No	No	Yes	The POCD is current
Floodplain or Basin Plan	No	No	No	No	
Stormwater Plan	Yes	No	No	Yes	MS4 community
Capital Improvement Plan	Yes	No	No	No	

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Habitat Conservation Plan	No	No	No	No	
Economic Development Plan	Yes	No	Yes	No	Regional Comprehensive Economic Development Strategy
Emergency Response Plan	Yes	No	No	Yes	LEOP templates provided by DEMHS
Shoreline Management Plan	No	No	No	No	
Post Disaster Recovery Plan	Yes	No	No	Yes	LEOP templated provided by DEMHS

Table 4.5. Administrative and Technical Capability

Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Planning & Zoning
Engineers or professionals trained in building or infrastructure construction practices	Yes	Public Works
Planners or engineers with an understanding of natural hazards	Yes	Planning & Zoning, RiverCOG
Staff with training in benefit/cost analysis	No	
Floodplain manager	Yes	
Surveyors	No	
Personnel skilled or trained in GIS applications	Yes	RiverCOG & Main Street GIS, LLC
Emergency manager	Yes	Emergency Management
Grant writers	Yes	RiverCOG, Municipal Staff

Table 4.6. Financial Resources

Financial Resources	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes

Financial Resources	Accessible or Eligible to Use?
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	Yes
Withhold Public Expenditures in Hazard-Prone Areas	Yes (State)
State Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	No

4.3.4 Capital Improvements

The Capital Improvement Plan addresses municipal improvements including rights-of-way, land, housing, infrastructure, or utilities for public purposes. Mitigation actions from this NHMP are included in the CIP. Larger items such as bridge and culvert replacements and elevation of roads are included in the 5-year CIP. The CIP should be reviewed often so that it can include new mitigation action items each time the NHMP is updated. This is a good way for the town to prioritize mitigation items and use the Capital Improvement Program (CIP) to set aside funds for infrastructure improvements to reduce loss of life and property during natural hazard (NH) events.

Chester maintains a Capital Improvement Plan, which has played a role in numerous upgrades including a culvert enlargement project on Prospect Street. The Town pursues culvert replacements and upgrades and is aware of the mitigative benefits of such upgrades.

The Chester Energy Committee is continuously working on implementing solar power generation throughout the town. Currently, Town Hall, the Chester Elementary School and the Fire House have solar installations. These installations feed back into the grid and do not provide power to these facilities during power outages.

4.3.5 Plan Integration with Other Planning Mechanisms

The Town of Chester incorporated the findings from the NHMP into its Local Emergency Operations Plan (LEOP). Additionally, the town of Chester uses the mitigation plan to inform its 5-year capital improvement plan and associated annual budgets. Chester staff reported that the plan has not been formally incorporated into other planning documents. There is new legislation (P.A. 25-33) that now requires cities and towns to incorporate climate vulnerability (specifically including flooding) and resilience strategies into Plans of Conservation and Development (POCDs). Chester plans to comply with that new requirement during the next POCD Update. Further, communities are now required to develop and maintain affordable housing plans. The mitigation plan will help inform siting criteria within that plan.

4.3.6 Outreach, Education, Communication, and Warnings

Chester utilizes the United Way 2-1-1 system to alert residents about forecast hazard events. Chester notifies certain residents with functional and access needs prior to forecast hazard events.

5. Hazard Mitigation Action Plan

This section presents the progress made since the 2021 action plan and establishes new goals, objectives and actions identified for the 2026-2030 planning horizon.

5.1. Previous Mitigation Actions Disposition

During the process of developing the 2021 Chester Hazard Mitigation Plan, several hazard mitigation actions were identified to be pursued during the five-year planning horizon that followed. Table 5.1 presents the actions listed in that document, and the status of those actions.

Table 5.1. Status of Previous Mitigation Strategies and Actions

Action	Description	Status	Notes
01	Conduct a study to assess the extent to which the dredging of impoundments in Chester is feasible, would increase the floodwater storage capacity of the impoundments, and would reduce flood risks for the community.	Carry Forward	Some dredging done when Water Street bridge was completed in 2024. Routine sediment removal will continue to be needed from time to time. The mouth is the area that needs most attention.
02	Work with an organization such as Trout Unlimited, American Rivers, the Connecticut River Conservancy, CT DEEP to identify dams in Town that may benefit from removal and approach their owners to offer facilitation of that removal.	Carry Forward	
03	Conduct a comprehensive needs assessment of dams in Chester to guide risk mitigation actions and grant applications moving forward	Carry Forward	
04	Increase the "look back" period for the definition of "Substantial Damage" in the Chester zoning regulations so that cumulative damages to flood-prone properties will trigger requirements for mitigative action.	Complete	Lookback is ten years.
05	Institute a program to incentivize landlords to invest in risk-reduction measures that will benefit their commercial or residential tenants (for example, permit fees for mitigation measures could be waved).	Deleted	An education program would be more effective.
06	Complete a Hazard Mitigation Assistance (HMA) grant application to elevate Dock Road.	Carry Forward	Modify to be feasibility study for road elevations.
07	Install an underground water tank in the Cedar Lake area to provide firefighting water.	Carry Forward	New focus might be adding standpipes (dry hydrants) using lake water for fire protection. The Town has a drawing or plan.

Action	Description	Status	Notes
08	Conduct a study to identify needs and alternatives with regard to wildland firefighting capabilities at the Inspiration lane commercial and industrial park.	Carry Forward	Current discussion is for advancing a 30,000 gallon cistern
09	Request all facilities housing large populations of higher-risk individuals (such as nursing and independent living institutions) to submit a natural hazard response plan to the Town. Assign a department to review and approve these plans.	Deleted	Direct outreach to facilities with this type of need is the preferred approach.
10	Complete restoration and stabilization of Chester Creek at North Main and High Street	Complete	This area was repaired after the 2018 flood and more action is not needed at this time [this is Great Brook].
11	Conduct an alternatives analysis to identify measures for restoring natural flows and stabilizing banks of Chester Creek at Deep Hollow and Liberty Road. Include CT DEEP, USACE, and other stakeholders in the process as appropriate.	Complete	
12	Develop a prioritized list of undersized culverts to be replaced with larger structures to facilitate passage of debris and rubble.	Complete	All culverts above a certain diameter were observed and many were evaluated. The next phase of study is about underway in 2026.
13	Replace priority undersized culverts with larger structures to facilitate passage of debris and rubble. At the time of development of this hazard mitigation plan, the Town had identified six culverts restricted by rocks and rubble.	Carry Forward	Carry forward and refer to the active list that will be separately maintained.
14	Work with local businesses and the Middlesex County Chamber of Commerce to explore options for reducing risks to businesses in Chester. This may include assisting businesses to develop business continuity plans.	Carry Forward and merge with below	Modify to focus on Chester center and incorporate into new action.
15	Provide guidance to local businesses on hazard and risk mitigation options accessible to them.	Carry Forward and merge with above	Modify to focus on Chester center and incorporate into new action.
16	Conduct a direct outreach campaign to owners of Repetitive Loss and Severe Repetitive Loss properties informing them of mitigation options including elevation, relocation, and acquisition. Include information about funding and technical assistance from municipal, state, and federal sources.	Carry Forward	
17	Develop a written annual schedule for natural hazard public education and outreach efforts	Complete	

Action	Description	Status	Notes
	through the Town website, social media outlets, mailers, in-person outlets, neighborhood associations, and other media, to ensure consistent and long-term public education programs. Education should include information on sheltering locations, private property owner mitigation action options, techniques for homeowner self-inspection, hazard insurance, and geographic distributions of natural hazard risk zones in Town.		
18	Upgrade or install generators at critical facilities in need of emergency power, including future municipal buildings.	Carry forward	Some are needed. They would like a generator for a local shelter, which could be the elementary school. The synagogue was another candidate, but it was fitted with a full generator in 2026. The school should be a priority going forward.
19	Install a generator for back-up power at the Public Works Garage.	Completed	
20	Conduct a campaign to inform Chester residents that are elderly, disabled, non-English speakers, or have other functional needs, about the Town's protocols for hazard alerts and communication. Work with these populations to identify needs and gaps in the protocols.	Remove	Direct outreach is conducted.
21	Paper Records Preservation – Convert all paper records maintained by the municipality to electronic format, consistent with State recommendations, to ensure their survival. Establish protocols for practice going forward	Completed	
22	Drought Study and Water Conservation – Conduct town-wide study of ground and surface water capacity as it relates to planning for droughts. Develop recommendations for future land use to include recharge and site design to encourage water conservation.	Deleted	Water can be distributed to residents with private wells (as needed during droughts) from the public water system at the fire house. Other drought needs are addressed case by case.
23	Structural Reports – Continue to require structural engineering reports for expansion or alteration of buildings within the V-Zone. Evaluate benefits of doing same in other flood zones.	Completed	This is conducted as needed per the State Building Code and local flood regulations.

5.2 Updated Mitigation Goals, Objectives, and Strategies

As noted in Section 3 of Volume 1, all the RiverCOG participating communities, including Chester, participated in setting regional goals and objectives. Chester has confirmed these goals and objectives valid for the Town's annex. The three goals and objectives are as follows:

Goal 1: Promote implementation of sound flood management and other natural hazard mitigation principles on a regional and local level. Note: Covers future development through policy, planning, regulation, emergency services, and environmental strategies.

- **Objective for Goal 1:** To promote the development, improvement and implementation of programs, policies, regulations, and emergency services that result in the reduction of long-term risks to life and property.

Goal 2: Implementation of effective natural hazard mitigation projects at the regional and local level. Note: Covers infrastructure and building related projects – the existing built environment.

- **Objective for Goal 2:** To enhance the ability of RiverCOG, other regional entities, and local communities to reduce or eliminate risks to life and property from natural hazards through cost-effective hazard mitigation projects, including avoidance.

Goal 3: Increase research, planning and outreach activities for the mitigation of natural hazards on a regional and local level. Note: Covers the people component of mitigation via outreach and education, and integration with other planning and continuous improvement through increase research.

- **Objective for Goal 3:** To increase general awareness of the region's natural hazards and encourage State agencies, local communities, and the public to be proactive in taking actions to reduce long-term risk to life and property.

In the 2026 NHMP Update process, Chester affirmed that the above goals and objectives are relevant to the town.

5.2.1 Prioritization of Mitigation Strategies

In considering which projects, processes, and other measures to undertake in the upcoming plan period, municipal and regional officials evaluated the need to address problems and vulnerabilities in their communities against the communities' resources and capabilities. To prioritize mitigation strategies, a set of criteria commonly used by public administration officials and planners was applied to each proposed strategy. The method, called STAPLEE, is outlined in FEMA planning documents such as Developing the Mitigation Plan (FEMA 386-3) and Using Benefit-Cost Review in Mitigation Planning (FEMA 386-5). STAPLEE stands for the "Social, Technical, Administrative, Political, Legal, Economic, and Environmental" criteria for making planning decisions. Benefit-cost review was emphasized in the prioritization process. Criteria were divided into potential benefits (pros) and potential costs (cons) for each mitigation strategy. The following questions were asked about the proposed mitigation strategies:

Social:

- Benefits: Is the proposed strategy socially acceptable to the community?
- Costs: Are there any equity issues involved that would mean that one segment of the community could be treated unfairly? Will the action disrupt established neighborhoods, break up voting districts, or cause the relocation of lower-income people? Is the action compatible with present and future community values?

Technical:

- Benefits: Will the proposed strategy work? Will it reduce losses in the long term with minimal secondary impacts?
- Costs: Is the action technically feasible? Will it create more problems than it will solve? Does it solve the problem or only a symptom?

Administrative:

- Benefits: Does the project make it easier for the community to administrate future mitigation or emergency response actions?
- Costs: Does the community have the capability (staff, technical experts, and/or funding) to implement the action, or can it be readily obtained? Can the community perform the necessary maintenance? Can the project be accomplished in a timely manner?

Political:

- Benefits: Is the strategy politically beneficial? Is there public support both to implement and maintain the project? Is there a local champion willing to see the project to completion? Can the mitigation objectives be accomplished at the lowest cost to the community (grants, etc.)?
- Costs: Have political leaders participated in the planning process? Do project stakeholders support the project enough to ensure success? Have the stakeholders been offered the opportunity to participate in the planning process?

Legal:

- Benefits: Is there a technical, scientific, or legal basis for the mitigation action? Are the proper laws, ordinances, and resolutions in place to implement the action?
- Costs: Does the community have the authority to implement the proposed action? Are there any potential legal consequences? Will the community be liable for the actions or support of actions or for lack of action? Is the action likely to be challenged by stakeholders who may be negatively affected?

Economic:

- Benefits: Are there currently sources of funds that can be used to implement the action? What benefits will the action provide? Does the action contribute to community goals such as capital improvements or economic development?

Costs: Does the cost seem reasonable for the size of the problem and the likely benefits? What burden will be placed on the tax base or local economy to implement this action? What proposed actions should be considered but be tabled for implementation until outside sources of funding are available?

Each proposed mitigation strategy presented in this plan was evaluated and quantitatively assigned a "benefit" score and a "cost" score for each of the seven STAPLEE criteria as outlined below:

- For potential benefits, a score of "1" was assigned if the project will have a beneficial effect for that criterion or a "0" if the project would have a negligible effect or if the questions were not applicable to the strategy.
- For potential costs, a score of "-1" was assigned if the project would have an unfavorable impact for that criterion or a "0" if the project would have a negligible impact or if the questions were not applicable to the strategy.
- Technical and Economic criteria were double weighted (multiplied by two) in the final sum of scores.
- The total benefit score and cost score for each mitigation strategy was summed to determine each strategy's final STAPLEE score.

Although a community may implement recommendations as prioritized by the STAPLEE method, an additional consideration is important for those recommendations that may be funded under the FEMA mitigation grant programs. To receive federal funding, the mitigation action must have a benefit-cost ratio (BCR) that exceeds a value of 1.0. Calculation of the BCR is conducted using FEMA's Benefit Cost Analysis (BCA) toolkit. The calculation method may be complex and vary with the mitigation action of interest. Calculations are dependent on detailed information such as property value appraisals, design and construction costs for structural projects, and tabulations of previous damages or NFIP claims. The BCR scoring system used is outlined in Table 5.2.

Table 5.2. BCR Scoring System

Scoring	Benefits	Costs
Low: 0-1 points	Few would benefit; the impacts being addressed are not severe; benefits may be short term	Likely to be done by existing personnel with little impact on budget; not complicated to accomplish. Costs to implement is likely to be under $10,000.
Medium: 2-3 points	Benefits may be felt by many in the community; the action may solve a problem or otherwise benefit the community for several years	May need additional funding or studies; may require change in practices; costs to implement may be between $10,000 and $100,000
High: 4-5 points	Benefits would accrue to many in the community; benefits may accrue to the most vulnerable or those not able to recover on their own; benefits would be long term and may permanently protect from damages	Likely to cost over $100,000 and require obtaining funding outside of operating budget; complicated, lengthy process to implement

The STAPLEE method accounts for cost-benefit considerations both directly (through the "Economic" category) and indirectly (through general consideration of costs and benefits of actions). Additionally, the range of estimated costs of each strategy are included in the STAPLEE table. The assumed costs of projects and generalized presentation of the benefits accruing from them are not based on specific detailed cost estimates as that level of analysis is not appropriate for this type of planning effort. For some projects, such as routine or recurring operations that are established practices and conducted with municipal general operating funds and existing staff, the STAPLEE results can be the only explicit comparison of costs and benefits. For projects for which bonding and/or grant funding will be sought, more in-depth evaluations of costs and benefits will be required. As project scopes are detailed, benefits and costs can be identified with more precision, and the benefit-cost ratio which results from a full benefit-cost analysis may differ from the planning-level STAPLEE results presented here.

It should be noted that higher BCRs do not necessarily correspond to high priorities, nor do low BCRs or BCRs under 1.0 correspond to low-priority projects. An important project with a high priority to the community may have a lower BCR because of its complexity, assumed high expense, and other costs. Communities should not be discouraged or deterred from further consideration of projects that have low BCRs or BCRs less than 1.0 until additional, more specific evaluations of the costs and benefits have been undertaken.

5.2.2 2021-2026 Prioritized Hazard Mitigation Actions

In addition to the regional mitigation actions endorsed by Chester and outlined in Section 3 of Volume 1 of the regional plan, the Town identified or carried over from the last update, ranked and evaluated the actions in Table 5.3. For each identified action, the goal and objective it addresses is noted. Additionally, a description, lead agency, indication of costs and potential funding sources, and an estimated timeline for completion is included. Also included are the hazards addressed by a specific action.

Table 5.3. Chester Hazard Mitigation Strategies and Prioritization

KEY: SW= Severe Weather, TW = Tornado/Wind, ET = Extreme Temperatures, WS=Winter Storm, F = Flood, TI = Tree Damage and Invasive Species, WF = Wildfire, D = Drought, E = Earthquake, CC = Climate Change

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
1	2-1	Conduct a study to assess the extent to which dredging of impoundments is feasible, would increase the floodwater storage capacity of impoundments, and reduce flood risks for the community.	DPW	$100,000-$500,000	OB, STEAP, CIP	2027-2028	F, CC	0	0	1	0	0	0	1	0	0	0	1	-1	1	-1	3/Low
2	2-1	Conduct a comprehensive needs assessment of dams in Chester to guide risk mitigation actions and grant applications moving forward	DPW	$100,000-$500,000	OB, STEAP, CIP	2027-2028	F, CC	1	0	1	0	1	0	1	0	0	0	0	0	0	0	5/Med

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
3		Work with an organization such as Trout Unlimited, American Rivers, or DEEP to identify dams in Town that may benefit from removal and approach their owners to offer facilitation of that removal. Prioritize "Pattaconk #2" dam.	DPW	$25,000-$50,000 (Town part)	OB and the selected entity (TU, AR, or DEEP)	2028-2030	F, CC	1	0	1	0	1	0	1	0	1	0	1	-1	1	0	7/High
4		**Declass Cedar Lake Road dam** from BB to AA or A to appropriate characterize the risk and scale maintenance requirements.	First Selectman with PW and EMD	$25,000-$50,000	OB	2028-2029	F, CC	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2/Low
5		Conduct feasibility studies related to potential road elevations for Dock Road and other roads in tidally influenced flood zones.	PW	$100,000-$500,000	DCRF, STEAP, FEMA HMA	2027-2028	F, CC	1	0	1	0	1	0	1	0	1	0	1	-1	1	0	7/High

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
6		Address fire protection in the Cedar Lake area by adding standpipes (dry hydrants) using lake water for fire protection. The Town has a drawing or plan for such purpose.	PW, FD	$100,000-$500,000	STEAP, CIP	2028-2030	WF	1	0	1	0	1	0	1	0	1	0	1	0	0	0	8/High
7		Conduct a study to identify needs and alternatives with regard to wildland firefighting capabilities at the Inspiration lane commercial and industrial park. Current discussion is for advancing a 30,000 gallon cistern	PW, FD	$25,000-$50,000	STEAP, CIP	2028-2030	WF	1	0	1	0	1	0	1	0	1	0	1	0	0	0	8/High

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
8		Replace priority undersized culverts with larger structures to facilitate passage of debris. An actively updated list shall be separately maintained for this purpose.	DPW	>$1M (sum for numerous culverts)	FEMA HMA, LOTCIP	2026-2030	F, CC	1	0	1	0	1	0	1	0	0	0	0	-1	1	0	4/Med
9		Work with local businesses and the Middlesex County Chamber of Commerce to explore options for reducing risks to businesses in Chester. This should be coordinated with the action below about Chester Center.	EMD, EDC	$0-$1,000 + staff costs	OB	2027-2030	SW, WS, TW, F, CC	1	0	1	0	0	0	1	0	0	0	1	0	1	0	7/High

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
10		Conduct a direct outreach campaign to owners of Repetitive Loss and Severe Repetitive Loss properties informing them of mitigation options including elevation, relocation, and acquisition. Include information about funding and technical assistance from municipal, state, and federal sources.	P&Z, EMD	$0-$1,000 + staff costs	OB	Annually	F, CC	0	0	1	0	0	0	0	0	0	0	0	0	1	0	3/Low
11		Upgrade or install generators at critical facilities in need of emergency power, including future municipal buildings. The elementary school is the current priority.	EMD, DPW	$100,000-$500,000	STEAP, FEMA HMA, CIP	2028-2029	SW, TW, WS, F	1	0	1	0	1	0	1	0	1	0	0	-1	0	0	4/Med

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
12		**Floodproof sewer pumping station** at 4 Water Street per recommendations of the SRC grant completed in 2026.	PW	$100,000-$500,000	FEMA HMA, STEAP, CIP	2029-2030	F, CC	1	0	1	0	1	0	1	0	0	0	1	0	1	0	8/High
13		**Floodproof transit center** on Water Street per recommendations of the SRC grant completed in 2026.	Transit District	$100,000-$500,000	FEMA HMA, STEAP, CIP	2030-2031	F, CC	1	0	1	0	1	0	1	0	0	0	1	0	1	0	8/High
14		**Conduct tabletop exercises (drills) for Class C dams** that could impact Chester. The Class C dams are Pattaconk Reservoir and Jennings Pond.	EMD	$0-$1,000 + staff costs	OB	2027-2029	F, CC	1	0	1	0	1	-1	1	0	0	0	0	0	0	0	4/Med

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
15		**Resilient Connecticut, SRC, and/or DCRF Program Deployment for Chester Center:** Work with CIRCA to develop scope of work for study and concept design in the "resilience opportunity area" in Chester center, which was incorporated into the detailed scope developed under the SRC grant in 2026.	First Selectman	$0-$1,000 + staff costs	CIRCA, CT Sea Grant, and DEEP (DCRF)	2027-2030	All	1	0	1	0	1	-1	1	0	0	0	1	0	1	0	7/High
16		**Terrestrial Invasive Species:** Seek funding for addressing species	PW	$0-$1,000 + staff costs	DEEP	2026-2030	TI	1	0	1	0	1	-1	1	0	0	0	1	0	1	0	7/High

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
17		**Aquatic Invasive Species:** Seek funding for addressing species of concern, especially along Chester Creek	PW	$0-$1,000 + staff costs	DEEP	2026-2030	TI	1	0	1	0	1	-1	1	0	0	0	1	0	1	0	7/High
18		**Tree Pests and Diseases:** Seek funding for addressing pests of concern	PW	$0-$1,000 + staff costs	DEEP	2026-2030	TI	1	0	1	0	1	-1	1	0	0	0	1	0	1	0	7/High

EDC	Economic Development Commission	P&Z	Planning & Zoning
SS	Social Services	BOE	Operating Budget
PH	Public Health	OB	FEMA Hazard Mitigation Assistance
DPW	Department of Public Works	HMA	
EMD	Emergency Management Director		

LOWER CONNECTICUT RIVER VALLEY COUNCIL OF GOVERNMENTS
HAZARD MITIGATION PLAN 2026 UPDATE

TOWN OF CLINTON MUNICIPAL ANNEX

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1. Contact Information

1.1 Point of Contact

Table 1.1. Town of Clinton Contact Information

Information	Town of Clinton
Contact Name	Abby Piersall, Town Planner
Address	54 E Main St. Clinton, CT 06413
Telephone	860-669-6133
Email	apiersall@clintonct.gov

1.2 Local Planning Team

The following representatives listed in Table 1.2 participated in meetings and provided input, data, and council toward the development of Volume 1 and this Clinton, Connecticut Annex.

Table 1.2. Town of Clinton Planning Team

Name	Title
Michael Neff	EMD
Todd Hajek	DPW
Richard Pleines	Building Official
Ken Cain	CPD
Vince DeMaio	Clinton PD
Brian Manware	Clinton Fire
Kathleen Savona	CZEO & Floodplain Administrator
Michelle Benivegna	Town Manager

1.3 Lower Connecticut River Valley Council of Governments

Table 1.3. RiverCOG Contact Information

Information	RiverCOG Information
Contact Name	Margot Burns – Senior Environmental Planner
Address	RiverCOG 145 Dennison Rd. Essex, CT 06426
Telephone	(860) 581-8554 x 702
Email	mburns@rivercog.org

2. Jurisdiction Profile

2.1 Town Profile

Clinton traces its history from 1663, when the land was known as Hammonasset between Guilford and Saybrook, as they were then bounded. The General Court appointed a committee at Hartford to lay out this area as a plantation. In 1667, the settlement was designated as a town and named Kenilworth; this name became Killingworth by the middle of the eighteenth century, through changes in use. In 1838, the southern portion was incorporated by the General Assembly as the Town of Clinton, the northern portion retaining the name of Killingworth. The town was named after New York Governor DeWitt Clinton. The line between Killingworth and Clinton had also divided the earlier ecclesiastical societies (or school societies) which were established in 1735. Clinton was incorporated in 1838.

Clinton lies within Middlesex County, located in south-central Connecticut, along its shoreline with Long Island Sound. To the west, the town of Madison (New Haven County) borders Clinton; to the north, by the town of Killingworth; and to the east, by the town of Westbrook.

Figure 2.1 shows the location and corporate boundaries of Clinton.

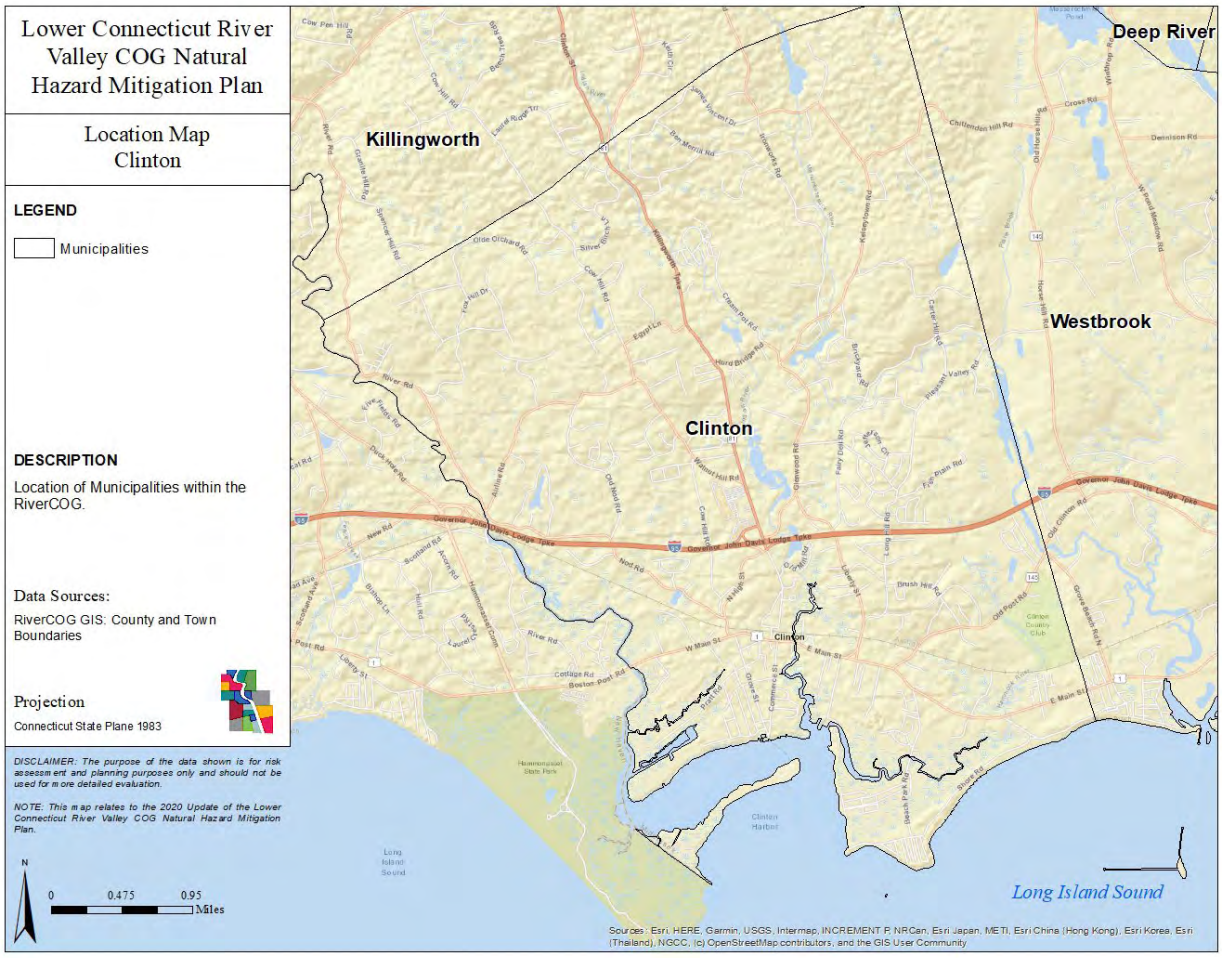


Figure 2.1. Clinton Location

Although New York's Long Island serves as a barrier, Clinton is susceptible to high winds and coastal storms due to its geographic location.

Clinton's total area of 16.21 square miles has a relatively low-lying coastal topography. Clinton has an integral relationship to Long Island Sound and its tidal rivers and associated resources. Like the neighboring Town of Westbrook, this connection is also seen in the town's recreational marine industry centered on Clinton Harbor. It is the close tie of the municipality to the waters of Long Island Sound that also exposes its citizens and their properties to the hazards associated with coastal storms and high winds and flooding that often accompany them. Additionally, the hilly ridge and valley topography of the northern area of town provides an opportunity for stream belt flooding that can be associated with either coastal storms or non-coastal heavy rain events. Either way, flooding tends to be the primary hazard that Clinton must plan for if it is to mitigate natural hazards for its citizens.

In the area north of I-95, development density is separated into several zoning districts with minimum lot sizes ranging upward from ½ acre to 2 acres. This contrasts with the relatively high-

density seasonal beach areas along Long Island Sound where lot sizes range from ¼ acre up to ½ acre. Although most of the available land south of I-95 has been developed throughout the years, the residential areas north of I-95 still include several larger tracts of land that may be viable for subdivision. Overall, residential land uses occupy 5,426.6 acres (51.7%) of Clinton's land area. Commercial 329.2 acres (3.1%), industrial 270.2 acres (2.6%), institutional 218 acres (2.1%), agriculture 243.4 acres (2.3% and utility and ROW 965.3 acres (9.2%), together occupy 7,300.2 acres (69.5%) of Clinton's total land area. Approximately 70.5 acres, or 0.7% of the total land area in Clinton is water.

Open space preservation has long been an important consideration in Clinton. Most recent figures presented in the Plan of Conservation and Development (2025) indicate that committed open space occupies approximately 1,688 acres (16%) of Clinton's land area while uncommitted open space occupies approximately 1,102.7 acres (10.5%). Where committed open space will remain open, uncommitted open space could be developed. Figure 2.2 shows land cover as it generally relates to developed and undeveloped land in Clinton.

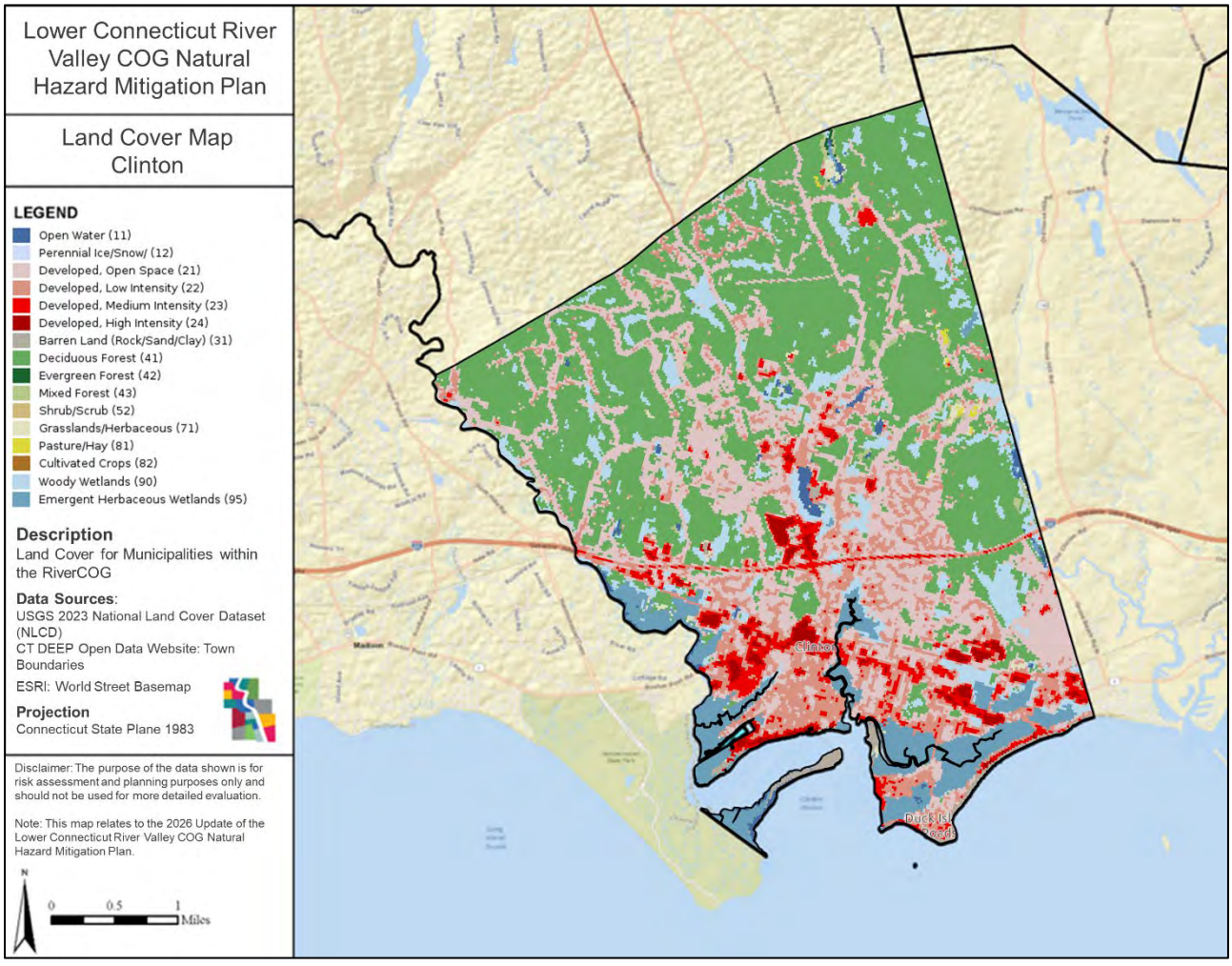


Figure 2.2. Clinton Land Cover

Commercial and industrial uses occupy approximately 5.7% of the land area. Approximately 7.7% of the land area is dedicated to transportation including the I-95 corridor, the Amtrak corridor, state, town, and private roads.

Transportation includes an interstate highway, several state roads which serve as collectors, local town roads, the Northeast Corridor Railroad which carries Amtrak and Shore Line East passenger trains as well as freight trains, and the River Valley Transit service. Major roads in Clinton include Interstate 95, a limited access highway running in an east-west orientation approximately 2 miles from the shoreline and Route 1, also running in an east west-orientation less than a mile from the shoreline acting as the main business route through town. Other roads include Route 81 running north-south, splitting the town in half and providing access to Interstate 95 and northern areas of the region and Route 145, making a connection to I-95 in Westbrook bringing traffic to the eastern side of Clinton. The Northeast corridor runs in an east west direction paralleling both I-95 and Route 1 and connects Boston to New York.

Shore Line East has a train station in Clinton, and River Valley Transit provides bus service between Madison and the Old Saybrook Amtrak station via the Shoreline Route with several stops in Clinton along Route 1.

The 2023 American Community Survey (ACS) reported a town population of 13,317 people which represents a 2.9% increase from 2019.[1]

Figure 2.3 provides a demographic profile for Clinton.[2]

[1] https://s3-us-west-2.amazonaws.com/cerc-pdfs/2025/Clinton.pdf
[2] - Published on Town of Clinton, CT *(Source: Connecticut Data Collaborative)*

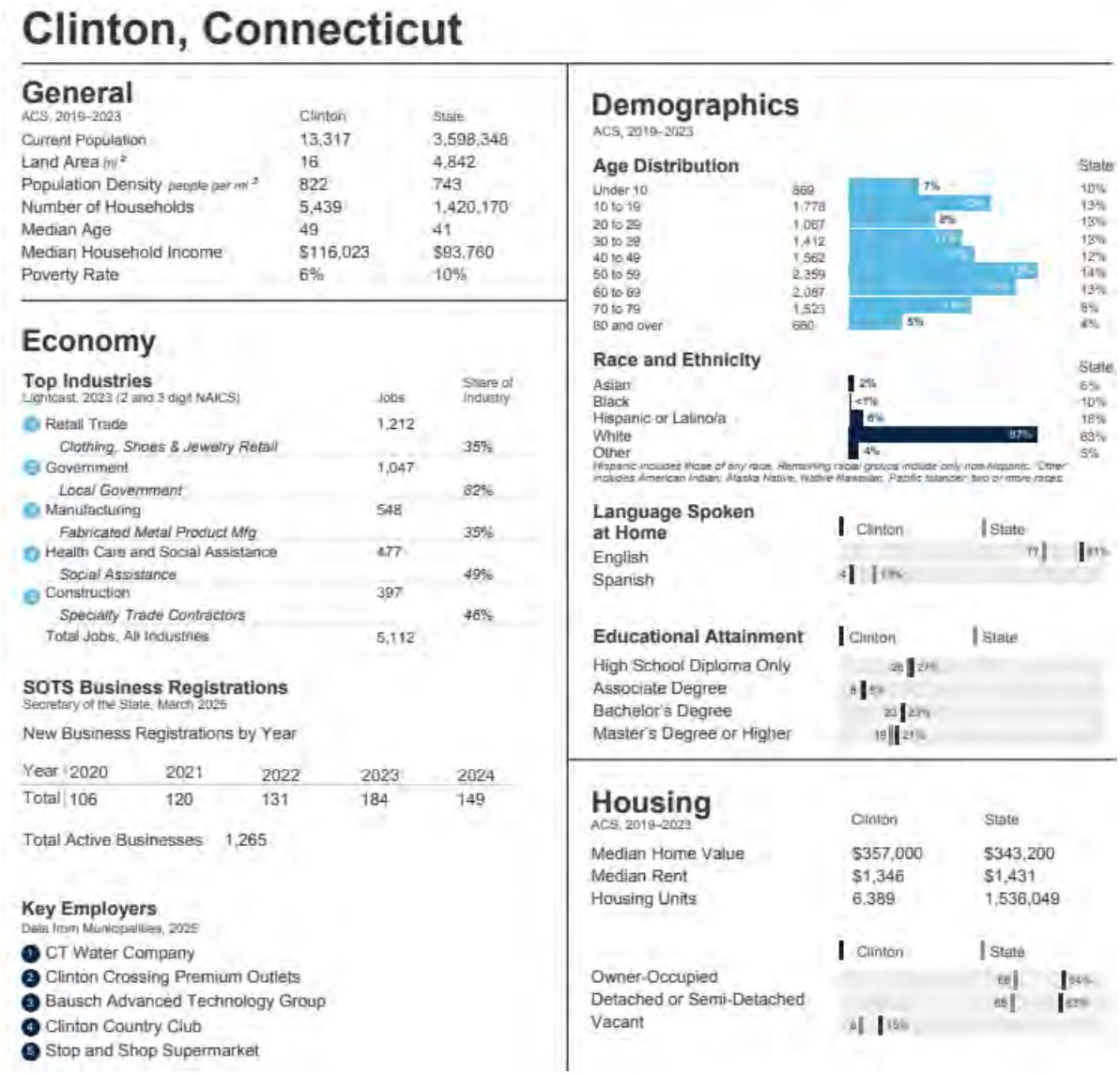


Figure 2.3. Town of Clinton Demographics

2.2 Climate

Average weather data in Clinton was sourced from the Weather Spark website (weatherspark.com).

In Clinton, the summers are warm and humid; the winters are very cold, wet, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from 24°F to 81°F and is rarely below 10°F or above 88°F. The warm season lasts for 3.4 months, from June 3 to September 16, with an average daily high temperature above 72°F. The hottest day of the year is July 20, with an average high of 81°F and low of 67°F.

The cold season lasts for 3.4 months, from December 3 to March 14, with an average daily high temperature below 46°F. The coldest day of the year is January 30, with an average low of 24°F and high of 38°F.

Clinton does not experience significant seasonal variation in the frequency of wet days (i.e., those with greater than 0.04 inches of liquid or liquid-equivalent precipitation). The frequency ranges from 23% to 32%, with an average value of 27%. Rain falls throughout the year in Clinton. The most rain falls during the 31 days centered around April 2, with an average total accumulation of 3.9 inches.

The snowy period of the year lasts for 4.5 months, from November 19 to April 5, with a sliding 31-day liquid-equivalent snowfall of at least 0.1 inches. The most snow falls during the 31 days centered around January 27, with an average total liquid-equivalent accumulation of 0.7 inches.

The windier part of the year lasts for 6.3 months, from October 10 to April 19, with average wind speeds of more than 7.9 miles per hour. The windiest day of the year is January 13, with an average hourly wind speed of 9.9 miles per hour.

2.3 Government Style

In November 2018, the Town of Clinton voted to amend the Charter and adopt a Town Council and Town Manager form of government. This form of government has a Town Council that enjoys all the importance of a Board of Directors (legislating and policy-making) and a Town Manager that is appointed by the council to serve as Clinton's chief executive officer overseeing the day-to-day management of town business and fulfilling the policy direction of Town Council. The Town Manager is responsible for policy implementation and administration, the development and execution of the annual operating and capital budget and directing municipal operations.

2.4 Development Trends

Development since the last plan update has primarily been renovations and replacements of existing homes, here and there. There have been approximately 40 new single-family condominiums built in Tidewater Village and 40 in the Hammocks. They are in the floodplain but constructed on fill above the BFE.

There are ongoing commercial and residential projects occurring outside of high hazard areas including the development of the Indian River Complex on Route 81. The Town anticipates the redevelopment of Pierson School (outside of high hazard areas) in the near future and working to create a Resilient Hub within the Downtown area.

2.5 Town-Specific Hazard Concerns

Municipal staff reported several specific hazard concern issues, which are listed below. The information below is intended to supplement the hazard specific analysis completed in Section 2, of Volume I of this plan.

A note: To preserve the reader's ability to align RiverCOG-Level and town-level hazard identification and risk analysis, the order of the following hazards aligns with the order of hazards in Volume I.

Individual towns have ranked these hazards differently. This town-level ranking can be found in Section 3.3 Hazard Risk Ranking.

2.5.1 Severe Winter Weather

Winter storms are one of the three most significant hazards for the Town of Clinton. Snow and ice removal have a tremendous impact on municipal budgets. Significant snowfall rates or ice accumulation can exceed the ability of crews to keep roads open for travel and can bring down electric, telephone, and cable wires.

Affective deployment of regional services for sheltering needs to be aligned with new DEMHS standards. Generators for local gas stations and supermarkets is an ongoing necessity in Clinton; however, capability improvements have been made in recent years including at Big Y.

2.5.2 Flooding

Flooding - Riverine and Inland Flooding

The Town has reported several areas throughout Clinton which have experienced challenges related to riverine flooding. During the severe flood of September 2018, large sections of town were cut off due to high floodwaters over the roads. College Street, Liberty Street by Fairydell, and several sections of Ironworks were cut off. Furthermore, flood waters reportedly impacted aquifers in Clinton; for example, the Indian River needed to subside and floodwaters needed to be routed back to the river to restore the Clinton Well back to service for Connecticut Water Company.

Aside from severe flood events like 2018, roadways such as Woods Lane or River Road can be flooded or cut off from Menunketesuck River and Hammonasset River, respectively.

Other flood concerns include the Hurd Bridge area, the mobile home park on Riverview Road, the Old Mill mobile home park and Evergreen mobile home park which may be cut off from access.

Any challenges to bank stabilization were likely addressed after the 2018 flood event, however the Town continuously monitors as conditions change and new challenges arise.

Flooding - Coastal Flood

The Four Shore Coastal Resiliency Plan was completed in 2025. This plan documents coastal flood risks in Clinton and reports that "… roads including River Road, Glenwood Road, Causeway, Shore Road, and Riverside Drive are critical for both local movement and emergency services. When these roads are flooded, it cuts off access to communities, preventing people from leaving or receiving aid. This also happens at the end of Hammock Road, Meadow Road, and Old Mill Road, where residents get stranded for hours. Runoff from 1-95 floods Cow Hill Rd and Liberty St. Flooding at the railroad bridge underpasses cuts the town off when they are flooded."

The plan further explains that "High tides and storm surges are becoming increasingly problematic, with residents expressing concerns, especially along Grove, Shore, Causeway, Hammock, and West Roads. Residents report seeing water near the tops of sea walls during high tide on calm days, noting

that the risk of flooding is rising, especially during storms. These frequent flooding events are causing concern about flooding on private property."

Nuisance flooding in low lying coastal areas is caused by extreme astronomical high tides, which can flood yards, basements, septic systems, storm water drainage systems, and roads. As Clinton developed, many of the existing structures were built within the existing flood zones prior to the existence of flood regulations, or zoning regulations. The coastal boundary within Clinton, of which a major part is the mapped flood plain, constitutes approximately 1,700 acres, or almost 16% of the Town's total area.

Floodwaters from the tidal Indian River have risen to the fire department building walls and bay doors, but they have not flooded inside the building. During one flooding event, the adjacent Route 1 bridge flooded, and it was unknown whether the bridge was structurally compromised at the Indian River. Ultimately, the fire department chose to not use the bridge in the event of a potential failure. The fire department has explored floodproofing and hardening, but previously determined in 2017-2018 that the cost to undertake those activities was too high, and the facility should be relocated.

Beach Park Road is very low lying and becomes flooded often restricting access. There is a project underway to install automatic tide gates managed by DEEP. This project focuses on tidal marsh management, and while the road will be elevated above its current height, the project will only slightly address the issue of flooding. An ongoing concern remains that a category 1 or 2 hurricane event would make the road impassable for emergency vehicles.

Major rain events coupled with tidal events will cause flooding along River Road and Meadow Road. Meadow Road has seen some improvement since it was very recently resurfaced, but the road was not substantially raised, and flooding concerns remain. The new tide gates on Beach Park Rd (not yet in place in mid-2026) may alleviate some of the flooding in the marsh system that affects Meadow Road, but the road remains low relative to very high tides and flood events.

Sea Level Rise and Shoreline Change

Sea level rise is a central topic of the Four Shore Coastal Resiliency Plan, as it is one of the drivers of frequent shallow flooding in Clinton. Low-lying coastal areas adjacent to Long Island Sound and the Indian River are being affected.

The Four Shore Coastal Resiliency Plan was completed in 2025. This plan documents coastal erosion risks in Clinton and reports that "Coastal erosion is a major threat to infrastructure and resources. Much of Clinton's coastline is privately owned, and erosion is a threat to private properties along the shoreline. Private property owners and beach associations maintain seawalls, bulkheads, groins, and jetties as well as beaches. Design, permitting, and construction associated with maintaining coastal structures can be challenging and costly. Maintaining beaches and structures in the face of storms and sea level rise is also a challenge. Private beaches provide recreational opportunities and value for residents with access."

The plan further explains that "There are areas along the Town Beach that have been experiencing accelerated rates of erosion. One area, north of the swimming area, was significantly compromised when a section of bluff and beach washed out in a winter storm. Vegetation in this area was damaged, and there is concern that erosion will continue without root systems to hold soil in place. In the long term, this erosion could compromise public access, the park space, and trails." Furthermore, the Cedar Island section of Clinton is separated from the mainland, placing the small community at isolation-related risk during natural hazard events.

Flash Flooding

The primary locations of concern as they relate to flash flooding include the railroad underpasses at North High Street and Hull Street. Cow Hill also experiences pooling during heavy rain events as well as at the intersection of Route 81 and Evergreen Street which is the only entry point for the Evergreen Mobile Home Park. Flooding of Route 1 east of Grove Street has occurred in the past due to overwhelmed drainage systems.

2.5.3 Dam Breach

Dams are typically a concern in communities due to the risk of their failure or overtopping. Figure 2.4 shows the location and classification of the seven dams in Clinton, from the State DEEP Database. Of the seven, one is listed as moderate risk and two as significant risk.

The Hammonasset Dam and Killingworth Reservoir Dam, both in Killingworth to the north, are high hazard dams that may pose risk to Clinton. Moderate, Significant, and high hazard-class dams are presented in Table 2.1. A full list of dams is provided in Appendix B.

Table 2.1. Moderate, Significant and High Hazard Dams, Clinton, CT

CT Dam #	Dam Name	Hazard Class	Owner
2701	Kelseytown Reservoir Dam	B - Significant	Connecticut Water Company
2704	Lockwood Lake Dam	B - Significant	Lochwood Lake Improvement District
-	Hammonasset Dam*	C - High	South Central CT RWA
7002	Killingworth Reservoir Dam*	C – High	Connecticut Water Company
2702	Boulder Lake Dam	BB- Moderate	Boulder Lake Improvement Association, Inc.
* Located upstream of Clinton, but could impact the Town			

The Town has noted challenges with the dams in the past, including concerns with dam overtopping during heavy rain events. Ironworks Road, adjacent to the Kelseytown Reservoir, is a concern, as well as River Road which sometimes sees water on the roadway when water has reportedly flowed over the Hammonasset Dam. It was also noted that within the past five years the Kelseytown Reservoir has reached a level 2 flood stage in which the Town was notified of the rising water levels. There is concern that if the Kelseytown or Killingworth dams were to fail the impacts would be significant as there are reportedly hundreds of homes in the inundation area,

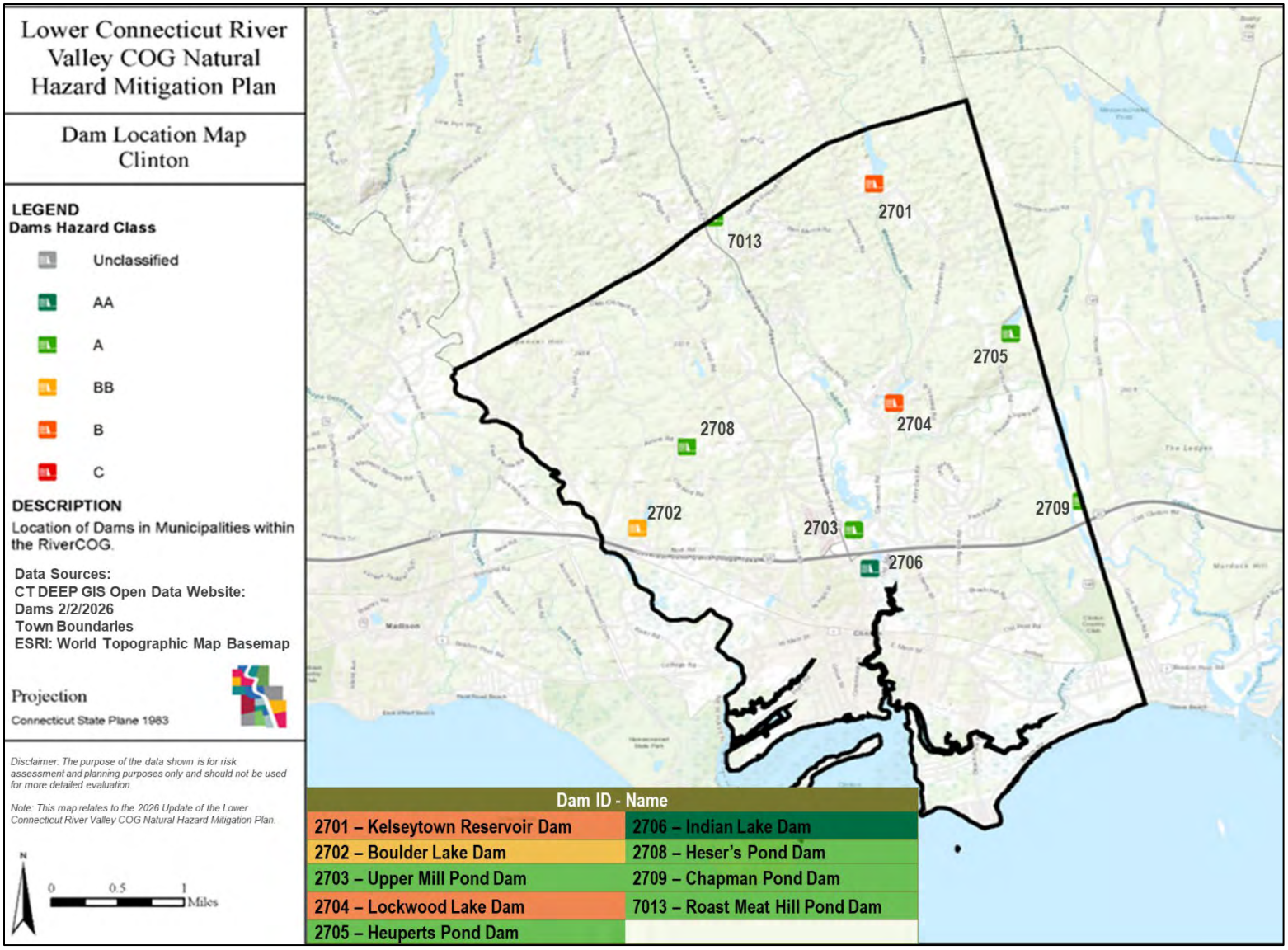


Figure 2.4. Location of Dams, Clinton, CT

The subject plan update seeks approval under Element G of the Local Plan Review Tool, for potential HHPD eligibility. Two high hazard dams are located upstream of Clinton as noted above – Hammonasset Dam and Killingworth Reservoir Dam. The Emergency Action Plan (EAP) for the Killingworth Reservoir was obtained and reviewed to understand the people, critical facilities, and community assets in the dam failure inundation area. The EAP was not available for the Hammonasset Dam.

Killingworth Reservoir Dam: The Killingworth Reservoir and Kelseytown Reservoir are located in series along the Menunketesuck River. The river flows into the Kelseytown Reservoir at the Killlingworth/Clinton town line. The breach analysis for the Killingworth Reservoir appears to assume that the Kelseytown Reservoir dam would then fail or overtop, although this is not stated in the EAP. At a minimum, the inundation mapping assumes that the breach impacts from Killingworth Reservoir would continue downstream past Kelseytown Reservoir.

- The inundation area downstream of the Kelseytown Reservoir along the Menunketesuck River would significantly affect residential properties in Clinton.
- Residential properties could be flooded along Kelseytown Bridge Road, Reservoir Road, Ironworks Road, Princess Pine Lane, Kelseytown Road, Lochbourne Drive, Lake Circle, Brickyard Road, Lochwood Drive, Delwood Avenue, Glenwood Road, Woods Lane, Whippoorwill Lane, Valley Road, Fairy Dell Road, Carter Hill Road, Pleasant Valley Road, Laconia Drive, Fernwood Lane, and Menunketesuck Drive.

At the Hurd Bridge Road/Cream Pot Road intersection and the Hurd Bridge Road/Glenwood Road intersection, the inundation area along the Menunketesuck River is projected to jump the drainage basin divide and form a dam failure inundation area along the Indian River.

- Overall, the inundation area along the Indian River would affect residential, commercial, and municipal properties in Clinton.
- Interstate 95 and U.S. Route 1 would be crossed by the inundation area.
- Residential properties located north of I-95 could be flooded along Hurd Bridge Road, Cream Pot Road, Dogwood Lane, Greyledge Road, Glenwood Road, and Route 81.
- Essential, critical, and/or municipal facilities at risk of flooding north of I-95 include the Morgan School, Joel School, Eliot Middle School, and the Henry Carter Hull Library.
- Residential properties located south of I-95 could be flooded along numerous streets including Mill Road, the ends of dead end roads (Sandy Brook Road, Meadowview Estates, Joshua Lane, Bargate Road, Sterling Drive, Liberty Ridge, and Silverbrook Lane), and roads south of Route 1.
- Downstream of I-95, the essential, critical, and/or municipal facilities at risk of flooding include the former Pierson School (which is being converted to housing), the Fire Department headquarters, and the Town Hall.

The mapped inundation areas along the Menunketesuck River and Indian River were extended southward and laterally westward and eastward into all tidally affected marshes and estuaries associated with the two rivers. While this is considered conservatively large for evacuation planning, the EAP nevertheless includes thousands of residential properties along and south of Route 1 in the shoreline neighborhoods of Clinton. In the context of this conservatively wide mapping, the Clinton Police Department is likewise included in the potential inundation area.

2.5.4 Thunderstorms and Severe Weather

Clinton has experienced significant damage throughout town as a result of thunderstorms and severe weather events. Residential neighborhoods in the northern area of Town tend to see downed trees and power lines as a result of storms. Public Works crews work to clean and remove trees and brush. Eversource implements a tree trimming program along powerlines throughout the region. Clinton includes tree trimming in its annual budget.

2.5.5 Hurricanes and Tropical Storms

Hurricanes are also one of the most significant hazards in Clinton. Hurricanes and tropical storms will affect the entire town; however, affects will vary depending on proximity to the shore. Strong winds and rain will affect the entire town while storm surges and coastal flooding will affect coastal areas. Properties in the coastal areas of Clinton are most vulnerable to the effects of hurricanes, particularly those areas in flood zones. Storm surge is of concern along the shore, along with high wind speeds potentially pushing water into Long Island Sound, as was the case with Tropical Storm Sandy. Inland areas are less susceptible to coastal storm related flooding; nevertheless, the timing of rainfall, storm surge, and high tide cycles can have a significant impact on flooding farther upstream than the immediate coastline. Furthermore, falling trees from high winds pose a significant townwide threat. Superstorm Sandy and Tropical Storm Irene caused severe damage throughout the State, and the local tree damage and resulting impacts were extensive. Please refer to Volume I of this plan update for detailed information on impacts of Hurricanes.

2.5.6 Tornado

Although relatively rare in CT, the threat of tornado could cause significant damages to life and property in the Town of Clinton. In 2008, the National Weather Service was asked to determine if a tornado had occurred in Clinton after some residents thought they had seen a funnel cloud; it was inconclusive. Clinton-area historical tornado action is near the Connecticut state average, which is 25% smaller than the overall U.S. average. Overall, residents throughout Clinton are equally susceptible to the chance of a tornado occurrence. However, a strong tornado would likely cause more damage in the more densely developed shoreline areas south of Interstate 95. The area north of 95, which tends to be less developed, may not sustain as much property damage; however damages from downed trees and wires could be substantial.

2.5.7 Earthquakes

The entire town could be affected by an earthquake in this region; however, impacts may vary locally. In Clinton and the surrounding region, recorded impacts have been limited to mild shaking that knocked items off shelves, alarming residents. Structural damage has been limited to building components such as chimneys and buildings already in poor repair; but failing structures have caused property damage in nearby towns. Anything higher than a "minor" earthquake is very unlikely in Clinton; however, the potential does exist.

2.5.8 Drought and Wildfire

Clinton is small enough that a drought would most likely be town wide. Under extreme drought conditions, areas of concern for wildfire include the deciduous forest located in the northern areas of town, unmanaged private forest areas including those abutting mobile home parks, or areas of Phragmites in coastal tidal marshes. Drought also can exacerbate potential for small wildfires and hinder the ability of the town to control outbreaks. Severe and sustained droughts are not frequently occurring natural events, but flashy droughts have been occurring with some regularity. At times of severe drought, communities face growing wild land-urban interface (WUI) problems. The primary issue for Clinton, along with other Connecticut towns that rely on aquifers and local well systems, even public water supplies such as the Connecticut Water Company, is that potential for increased problems during drought conditions can increase with population growth and increased demands for water. Land-use planning techniques can be applied to existing, new, and redeveloping areas alike.

Different areas throughout town are susceptible to different types of fires. Inland areas where thick forest cover is abundant are more susceptible to fires feeding on ground ladder fuels. Areas closer to the densely developed shoreline where more roads are present are more susceptible to fires feeding on surface fuels. Overall Connecticut does not have a history of fire feeding on the canopy of trees. Most fires remain on the ground in Clinton.

In 2015, to increase water availability in the northern parts of town, which lacks public water supply, the Town conducted a water supply study which identified several suitable locations for water cisterns. The Town was able to execute fewer than half of the identified projects due to funding changes in the wake of COVID. The fire department has indicated that water supply for fire suppression is sufficient under current conditions, however, there are concerns about water availability should areas such as Carter Hill Road be developed. There is additional concern regarding water availability for firefighting during drought. Vienna Lane was raised as a concern during periods of drought, as there is not always enough water to pump for firefighting. The Town is actively trying to increase the number of tanks in the ground, with plans for at least 25-30 more, and funding for a subset of those.

The most impactful brush fire of memory was 1998/1999, however, there is certainly abundant fuel in forested areas in town. Eversource did major tree clearing along transmission lines in 2024, which reduced the overall available fuel in those areas. Invasive species, however, are causing

forest dieback and likely adding fuel throughout forested areas. There are no forest management plans in place for forested areas, regardless of property ownership. The Clinton Land Conservation Trust maintains trails, but does not actively manage forests on its properties.

2.5.9 Extreme Temperature

Clinton falls in the humid continental climate zone, the same as much of interior Connecticut. Summer is hot and humid throughout the state, with average highs in New London of 81 °F (27 °C) and 87 °F (31 °C) in Windsor Locks. July and August tend to be the hottest months of the year with average temperatures in Hartford being 84ºF and 82ºF, respectively. With the elevated summer temperatures comes a risk of extreme heat. With its dense forest coverage and abundant water features, Clinton is slightly more protected from extreme heat than some of its neighbors, but heat waves do occur. A heat wave in Connecticut is defined as any period in which daytime high temperatures reach more than 90ºF for three consecutive days or longer. All areas of Clinton are equally susceptible to extreme heat. Depending on wind direction, areas directly along the shoreline may stay slightly cooler because of the water temperature in Long Island Sound having a cooling effect on the surrounding air.

Extreme cold spells do occur periodically, typically between the months of December and March. Although cold temperatures are normal during the winter months, occasionally temperatures can drop below freezing for extended periods, sometimes as low as 0ºF. Low-income housing residents and the elderly in homes without sufficient heat sources are particularly vulnerable. Town officials have planned and continue to update the accommodations of shelters in their municipalities. One classification of shelters is warming centers, to be used by those that either have insufficient heat sources or for times of power outages. The Town urges residents to visit library for cooling and warming purposes during business hours, and can open the Police Community Room during cold events to provide additional warming if necessary as the Police Station is staffed 24/7. The Community Room is not intended to accommodate overnight or extended sheltering.

2.5.10 Terrestrial Invasive Species

Terrestrial invasive species include those typically found in Connecticut. Though there are not specific areas of concern, the Town has seen an increase in Spotted Lantern Flies, Beech Blight, and Japanese Knotweed. The Sustainability Committee is working to create an outreach program geared toward raising residential awareness on invasive awareness and management strategies. The Town is also concerned about marsh invasives and the impact on those ecosystems and the habitats' capability of withstanding future flood events and sea level rise.

2.5.11 Tree Diseases and Pests

The Town has removed trees that have been damaged or killed as a result of other hazards and have also removed trees damaged by disease and pestilence such as the emerald ash borer. Lantern flies have been a concern since the adoption of the 2021 edition of this plan.

3. Hazard Risk

3.1 Historical Events

Table 3.1 lists the Federal Disaster declarations for Middlesex County, for which Clinton requested assistance. There have been no Presidentially declared disasters since the adoption of the 2021 plan update.

Table 3.1. Clinton Natural Hazard Events

Type of Event	Date	Preliminary Damage Assessment
Flood Event (DR-4087)	10/30/2012	$1,250,883.48
Hurricane Event (DR-4023)	09/02/2011	$1,362,502.65
Hurricane Event (DR-4087)	10/30/2012	$625,441.74
Winter Weather Event (DR-4106)	03/21/2013	$166,636.12
Hurricane Event (DR-1904)	04/23/2010	$15,394
Flood Event (DR-4410)	12/05/2018	$711,001
Tropical Storm Isaias (DR-4580)	1/12/2021	$79,560.56

3.2 Recent Events

Since the 2021 plan update, Clinton has experienced a few hazard events, but the town planning team described them as “not of particular note” as compared to more significant historic events. These events included heavy rain, coastal erosion and flooding, and wind events/nor’easters causing outages.

FEMA’s public assistance program provides reimbursement to communities after federally declared disasters. Funding is typically for public works and public safety extraordinary expenses (overtime), administrative expenses, debris cleanup, and public damages.

Total PA reimbursements to the community were as follows:

- Flood Events: $1,990,035 ($73,705 annually)
- Hurricane (Wind) Events: $2,082,900 ($77,144 annually)
- Winter (Snow) Storm Events: $248,214 ($9,193 annually)

Table 3-2, Table 3-3, and Table 3-4 show PA reimbursements for Clinton.

Table 3.2. Flood Event PA Reimbursements, Clinton, CT

Disaster No.	1904	4087	4410
Incident Dates	Mar-May 2010	Oct-Nov 2012	Sep 2018
Declaration	4/23/2010	10/30/2012	12/05/2018
Entity	FEMA PA Reimbursement	FEMA PA Reimbursement	
State	$	$	$
Municipal	$	$	$
Nonprofit	$0	$0	$0
Total	$28,150	$1,250,884	$711,001
Annualized	$1,043	$46,329	$26,333

*Annualized is calculated over a 27-year period from 1998 and 2025

Table 3.3. Hurricane Wind Event PA Reimbursements, Clinton, CT

Disaster No.	1904	4023	4087	4580
Incident Dates	Mar-May 2010	Aug-Sep 2011 (T.S. Irene)	Oct-Nov 2012	Jan 2021
Declaration	4/23/2010	9/2/2011	10/30/2012	1/12/2021
Entity	FEMA PA Reimbursement	FEMA PA Reimbursement	FEMA PA Reimbursement	FEMA PA Reimbursement
State	$	$	$	$
Municipal	$	$	$	$
Nonprofit	$0	$0	$0	$0
Total	$15,394	$1,362,503	$625,442	$79,561
Annualized	$570	$50,463	$23,165	$2,947

*Annualized is calculated over a 27-year period from 1998 and 2025

Table 3.4. Winter Storm PA Reimbursements, Clinton, CT

Disaster No.	3176	3200	4106
Incident Dates	Feb 2003	Jan 2005	Feb 2013
Declaration	3/11/03	2/17/05	3/21/13
Entity	FEMA PA Reimbursement	FEMA PA Reimbursement	FEMA PA Reimbursement
State	$	$	$
Municipal	$	$	$
Nonprofit	$0	$0	$0
Total	$32,832	$48,746	$166,636
Annualized	**$1,216**	**$1,805**	**$6,172**

3.3 Hazard Risk Ranking

Clinton participated in the regional hazard ranking conducted by the Hazard Mitigation Planning Team. The probability of each hazard is determined by assigning a level, from unlikely to highly likely, based on the likelihood of occurrence from historical data. The total impact value includes the affected area, primary impact, and secondary impact levels of each hazard. Level of Community Concern reflects the perceived risk of each hazard as indicated by respondents to question 6 of the community survey. This question asks, "How concerned are you about each of the following hazards impacting your home, business, community, or organization?"

Each of these five criteria are assigned weights, as well as point values for each of their responses. Each level's score is reflected in the matrix. The total score for each hazard is the probability score multiplied by its importance factor times the sum of the impact level scores multiplied by their importance factors. Based on this total score, the hazards are separated into three categories based on the hazard level they pose to the communities: Significant, Moderate, Limited. Table 3.5 provides a summary of the categories used to rank the hazards and their weighted values for the Composite Hazard Risk Index.

Table 3.5. Hazard Ranking Parameters

Criteria	Weight	1 Point	2 Points	3 Points	4 Points
Hazard Probability	2.0	**Unlikely** Less than 1% probability in next 100 years or has a recurrence interval of greater than every 100 years.	**Somewhat Likely** Between 1 and 10% probability in next year or has a recurrence interval of 11 to 100 years.	**Likely** Between 10 and 100% probability in next year or has a recurrence interval of 10 years or less	**Highly Likely** Near 100% probability in next year or happens every year.
Impact – Affected Area	0.8	**Isolated** Less than 1% of area affected	**Small** Between 1 and 10% of area affected	**Medium** Between 10 and 50% of area affected	**Large** Between 50 and 100% of area affected
Impact – Primary Impact	0.7	**Negligible** 1 to 10% of people or property	**Limited** 10% to 25% of people or property	**Critical** 25 to 50% of people or property	**Catastrophic** >50% of people or property
Impact – Secondary Impact	0.5	**Negligible** No loss of function, downtime, and/or evacuations	**Limited** Minimal loss of function, downtime, and/or evacuations	**Moderate** Some loss of function, downtime, and/or evacuations	**High** Major loss of function, downtime, and/or evacuations

Criteria	Weight	1 Point	2 Points	3 Points	4 Points
Level of Community Concern	1.0	**Low Concern**	**Moderate Concern**	**High Concern**	-

The hazard risk ranking generated from this exercise, along with consideration of available data, was used to prioritize the level of effort assigned to further analysis of each hazard in the vulnerability analysis and lost estimation sections. All the participating communities agreed upon the results of the hazard ranking for the overall region. Based on the results of the exercise, the hazards were ranked as follows in Table 3.5. Hazard Ranking Parameters. Clinton endorsed the ranking as accurate for the Town.

Table 3.6. Summary of Potential Hazard Impacts.

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
Winter Storms (Snow, Ice, Wind, including Nor'easters)	Historic analysis for probability and annualized damages	**Highly Likely - 4**	**Large - 4**	Negligible - 1	Moderate - 3	Moderate Concern - 2	15.4	Significant
Flood – Riverine and Inland Flooding (Riverine, Drainage, Coastal Surge, Sea Level Rise - includes flooding from Nor'easters)	Hazus, SLR Overlay, FS Model Overlay, Historic data and damages for additional probability	Likely - 3	Medium - 3	Limited - 2	Moderate - 3	High Concern - 3	14.3	Significant
Flood – Coastal Flood (Riverine, Drainage, Coastal Surge, Sea Level Rise - includes flooding from Nor'easters)	Hazus, SLR Overlay, FS Model Overlay, Historic data and damages for additional probability	Likely - 3	Medium - 3	Limited - 2	Moderate - 3	High Concern - 3	14.3	Significant
Flooding from Dam Failure	Dam Inundation areas, Historic analysis for probability and annualized damages	Somewhat Likely - 2	Medium - 3	**Catastrophic - 4**	**High - 4**	Moderate Concern - 2	13.2	Moderate
Severe Weather (thunderstorms, downbursts, hail, lightning)	Historic analysis for probability and annualized damages	**Highly Likely - 4**	Small - 2	Negligible - 1	Limited - 2	Moderate Concern - 2	13.3	Moderate
Extreme Heat and Cold	Qualitative based on historic	Likely - 3	**Large - 4**	Negligible - 1	Limited - 2	High Concern - 3	13.9	Moderate
Hurricanes	Hazus for wind	Likely - 3	**Large - 4**	Critical - 3	Moderate - 3	High Concern - 3	15.8	Significant

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
Tornadoes	Historic analysis for probability and annualized damages - pulling in surrounding counties	Likely - 3	Isolated - 1	**Catastrophic - 4**	Limited - 2	Moderate Concern - 2	12.6	Moderate
Earthquakes	Hazus, 3 scenarios	Somewhat Likely - 2	Small - 2	**Catastrophic - 4**	**High - 4**	Low Concern - 1	11.4	Limited
Drought	Historic analysis for probability and annualized damages - some qualitative	Likely - 3	Medium - 3	Negligible - 1	Limited - 2	High Concern - 3	13.1	Moderate
Wildfire	Historic analysis for probability and annualized damages	Likely - 3	Small - 2	Critical - 3	Moderate - 3	Moderate Concern - 2	13.2	Moderate
Aquatic Invasive Species	Semi-quantitative, supplemented by state and municipal figures, recommend survey	**Highly Likely - 4**	**Large - 4**	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant
Terrestrial Invasive Species	Semi-quantitative, supplemented by state and municipal figures, recommend survey	**Highly Likely - 4**	**Large - 4**	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant
Tree Infestation	Semi-quantitative, supplemented by state and municipal figures, recommend survey	**Highly Likely - 4**	**Large - 4**	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant

3.3.1 National Flood Insurance Program (NFIP) Participation

Clinton began participating in the NFIP in 1973. There are 535 policies in force, providing approximately $175 million in coverage. Losses paid have been approximately $8.4 million.

Repetitive Loss Property Detail

The Town of Clinton has fifty-four (54) Repetitive Loss properties. These are mainly located along the shoreline of Clinton Harbor and Long Island Sound and the Hammonasset River (53 residential and 1 commercial). For those 54 properties there have been a total of 126 claims and total payments of just over $4 million. There is one (1) Severe Repetitive Loss (SRL) residential property in Clinton along Shore Road. For that property, there have been six (6) claims paid, totaling $114,709.

4. Capability Assessment

This section discusses capabilities and operational procedures that Clinton undertakes that contribute to or have the potential to contribute to hazard mitigation. It also notes deficiencies in those capabilities that could be addressed to strengthen resilience.

4.1. Critical Facilities

Public and private utility facilities are vital to maintaining or restoring normal services to areas of town before, during, and after a natural disaster.

The town considers critical facilities to be those that serve the town on a day-to-day basis as well as during an emergency. The facilities include but are not limited to the Clinton Town Hall and Jared Elliot School (emergency shelters), Police Department, Fire Departments, and other schools. This list can also include facilities that house elderly and disabled people.

In Clinton, structures or facilities that produce, use, or store highly volatile, flammable, explosive, toxic, or water-reactive materials exist primarily in the industrial districts and along the I-95 and Route 1 corridor, running east-west through town. These areas are mostly outside of the 100-year floodplain.

The Town's police station, public works vehicle and equipment storage facility, and emergency operations center are located outside the 100-year flood zone. However, the fire house (which houses ambulances) in downtown Clinton, lies on the banks of the Indian River and is within the 1% Annual Chance (100-year) flood zone, a hurricane surge inundation zone, and dam breach inundation zone and is susceptible to major flooding. The Town Hall sits just outside the same flood zone and is susceptible to storm surges associated with Category 2- 4+ hurricanes. In addition, the Police Station would be cut off from much of the town following a Category 3 or 4 hurricane.

The Town has noted concerns related to sheltering capabilities. Currently, Clinton has no truly resilient shelter, as Town Hall is located in the Indian River flood zone. The Town has the option to utilize Eliot School as an alternative; however, this is located in the Kelseytown Dam inundation area. Residents are urged to

visit regional shelters. The Town has considered Morgan School as a shelter; however, it currently lacks the capacity to run power showers and toilets with a generator. Figure 4.1 shows the location of critical facilities in Clinton which are identified at the regional level and Table 4.1 lists critical facilities identified by the Town.

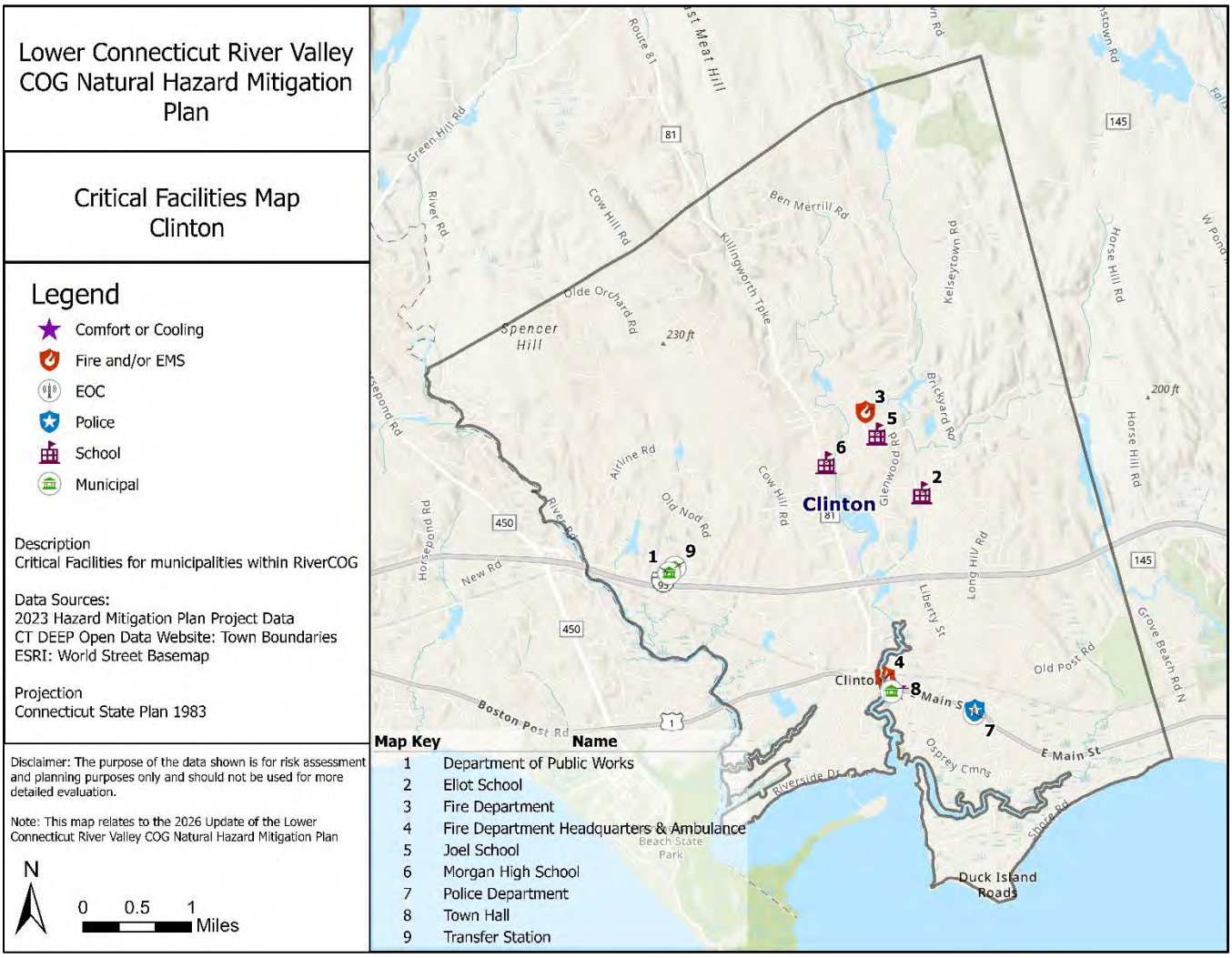


Figure 4.1. Location of Critical Facilities in Clinton

Table 4.1. Critical Facilities

Facility	Type	Address	Flood Zone	Generator	Notes
Morgan High School	Municipal	71 Killingworth Turnpike	No	X (partial)	Can be used to support displaced individuals during a disaster but does not meet sheltering requirements. Located in a dam breach inundation evacuation zone.
Eliot School	Municipal	69 Fairy Dell Rd	No	X	Elliot Middle/Elementary School has full generator power. It is the secondary shelter for use in the case of large disasters.
Joel School	Municipal	137A Glenwood Road			
Town Hall	Municipal	54 E Main St	Adjacent to AE zone	X	Town Hall also serves as a shelter during smaller disasters. Located in a dam breach inundation evacuation zone. Also susceptible to hurricane storm surge from categories 2-4+
Police Department	Law Enforcement	170 EAST MAIN ST	500-year (0.2 PCT Annual Chance Flood Hazard)	X	Would be cut off from the rest of town in a hurricane category 3 and above storm surge.
Fire Department Headquarters & Ambulance	Fire/EMS	35 EAST MAIN ST	100-year Zone AE (EL 9 Feet)	X	Also located in a dam breach inundation zone and hurricane surge inundation zone.
Fire Department	Fire	149 GLENWOOD ROAD	No	X	
Department of Public Works	Municipal	117 Nod Rd, Clinton, CT 06413	No	X	

Public and private utility facilities, which are vital to maintaining or restoring normal services to areas of town before, during, and after a natural disaster, were not inventoried extensively. All gas stations in Clinton are located along Routes 1 and 81; these are accessible to most of the townspeople and businesses that may lose power and may seek gasoline to power emergency generators, although access could be compromised in extreme coastal storms/dam breach. After the 2011 Halloween Nor'easter and Tropical Storm Irene, many residents of communities from adjacent coastal towns and from further north in the state traveled to Clinton since it was one of the few areas where gasoline was available.

Public and private utility facilities are subject to the same loss of power, potable water, communications, and accessibility as is the community they serve.

Since the 2021 Update, the town has made the following updates to critical facilities:

- The Police Department, Town Hall, Fire Department, and Public Works have all received new generators.

4.2 Municipal Capabilities

The Town of Clinton has a variety of natural hazard mitigation capabilities, including local regulations and ordinances, operational protocols, and emergency response capabilities. Following is a list of some highlighted capabilities identified by municipal staff.

4.2.1 Regulations and Ordinances

The Town of Clinton participates in the National Flood Insurance Program (NFIP). Within the Clinton Municipal Coastal Plan, the Zoning and Subdivision Regulations, and the Building Code, there are standards and criteria designed to meet NFIP requirements that govern the location and elevation of structures, construction methods, and the placement or removal of fill. For construction within the special flood hazard areas, the Zoning Enforcement Officer, Building Official and consulting Town Engineer review and issue a flood permit and conduct follow-up inspections to confirm compliance with the permit. The Flood Hazard Zone also applies to substantial improvements to existing structures located in SFHAs.

The Town enforces the State Building Code construction standards. Clinton implements State Building and Fire Codes and local Flood Codes through its municipal code and zoning regulations to enforce construction standards that minimize risks due to natural hazards. Flood-proof construction standards for roads and structures within the flood plain are strictly enforced. All new development must be designed to minimize runoff. Clinton uses the state Building Code as its own. The design wind speed for Clinton is 125 miles per hour.

The Clinton PZC adopted Section 36 of the Zoning Regulations in 2026 to codify and clarify stormwater management requirements for new development, redevelopment, and stormwater retrofits. The regulations became effective on June 10, 2026.

In anticipation of severe winter storms, the Town has the authority to order parking bans and can order evacuations in extreme situations if there is a significant threat of localized flooding. The Clinton Director of Emergency Management has the authority to designate cooling centers in public buildings during heat waves.

To secure a water supply for fire suppression that accounts for future cases of drought, the current Subdivision Regulations (Section 5.13) state that the site developer must meet with the Fire Marshall to determine the need for more water to support proposed development. When deemed necessary, storage tanks, fire ponds, or fire wells, must be capable of holding at least 20,000 gallons of water. The applicant is required to demonstrate that such water supply meets or exceeds the minimum requirements as set forth in National Fire Protection Association (NFPA) Standard 1141 (Standards for Fire Protection in Planned

Building Groups) and National Fire Protection Association (NFPA) Standard 1231 (Water Supplies for Suburban and Rural Firefighting).

4.2.2 Operations and Procedures

The Town of Clinton has numerous coastal roads, plus those mentioned earlier along the rivers, that experience reoccurring flooding during storm events and have procedures in place to allow these roads to flood and then return to normal conditions (through storm drainage). This flooding causes temporary disruption but generally subsides within hours. The Town may stage emergency vehicles and equipment at alternative locations when storm surge or flood predictions indicate that areas may be inaccessible for longer periods of time.

The Department of Public Works (DPW) maintains a fleet of trucks and other snow removal equipment and monitors weather forecasts during the winter months to mobilize in advance of storms. DPW has moved to salt use (no sand) for road ice management.

4.2.3 Capital Improvements

The Capital Improvement Plan (CIP) addresses municipal improvements including facilities, rights-of-way, land, housing, or utilities for public purposes. Mitigation actions from this NHMP should be included in the CIP. Larger items such as bridge and culvert replacements and elevation of roads are included in the 5-year CIP. The CIP should be reviewed often so that it can include new mitigation action items each time the NHMP is updated. This is a good way for the town to prioritize mitigation items and use the Capital Improvement Program (CIP) to set aside funds for infrastructure improvements to reduce loss of life and property during natural hazard (NH) events. Items such as bridge improvements to reduce flooding have been funded from the CIP. However, the CIP can only cover so much; more substantial, costly projects have been funded by outside sources, such as the Federal Local Bridge Program. State and Federal project funding will be necessary to implement larger projects.

4.2.4 Plan Integration with Other Planning Mechanisms

The Town of Clinton referenced the NHMP in their 2026 Sustainable CT bronze certification. The Town also references the NHMP in the 4 Shore Coastal Resiliency Plan along with the 2025 update to the Town's Plan of Conservation and Development (POCD). There is new legislation (P.A. 25-33) that now requires cities and towns to incorporate climate vulnerability (specifically including flooding) and resilience strategies into POCD. Clinton plans to comply with that new requirement during the next POCD Update. Further, communities are now required to develop and maintain affordable housing plans. The mitigation plan will help inform siting criteria within that plan.

Additionally, the town of Clinton uses the mitigation plan to inform its 5-year capital improvement plan and associated annual budgets. Clinton staff reported that the plan has not been formally incorporated into any other planning documents.

4.2.5 Outreach, Education, Communication, and Warnings

The Town provides outreach to businesses through brochures and connecting owners with consulting services such as those offered at the Connecticut Small Business Development Center to promote preparedness for natural hazard events. These procedures will equip a business with the tools for a quick recovery from a hazard event. The Town also promotes owner participation in mitigation efforts to protect their property, such as to elevate, flood and wind-proof structures to meet and exceed requirements through its various ordinances and regulations.

The Town is in the process of updating communications. This should improve capacity and help with areas that have experienced service troubles in the past. In 2022 the emergency communications center was also updated. There is interest in Everbridge or a program that would allow emergency services to blast notifications to residents including those for natural hazards events and beyond for public safety.

The Town does participate in CT Alerts. The dam failure inundation areas are programmed in and can be used for focused alert notifications. It has been utilized for Kelseytown Reservoir inundation area during events.

The Town has continuously worked to improve communication with Eversource. While communication has improved over the years, the Town reports that the Eversource emergency communication portal is only accessible during a certain level of emergency, and that portal does not have all streets input into the system; this sometimes leads to incorrect emergency response routing for Eversource crews as the town cannot select the correct location because it may not exist.

There is particular outreach strategy needed for Cedar Island. In the event of a storm, the Town has gone door to door to share evacuation information, but there is no formal plan to respond to the island which is seasonally inhabited and only accessible by boat. The PD has a boat; FD has a boat and has access to a third skiff if necessary. Fire remains the biggest concern in Cedar Island. While emergency services are prepared to respond, a fire would likely spread quickly. The FD boat has 1,000 GPM capacity, and there are pump houses on the island.

4.2.6 Other Capabilities

The following list highlights capabilities identified by Municipal staff:

- The Plan of Conservation & Development (POCD) guides other boards and commissions in promoting programs including outreach, stewardship, and other services. The POCD takes into consideration items from this HMP along with the Four Shore Coastal Resilience Plan. The POCD encourages prioritization of purchasing land in flood hazard zones to allow for more open space in these areas, and prioritizing road construction projects to lower the risk of flooding by raising roads and replacing inadequate bridges and culverts.
- Regarding tree maintenance, the town of Clinton has a Tree Warden. This Tree Warden is responsible for tree trimming and removal of debris. The current budget for this work is a small annual stipend.

Table 4.2, Table 4.3, and Table 4.4 list legal, regulatory, technical, administrative and financial capabilities that support hazard mitigation.

Table 4.2.a. Codes, Ordinances & Requirements

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Building Code	Yes	Yes	No	Yes	All municipalities enforce the State Building Code
Zoning Code	Yes	No	No	No	
Subdivisions	Yes	No	No	No	
Post Disaster Recovery	Yes	No	No	No	
Real Estate Disclosure	Yes	No	No	Yes	State requirement
Growth Management	No	No	No	No	
Site Plan Review	Yes	No	No	No	
Special Purpose (flood management, critical areas)	Yes	Yes	No	Yes	State flood management statutes and regulations

Table 4.2.b. Planning Documents

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
General Plan	Yes	No	No	Yes	POCD is Current
Floodplain or Basin Plan	No	No	No	No	Four Shore Coastal Resiliency Plan, CT Water EAPs
Stormwater Plan	Yes	No	No	Yes	MS4 community
Capital Improvement Plan	Yes	No	No	No	
Habitat Conservation Plan	No	No	No	No	
Economic Development Plan	Yes	No	Yes	No	Regional Comprehensive Economic Development Strategy
Emergency Response Plan	Yes	No	No	Yes	LEOP templates provided by DEMHS

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Shoreline Management Plan	No	No	No	No	
Post Disaster Recovery Plan	Yes	No	No	Yes	LEOP templated provided by DEMHS

Table 4.2. Administrative and Technical Capability

Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Planning & Zoning
Engineers or professionals trained in building or infrastructure construction practices	Yes	Public Works
Planners or engineers with an understanding of natural hazards	Yes	Planning & Zoning, RiverCOG
Staff with training in benefit/cost analysis	No	
Floodplain manager	Yes	Planning & Zoning
Surveyors	No	Contracted
Personnel skilled or trained in GIS applications	Yes	Contracted Tighe&Bond and Municipal Staff
Emergency manager	Yes	Emergency Management
Grant writers	Yes	RiverCOG, Municipal Staff

Table 4.3. Financial Resources

Financial Resources	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	Yes
Withhold Public Expenditures in Hazard-Prone Areas	Yes (State)

Financial Resources	Accessible or Eligible to Use?
State Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	No

4.2.7 New Capabilities and Completed Actions

Since the last plan update in 2021 there have been many updated capabilities:

- The Four Shore Coastal Resiliency Plan (March2025) was created in partnership with the Town of Westbrook, Town of Old Saybrook, and the Borough of Fenwick. The Plan explores sea level rise impacts to the four shoreline communities, and works to identify collaborative strategies and approaches to address these future impacts.
- The police department is now accredited by CALEA – the Commission of Accreditation for Law Enforcement Agencies
- Clinton hired a full time town planner.
- Various departments (planning and zoning, building,, regional health) now use the OpenGov permitting software that includes provisions forSI/SD tracking.
- The police department has new CCTV resources and plate readers.
- Fire Marshal Fees for project reviews are collected and go back into the general fund. The Town may consider how best to use these funds toward hazard mitigation projects in the future.

4.2.8 Emergency Access Challenges

The Town is concerned about emergency access and egress to Cedar Island. There are approximately 60 homes on the island that are accessible only by boat. The Town must maintain the harbor by dredging to ensure that emergency personnel can access the docks and boat to respond if necessary. Limitations on emergency access are also a concern at the two underpasses (roads that pass under the rail line) where flooding can occur.

5. Hazard Mitigation Action Plan

This section presents the progress made since the 2021 action plan and establishes new goals, objectives and actions identified for the 2026-2030 planning horizon.

5.1. Previous Mitigation Actions Disposition

During the process of developing the 2021 Clinton Hazard Mitigation Plan, several hazard mitigation actions were identified to be pursued during the five-year planning horizon that followed. Table 5.1 presents the actions listed in that document, and the status of those actions.

Table 5.1. Status of Previous Mitigation Strategies and Actions.

Action	Description	Status	Notes
1	HMP Plan Integration - Incorporate additional natural hazard mitigation concerns into Zoning Regulations and Subdivision Regulations. Incorporate additional natural hazard mitigation concerns into the Inland Wetland Regulations, including prevention of runoff near waterways.	Carry Forward	Stormwater Management requirements adopted into the Zoning Regulations in 2026 to address runoff. Zoning Regulation updates are scheduled for 2026-2027, and will provide the opportunity to revisit incorporation of additional mitigation principles.
2	Design Standards - Implement the results of the SHPO historic and cultural resources resilience project to develop guidelines for historic buildings in Flood Hazard Zones to minimize loss of life and property as well as preserve our historic neighborhoods.	Carry Forward	No progress since 2022. carry forward
3	Flood Zone and Sea Level Rise Study – Town Council (TC) should establish an ad-hoc committee to research medium and long-range impacts to coastal areas from sea level rise, to investigate possible mitigation actions and to assess legal, financial and policy implications. Work with The Nature Conservancy (TNC), DEEP, educational institutions, and state federal agencies to study impacts of sea level rise on coastal flooding in Clinton. Update flood zone study for the town to incorporate sea level rise mapping study to evaluate coastal flooding.	Carry Forward with Revisions	The Coastal Resilience Task Force (the lead group on 4 Shore plan) was established as full time committee/agency in 2026 to charge them with conducting public outreach. Revise action to shift from the planning phase (the 4 Shore Plan) to sustained action.
4	Infrastructure Improvements - Develop a priority list for road reconstruction and elevation for routes which experience frequent flooding or are integral to evacuation. Make a consideration for ongoing PW road evaluations.	Carry Forward	Started in the 4 Shore plan, but has not been fully vetted. NFWF tide gate project is under construction with an anticipated 2027 completion date.
5	Inventory Generators at Essential Facilities. Some non-critical facilities are essential for public function during an emergency, such as grocery stores and gas stations. For these essential facilities, inventory which have functional generators. Encourage gas stations and	Completed	Big Y has a full store generator, and the East Main Street Shell was working on a generator. All municipal facilities have adequate backup power.

Action	Description	Status	Notes
	grocery stores without generators to add them. Provide technical assistance and support identifying funding.		
6	Business Recovery Plan. Regional level to develop business recovery plan cooperatively with other region towns and distribute to town businesses. Clinton will support a regional effort, not carry out this task on its own.	Carry Forward	No formal recovery plan, but COG did do a study of critical businesses - what and where they are. Clinton would cooperate with future efforts.
7	Retrofit and expand or construct new Fire Station. Clinton is evaluating the future feasibility of its fire station. It needs resilience improvements and expansion. Evaluate the cost effectiveness and feasibility of enhancing the existing facility vs. replacing it with a new facility in a safer location.	Carry Forward	Some properties have been identified. Funding has proven to be a challenge. Concept has been expected for some time.
8	Local Social Resources. Coordinate with Town Human Services, Estuary Council of Seniors, and Shoreline Basic Needs Task Force to assist with those populations (i.e. elderly, disabled, non-English speakers, who may frequent, reside, or work) in Clinton.	Carry Forward	Need is growing. Coordination is growing, but still needed. There needs to be a more formal process/discussion.
9	Possible Open Space Criteria. The Conservation Commission should include possible inundation by future sea level rises to its considerations for preserving open space. Review and update open space plan developed in 2013. Modify to create contiguous space with acquisitions informed by TNC and CIRCA sea level/coastal flood reports.	Carry Forward	There is a targeted list, which is driven by what is available/potentially available. The Town may initiate a long-term conversation surrounding retreat/acquisitions. There is no mechanism in place to require or fund this action.
10	Update Recovery & Reconstruction Plan. Develop a post-disaster recovery and reconstruction plan to re-establish infrastructure and public services, etc. damaged or destroyed by any NH event, including establishment of a "rainy day"	Carry Forward	Nothing specific aside from what is in LEOP. Long term recovery is the issue. This remains a need.

Action	Description	Status	Notes
	fund in case Federal assistance is insufficient or delayed.		
11	Evacuation Routes. Identify and sign evacuation routes throughout town to aid public in evacuating. Evacuation routes should follow roads which will not flood during storms. Upgrade current evacuation routes for adequacy.	Completed	Routes are in the process of being updated regionally for DEMHS Region 2.
12	RL and SRL Properties. Encourage property owners of repetitive loss and several repetitive loss properties to obtain assistance for hazard mitigation funding from DEEP/FEMA for elevation of structures and repairs where applicable. Provide assistance as needed.	Carry Forward	Has not been targeted outreach, although privately funded elevations have taken place. The Town would need to build capacity to provide partnership to help with grant funding.
13	Road Reconstruction. Develop a priority list for road reconstruction and elevation for routes which experience frequent flooding or are integral to evacuation. Build into PW evaluation criteria.	Carry Forward with Revisions	There is still a need for developing a priority list. Merge with below Elevate Road action and bring in new actions from the 4 Shore Plan. *Refer to new actions 10, 11, 12, 14, and 15.*
14	Upgrade Culverts. Evaluate and reconstruct culverts in town to meet 100-year storm standards where feasible	Completed	Most are done. Beach Park Road bridge is under construction. *Refer to new actions 10, 11, 12, 14, and 15.*
15	Elevate Road and Bridge. Evaluate and reconstruct Beach Park Road in several spots to be above Base Flood Elevation (BFE). Reconstruct Causeway in several locations to elevate above BFE. Evaluate and reconstruct Route 1 (Boston Post Road) in several spots to be above BFE. Evaluate and reconstruct Nod and River Roads in several spots to be above BFE.	Carry Forward with Revisions	Merge with above Road Reconstruction action and bring in new actions from the 4 Shore Plan. *Refer to new actions 10, 11, 12, 14, and 15.*
16	Dune Restoration. Implement dune restoration and marshland protection techniques for flood storage and surge protection.	Carry Forward with Revisions	Parks and Rec is conducting an erosion study/plan for the Town Beach area. This could include dune component. Revise action. Incorporate narrative from Four

Action	Description	Status	Notes
			Shore Plan. *Refer to new actions 10, 11, 12, 14, and 15.*
17	Circulate Existing Literature. Access existing literature prepared by regional groups and the chamber of commerce and FEMA and display for public distribution in the Town Hall and Library.	Carry Forward	Coastal resilience task force could be tasked with this action, in partnership with municipal staff.
18	Preparedness and Recovery Webpage. Keep up-to-date Town website with NH preparedness information, including hazard areas, evacuation routes deemed appropriate per NH event and locations of shelters. Include information about recovery assistance following NH events.	Carry Forward	Staff from multiple departments will evaluate this action and update the Town website.

5.2 Updated Mitigation Goals, Objectives, and Strategies

As noted in Section 3 of Volume 1, all the RiverCOG participating communities, including Clinton, participated in setting regional goals and objectives. Clinton has confirmed these goals and objectives valid for the Town's annex. The three goals and objectives are as follows:

Goal 1: Promote implementation of sound flood management and other natural hazard mitigation principles on a regional and local level. Note: Covers future development through policy, planning, regulation, emergency services, and environmental strategies.

- **Objective for Goal 1:** To promote the development, improvement and implementation of programs, policies, regulations, and emergency services that result in the reduction of long-term risks to life and property.

Goal 2: Implementation of effective natural hazard mitigation projects at the regional and local level. Note: Covers infrastructure and building related projects – the existing built environment.

- **Objective for Goal 2:** To enhance the ability of RiverCOG, other regional entities, and local communities to reduce or eliminate risks to life and property from natural hazards through cost-effective hazard mitigation projects, including avoidance.

Goal 3: Increase research, planning and outreach activities for the mitigation of natural hazards on a regional and local level. Note: Covers the people component of mitigation via outreach and education, and integration with other planning and continuous improvement through increased research.

- **Objective for Goal 3:** To increase general awareness of the region's natural hazards and encourage State agencies, local communities, and the public to be proactive in taking actions to reduce long-term risk to life and property.

Clinton identified a series of new actions and hazard mitigation needs to consider. For the most part, these new actions are based on the Clinton-specific recommendations from the Four Shore Coastal Resiliency Plan (actions 11, 12, 13, 14, and 15 are based on this plan).

5.2.1 Prioritization of Mitigation Strategies

In considering which projects, processes, and other measures to undertake in the upcoming plan period, municipal and regional officials evaluated the need to address problems and vulnerabilities in their communities against the communities' resources and capabilities. To prioritize mitigation strategies, a set of criteria commonly used by public administration officials and planners was applied to each proposed strategy. The method, called STAPLEE, is outlined in FEMA planning documents such as Developing the Mitigation Plan (FEMA 386-3) and Using Benefit-Cost Review in Mitigation Planning (FEMA 386-5). STAPLEE stands for the "Social, Technical, Administrative, Political, Legal, Economic, and Environmental" criteria for making planning decisions. Benefit-cost review was emphasized in the prioritization process. Criteria were divided into potential benefits (pros) and potential costs (cons) for each mitigation strategy. The following questions were asked about the proposed mitigation strategies:

Social:

- Benefits: Is the proposed strategy socially acceptable to the community?
- Costs: Are there any equity issues involved that would mean that one segment of the community could be treated unfairly? Will the action disrupt established neighborhoods, break up voting districts, or cause the relocation of lower-income people? Is the action compatible with present and future community values?

Technical:

- Benefits: Will the proposed strategy work? Will it reduce losses in the long term with minimal secondary impacts?
- Costs: Is the action technically feasible? Will it create more problems than it will solve? Does it solve the problem or only a symptom?

Administrative:

- Benefits: Does the project make it easier for the community to administrate future mitigation or emergency response actions?

- Costs: Does the community have the capability (staff, technical experts, and/or funding) to implement the action, or can it be readily obtained? Can the community perform the necessary maintenance? Can the project be accomplished in a timely manner?

Political:

- Benefits: Is the strategy politically beneficial? Is there public support both to implement and maintain the project? Is there a local champion willing to see the project to completion? Can the mitigation objectives be accomplished at the lowest cost to the community (grants, etc.)?
- Costs: Have political leaders participated in the planning process? Do project stakeholders support the project enough to ensure success? Have the stakeholders been offered the opportunity to participate in the planning process?

Legal:

- Benefits: Is there a technical, scientific, or legal basis for the mitigation action? Are the proper laws, ordinances, and resolutions in place to implement the action?
- Costs: Does the community have the authority to implement the proposed action? Are there any potential legal consequences? Will the community be liable for the actions or support of actions or for lack of action? Is the action likely to be challenged by stakeholders who may be negatively affected?

Economic:

- Benefits: Are there currently sources of funds that can be used to implement the action? What benefits will the action provide? Does the action contribute to community goals such as capital improvements or economic development?
- Costs: Does the cost seem reasonable for the size of the problem and the likely benefits? What burden will be placed on the tax base or local economy to implement this action? What proposed actions should be considered but be tabled for implementation until outside sources of funding are available?

Each proposed mitigation strategy presented in this plan was evaluated and quantitatively assigned a "benefit" score and a "cost" score for each of the seven STAPLEE criteria as outlined below:

- For potential benefits, a score of "1" was assigned if the project will have a beneficial effect for that criterion or a "0" if the project would have a negligible effect or if the questions were not applicable to the strategy.
- For potential costs, a score of "-1" was assigned if the project would have an unfavorable impact for that criterion or a "0" if the project would have a negligible impact or if the questions were not applicable to the strategy.
- Technical and Economic criteria were double weighted (multiplied by two) in the final sum of scores.
- The total benefit score and cost score for each mitigation strategy was summed to determine each strategy's final STAPLEE score.

Although a community may implement recommendations as prioritized by the STAPLEE method, an additional consideration is important for those recommendations that may be funded under the FEMA mitigation grant programs. To receive federal funding, the mitigation action must have a benefit-cost ratio (BCR) that exceeds a value of 1.0. Calculation of the BCR is conducted using FEMA's Benefit Cost Analysis (BCA) toolkit. The calculation method may be complex and vary with the mitigation action of interest. Calculations are dependent on detailed information such as property value appraisals, design and construction costs for structural projects, and tabulations of previous damages or NFIP claims. The BCR scoring system used is outlined in Table 5.2.

Table 5.2. BCR Scoring System

Scoring	Benefits	Costs
Low: 0-1 points	Few would benefit; the impacts being addressed are not severe; benefits may be short term	Likely to be done by existing personnel with little impact on budget; not complicated to accomplish. Costs to implement are likely to be under $10,000.
Medium: 2-3 points	Benefits may be felt by many in the community; the action may solve a problem or otherwise benefit the community for several years	May need additional funding or studies; may require change in practices; costs to implement may be between $10,000 and $100,000
High: 4-5 points	Benefits would accrue to many in the community; benefits may accrue to the most vulnerable or those not able to recover on their own; benefits would be long term and may permanently protect from damages	Likely to cost over $100,000 and require obtaining funding outside of operating budget; complicated, lengthy process to implement

The STAPLEE method accounts for cost-benefit considerations both directly (through the "Economic" category) and indirectly (through general consideration of costs and benefits of actions). Additionally, the range of estimated costs of each strategy are included in the STAPLEE table. The assumed costs of projects and generalized presentation of the benefits accruing from them are not based on specific detailed cost estimates as that level of analysis is not appropriate for this type of planning effort. For some projects, such as routine or recurring operations that are established practices and conducted with municipal general operating funds and existing staff, the STAPLEE results can be the only explicit comparison of costs and benefits. For projects for which bonding and/or grant funding will be sought, more in-depth evaluations of costs and benefits will be required. As project scopes are detailed, benefits and costs can be identified with more precision, and the benefit-cost ratio which results from a full benefit-cost analysis may differ from the planning-level STAPLEE results presented here.

It should be noted that higher BCRs do not necessarily correspond to high priorities, nor do low BCRs or BCRs under 1.0 correspond to low-priority projects. An important project with a high priority to the community may have a lower BCR because of its complexity, assumed high expense, and other costs. Communities should not be discouraged or deterred from further consideration of projects that have low BCRs or BCRs less than 1.0 until additional, more specific evaluations of the costs and benefits have been undertaken.

5.2.2 2021-2026 Prioritized Hazard Mitigation Actions

In addition to the regional mitigation actions endorsed by Clinton and outlined in Section 3 of Volume 1 of the regional plan, the Town identified or carried over from the last update, ranked and evaluated the actions in Table 5.3. For each identified action, the goal and objective it addresses is noted. Additionally, a description, lead agency, indication of costs and potential funding sources and an estimated timeline for completion is included. Also included are the hazards addressed by a specific action.

Figure 5.1 shows the locations of the projects listed in Table 5.3 with spatial elements that have been carried forward or are new additions. Additionally, completed projects identified in Table 5.1 with spatial elements are also shown on the map. Projects carried forward and new projects are identified by their activity number (from Table 5.3) while completed projects are identified by the description of the project completed.

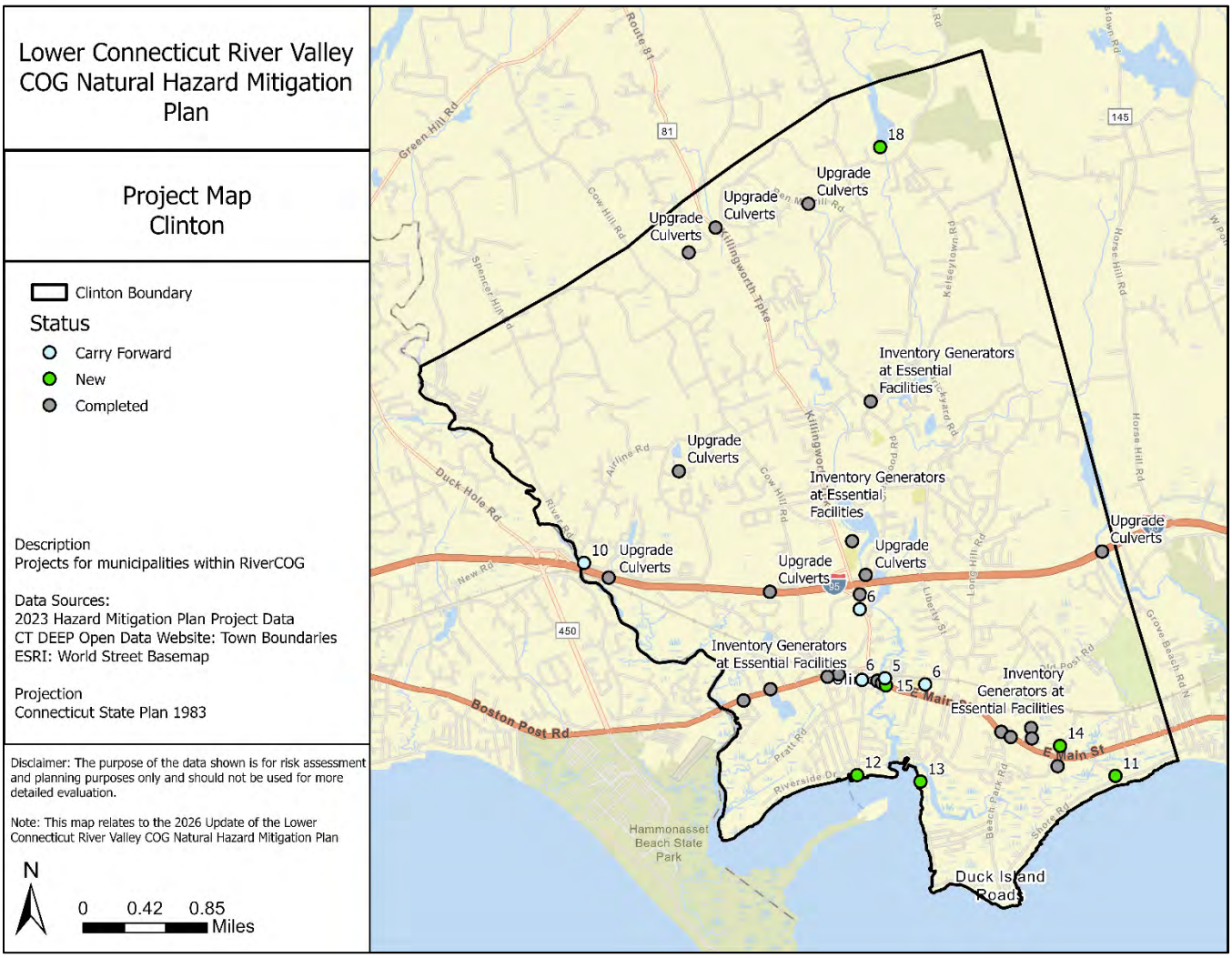


Figure 5.1. Carried Forward, New, and Completed Projects in Clinton

Table 5.3. Clinton Hazard Mitigation Strategies and Prioritization

Activity #	Goal Objective	Activity	Lead Agency	Est. Cost	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	Total STAPLEE Score/Priority
1	1-1	HMP and Four Shore Coastal Resiliency Plan Integration in Regulations. Incorporate additional natural hazard mitigation into Zoning Regulations and Subdivision Regulations. Incorporate additional natural hazard mitigation concerns into the Inland Wetland Regulations, including prevention of runoff near waterways.	Planning	$0-$10,000	CIP, OP	2026-2027	All	1	0	1	0	1	-1	1	-1	1	0	1	-1	1	0	5 - High
2	2-1	Design Standards - Implement the results of the SHPO historic and cultural resources resilience project to develop guidelines for historic buildings in Flood Hazard Zones to minimize loss of life and property as well as preserve our historic neighborhoods.	Building, Planning, and HDC	$0-$10,000	CIP, OP	2027-2029	F, CC	1	0	1	0	1	-1	1	-1	1	0	1	-1	0	0	4 – Med
3	1-1, 3-1	Sustained Action Related to Flooding and Sea Level Rise – Town Council will change the Coastal Resilience Task Force to a full time committee/agency and charge them with conducting public outreach, investigating	TC, Task Force (or new entity)	$0-$10,000	OP	2027	F, CC	1	0	1	1	0	-1	1	0	0	0	0	0	1	0	6 - High

Activity #	Goal Objective	Activity	Lead Agency	Est. Cost	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	Total STAPLEE Score/Priority
		possible mitigation actions, and to assess legal, financial and policy implications.																				
4	1-1	Business Recovery Plan. Regional level to develop business recovery plan cooperatively with other region towns and distribute to town businesses. Clinton will support a regional effort, rather than carrying out this task on its own.	TC	$0-$10,000	OP	2026-2027	SW, TW, ET, WS, F, TI, WF, D, E, CC	1	0	1	0	1	-1	1	0	0	0	1	0	1	0	7 - High
5	2-1	Retrofit and expand or construct new Fire Station. Clinton is evaluating the future feasibility of its fire station in its current location in the coastal flood zone. Evaluate the cost effectiveness and feasibility of enhancing the existing facility vs. replacing it with a new facility in a safer location.	TC, PW, BO, Fire	$25,000-$50,000 (study phase)	DEEP DCRF, FEMA HMA OP, CIP	2026-2031	All	1	0	1	0	1	0	1	0	1	0	1	-1	1	0	7 - High
6	3-1	Local Social Resources. Coordinate with Town Human Services, Estuary Council of Seniors, and Shoreline Basic Needs Task Force to assist with those populations (i.e. elderly,	TC, EMD	$0-$10,000	OP	2026-2031	SW, TW, ET, WS, F, E	1	0	0	0	0	-1	1	0	0	0	0	0	0	0	1 – Low

Activity #	Goal Objective	Activity	Lead Agency	Est. Cost	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	Total STAPLEE Score/Priority
		disabled, non-English speakers, who may frequent, reside, or work) in Clinton.																				
7	1-1	Possible Open Space Criteria. The Conservation Commission should include possible inundation by future sea level rises to its considerations for preserving open space. Review and update open space plan developed in 2013. Modify to create contiguous space with acquisitions informed by TNC and CIRCA's work related to sea level rise and coastal flood mapping.	PZC, LUO	$0-$10,000	CIP, OB	2027-2028	F, CC	1	0	1	0	1	0	1	0	0	0	1	0	1	0	8 - High
8	1-1	Update Recovery & Reconstruction Plan. Develop a post-disaster recovery and reconstruction plan to re-establish infrastructure and public services, etc. damaged or destroyed by any natural hazard event, including establishment of a "rainy day" fund in case Federal assistance is insufficient or delayed.	TC, PW	$25,000-$50,000	CIP, OB	Annually through 2031	SW, TW, WS, F, E	1	0	0	0	1	0	1	0	0	0	1	0	0	0	5 – Med

Activity #	Goal Objective	Activity	Lead Agency	Est. Cost	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	Total STAPLEE Score/Priority
9	2-1	RL and SRL Properties. Encourage property owners of repetitive loss and several repetitive loss properties to obtain assistance for hazard mitigation funding from DEEP/FEMA for elevation of structures and repairs where applicable. Evaluate internal resources and capacity to provide assistance.	LUO	$1,000-$5,000 if FEMA HMA used	FEMA HMA	Annually	F	1	0	1	0	1	-1	0	0	1	0	1	0	1	0	7 - High
10	2-1	Road Elevations and Reconstruction. Develop a priority list for road reconstruction and elevation for routes that experience frequent flooding or are integral to evacuation. Prioritize using PW criteria and Four Shore Coastal Resiliency Plan. For example, reconstruct Nod Road and River Road in several spots to reduce flood risks. *New actions for some roads are inserted below to correspond with Four Shore Coastal Resiliency Plan "projects."*	PW	$100,000+ (for developing study or list)	FEMA HMA, LOTCIP, STEAP, CIP	2026-2027	F, CC	1	0	1	0	1	0	1	0	0	0	1	-1	1	0	6 – Med

Activity #	Goal Objective	Activity	Lead Agency	Est. Cost	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	Total STAPLEE Score/Priority
11		Shore Road, Causeway, and Groveway. Advance the "Shore Road, Causeway, and Groveway" project in the Four Shore Coastal Resiliency Plan to study and design phases.	PW with Task Force (or new entity)	$100,000+ (study or design)	FEMA HMA, LOTCIP, STEAP, CIP, CT DOT	2029-2031	F, CC	1	0	1	0	1	0	1	0	0	0	1	-1	1	0	6 – Med
12		Grove & Commerce Street Area, Town Dock, and Riverside Drive. Advance the "Grove & Commerce Street Area, Town Dock, and Riverside Drive" project in the Four Shore Coastal Resiliency Plan to study and design phases.	PW with Task Force (or new entity)	$100,000+ (study or design)	FEMA HMA, LOTCIP, STEAP, LISFF, CIP	2029-2031		1	0	1	0	1	0	1	0	0	0	1	-1	1	0	6 – Med
13	2-1	Clinton Town Beach Nourishment and Fortification. Advance the "Clinton Town Beach Nourishment and Fortification" project in the Four Shore Coastal Resiliency Plan to study and design phases. Incorporate the findings of the Parks & Recreation erosion study of the Town Beach and implement actions to increase resilience at this location and reduce impacts from erosion and storm surge and increase marsh protection.	PW and P&R with Task Force (or new entity)	$100,000+ (study or design)	FEMA HMA, LOTCIP, STEAP, LISFF, CIP	2027-2028	SW, F, CC	0	0	1	0	1	0	1	0	0	0	1	0	1	-1	6 – Med

Activity #	Goal Objective	Activity	Lead Agency	Est. Cost	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	Total STAPLEE Score/Priority
14		Meadow Road Improvements. Advance the "Meadow Road Improvements" project in the Four Shore Coastal Resiliency Plan to study and design phases.	PW with Task Force (or new entity)	$100,000+ (study or design)	FEMA HMA, LOTCIP, STEAP, LISFF, CIP	2029-2031		1	0	1	0	1	0	1	0	0	0	1	-1	1	0	6 – Med
15		Town Center Area. Advance the "Town Center Area" project in the Four Shore Coastal Resiliency Plan to study and design phases for the Town Hall, East Main Street, and Indian River area; except note that the Fire Department action is listed above as a distinct action of this plan to enable separate action for the fire station. As an alternative, work with CIRCA under the *Resilient Connecticut* program to advance study and concept design for the Resilience Opportunity Area (ROAR) delineated around the Town Hall and Fire Department.	TC, FD, DPW, Planning with Task Force (or new entity)	$100,000+ (study or design)	DEEP DCRF, FEMA HMA, CIRCA, Sea Grant SRC, OP, CIP	2029-2031	F, CC, SW	1	0	1	0	1	0	1	0	1	0	1	0	1	0	9 – High

Activity #	Goal Objective	Activity	Lead Agency	Est. Cost	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	Total STAPLEE Score/Priority
16	3-1	Circulate Existing Literature. Access existing literature prepared by regional groups and FEMA and display for public distribution in the Town Hall and Library.	TC, LUO	$0-$1,000	HMPG, PDM	Annually through 2031	SW, TW, ET, WS, F, TI, WF, D, E, CC	1	0	0	0	1	-1	0	0	0	0	0	0	0	0	1 – Low
17	3-1	Preparedness and Recovery Webpage. Keep up-to-date Town website with NH preparedness information, including hazard areas, evacuation routes deemed appropriate per natural hazard event and locations of shelters. Include information about recovery assistance following events.	EMD	$0-$1,000	OP	Annually through 2031	SW, TW, WS, F	1	0	1	0	1	-1	0	0	0	0	0	0	0	0	3 – Low
18	3-1	Dam Preparedness work with Connecticut Water to conduct emergency response tabletop exercise for the Kelseytown Dam and Killingworth Reservoir Dam.	EMD	$0-$1,000	OP	Annually through 2031	F, DF, SW	1	0	1	0	1	-1	1	0	0	0	0	0	1	0	5 – Med

LOWER CONNECTICUT RIVER VALLEY COUNCIL OF GOVERNMENTS
HAZARD MITIGATION PLAN 2026 UPDATE

TOWN OF CROMWELL MUNICIPAL ANNEX

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1. Contact Information

1.1. Point of Contact

Table 1.1. Town of Cromwell Contact Information

Information	Town of Cromwell
Contact Name	Andrew J. Armstrong, Director of Planning & Development Local Coordinator for this plan
Address	Town Hall 41 West Street Cromwell, CT 06416
Telephone	860-632-3412
Email	aarmstrong@cromwellct.gov

1.2. Local Planning Team

The following representatives listed in Table 1.2 participated in meetings and provided input, data, and council toward the development of Volume 1 and this Cromwell, Connecticut Annex.

Table 1.2. Town of Cromwell Planning Team

Name	Title
Andrew J. Armstrong	Director of Planning & Development Local Coordinator for this plan
Bruce Driska	Development Compliance Officer
Jennifer Tranquillo	Administrative Assistant, Planning and Development
Daniel Parisi	Sewer Administrator
Harold Holmes	Fire Marshal
Rich Driscol	Assistant Fire Chief, Safety & Training
Jason Brade	Fire Chief
Joe Palmieri	Water Operations Manager
Lou Spina	Director of Public Works
Jon Harriman	Town Engineer
Fred Sifodaskalakis	Retired Chief of Police
Steven Penn	Chief of Police
John Carlson	Captain
Kevin Vandersloot	Emergency Management Director

1.3. Lower Connecticut River Valley Council of Governments

Table 1.3. RiverCOG Contact Information

Information	RiverCOG Information
Contact Name	Margot Burns – Senior Environmental Planner
Address	RiverCOG 145 Dennison Rd. Essex, CT 06426
Telephone	(860) 581-8554 x 702
Email	mburns@rivercog.org

2. Jurisdiction Profile

2.1. Town Profile

The first settlers arrived in what is now Cromwell in 1651. It was then known as the Upper Houses section of Middletown. In 1850, the town began talks of splitting off into a separate town from Middletown. Possible new names included: Upper Middletown, North Middletown, Glenwood, and, the eventual choice, Cromwell, which was put forth by Senator Levi Heaton. The Connecticut General Assembly approved the incorporation on June 18, 1851. Figure 1 shows the location and corporate boundaries of the Town of Cromwell.

The Town of Cromwell comprises 13.5 square miles in the approximate geographical center of the State. It is 14 miles south of Hartford and 28 miles northeast of New Haven. The Connecticut River forms the eastern boundary of the Town. A major north/south highway, Interstate 91, with two Cromwell exits, runs through the Town. The Central Connecticut Expressway (Route 9), opened at the end of 1989, enhances the Town's location as it connects I-95 in Old Saybrook, I-91 in Cromwell and I-84, the State's major east/west highway in New Britain.

Figure 2.1 shows the location and corporate boundaries of Cromwell.

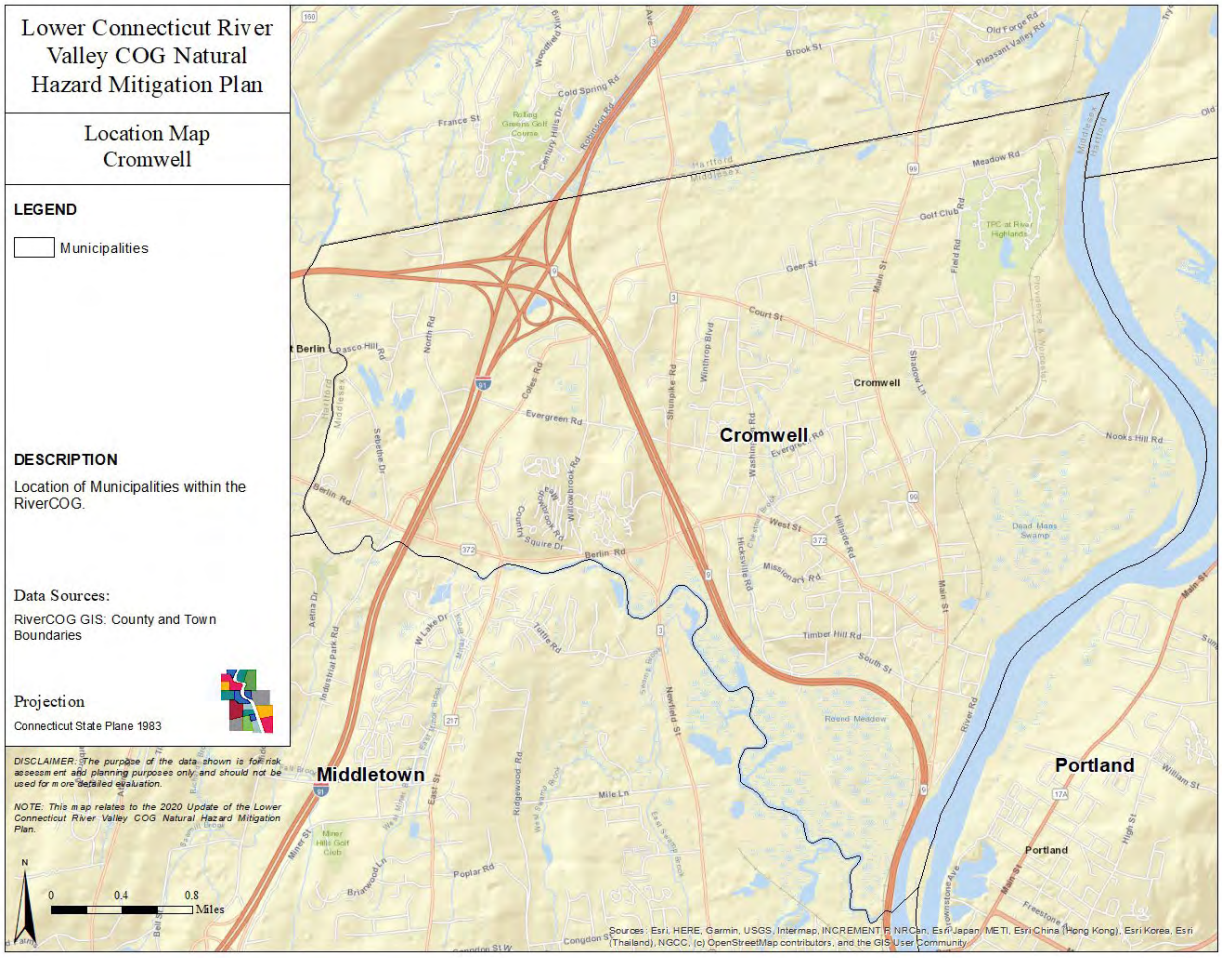


Figure 2.1. Cromwell Location

Cromwell's municipal government provides a full range of services including public safety (police department, animal control, and civil defense), public works (roadways, building and grounds, solid waste management, engineering, motor pool and building inspections), health, sanitation, wetlands protection and zoning compliance, senior citizens, youth services, social services, recreation, library, education and schools and general government administrative services. The Cromwell Fire District, under a separate government entity, provides fire, ambulance, and water services.

The major flood plains in the town are located around the Mattabasset and Connecticut Rivers, especially in the southeast corner of town. There are smaller flood plain areas scattered around the town corresponding with major brooks. The town zoning regulations designate the Flood Plain District. The district includes the two major flood plains in the southeast corner of the town. Within these two areas, the uses are restricted to farming, recreation, public utility wire and pipelines, storage of materials and equipment, flood protective uses and recreational or cultural events of a limited duration. Figure 2.2 shows land cover in Cromwell.

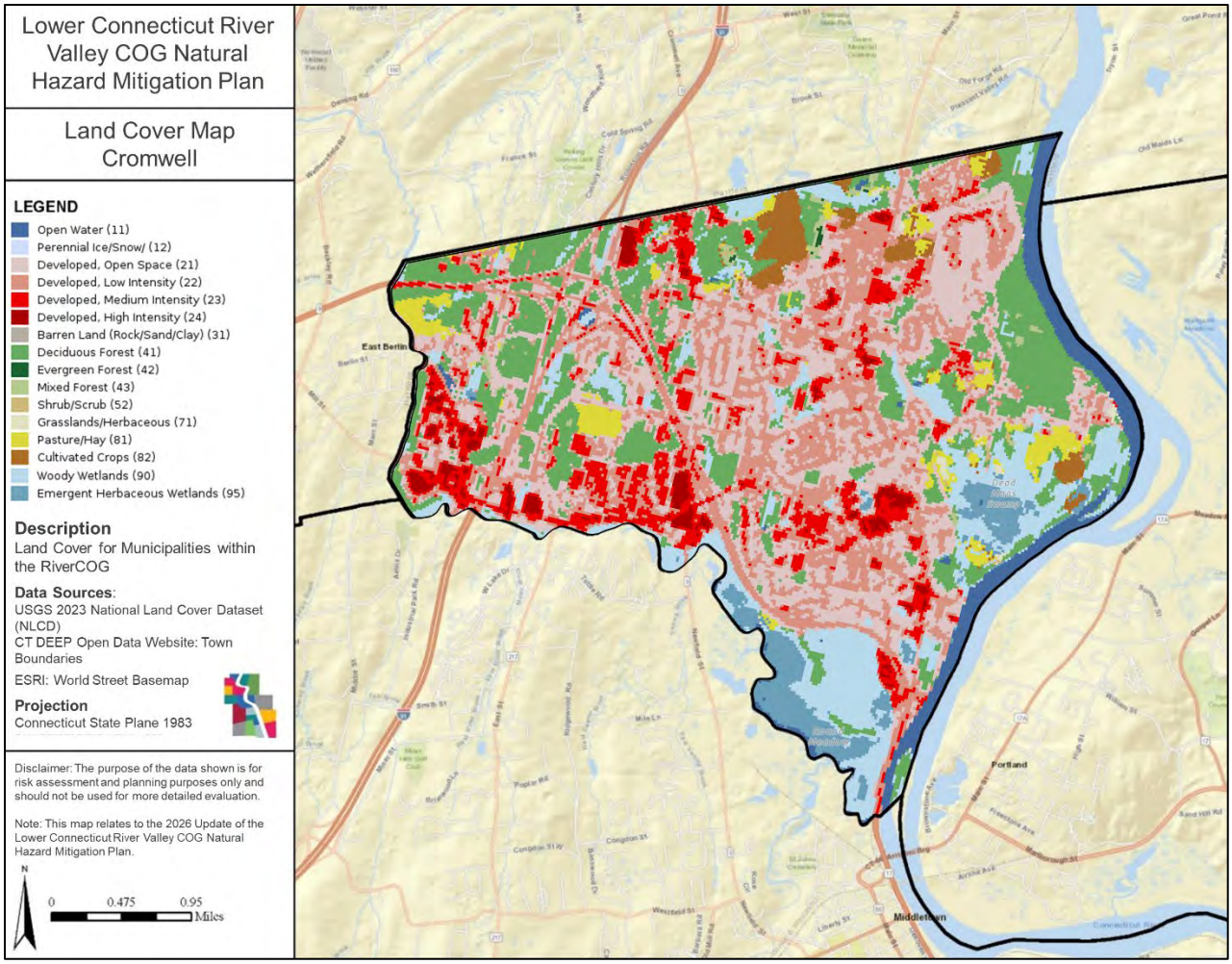
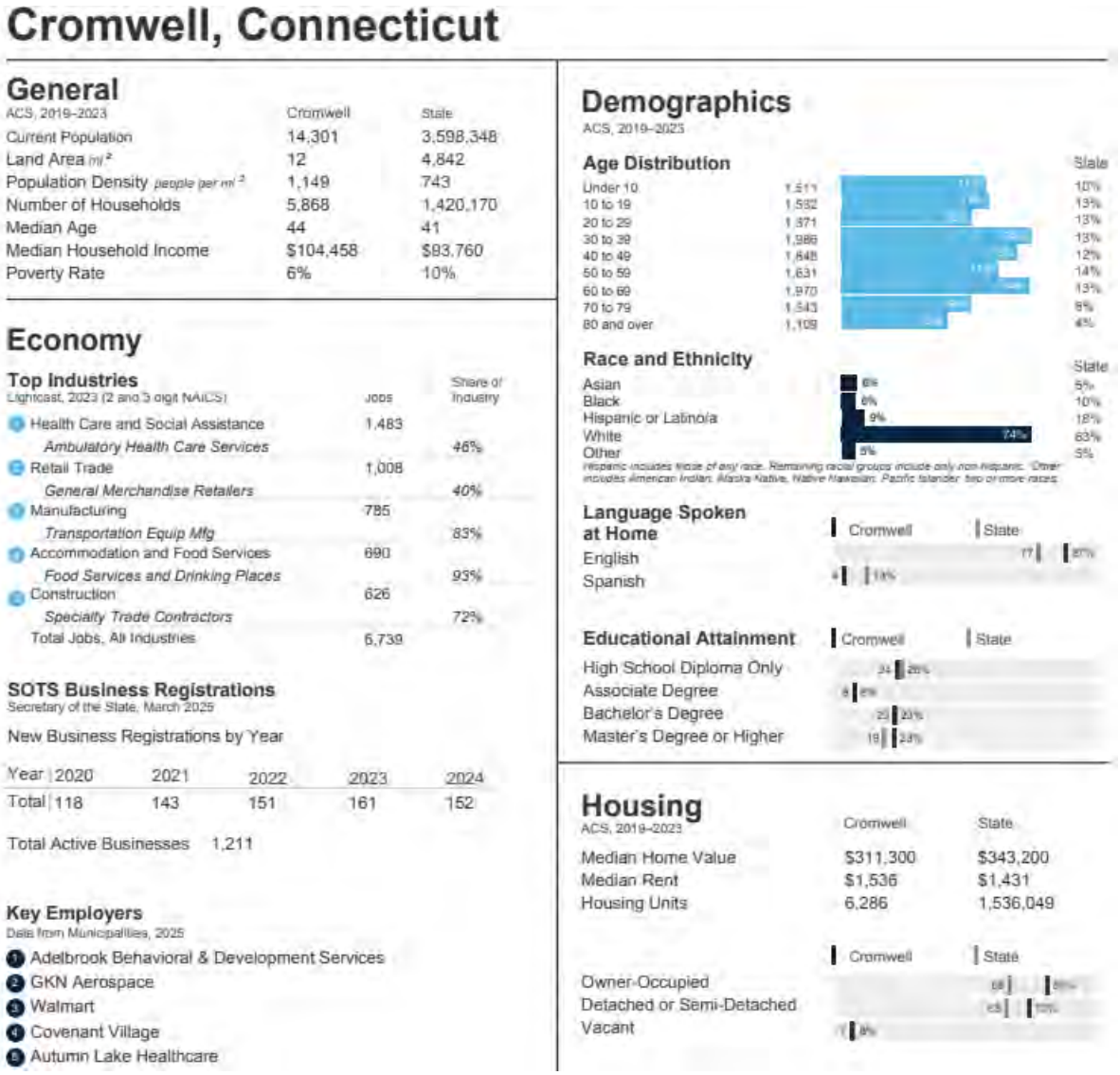


Figure 2.2. Cromwell Land Cover

The Town of Cromwell was incorporated in 1851 and has a current population of 14,301 from the American Community Survey (ACS) which was a 2.8% increase from 2019.[1] A UCONN study estimates an increase in population of 0.4% between 2020 and 2030.[2] Figure 2-3 shows population demographics for the Town of Cromwell. Figure 2.3 provides a demographic profile for Cromwell.[3]

[1] https://s3-us-west-2.amazonaws.com/cerc-pdfs/2025/Cromwell.pdf
[2] Source: State Data Center at UCONN
[3] - Published on Town of Cromwell, CT *(Source: Connecticut Data Collaborative)*



Cromwell, Connecticut

General

ACS, 2019–2023

	Cromwell	State
Current Population	14,301	3,598,348
Land Area (mi²)	12	4,842
Population Density (people per mi²)	1,149	743
Number of Households	5,868	1,420,170
Median Age	44	41
Median Household Income	$104,458	$83,760
Poverty Rate	6%	10%

Economy

Top Industries

Lightcast, 2023 (2 and 3 digit NAICS)

	Jobs	Share of Industry
Health Care and Social Assistance	1,483	
Ambulatory Health Care Services		46%
Retail Trade	1,008	
General Merchandise Retailers		40%
Manufacturing	785	
Transportation Equip Mfg		83%
Accommodation and Food Services	690	
Food Services and Drinking Places		93%
Construction	626	
Specialty Trade Contractors		72%
Total Jobs, All Industries	6,739	

SOTS Business Registrations

Secretary of the State, March 2025

New Business Registrations by Year

Year	2020	2021	2022	2023	2024
Total	118	143	151	161	152

Total Active Businesses 1,211

Key Employers

Data from Municipalities, 2025

1. Adelbrook Behavioral & Development Services
2. GKN Aerospace
3. Walmart
4. Covenant Village
5. Autumn Lake Healthcare

Demographics

ACS, 2019–2023

Age Distribution

		State
Under 10	1,511	10%
10 to 19	1,532	13%
20 to 29	1,371	13%
30 to 39	1,986	13%
40 to 49	1,648	12%
50 to 59	1,631	14%
60 to 69	1,970	13%
70 to 79	1,543	9%
80 and over	1,109	4%

Race and Ethnicity

		State
Asian	6%	5%
Black	6%	10%
Hispanic or Latino/a	9%	18%
White	74%	63%
Other	5%	5%

Hispanic includes those of any race. Remaining racial groups include only non-Hispanic. 'Other' includes American Indian, Alaska Native, Native Hawaiian, Pacific Islander, two or more races.

Language Spoken at Home

	Cromwell	State
English	17	67%
Spanish	6	18%

Educational Attainment

	Cromwell	State
High School Diploma Only	26	28%
Associate Degree	6	8%
Bachelor's Degree	25	20%
Master's Degree or Higher	19	23%

Housing

ACS, 2019–2023

	Cromwell	State
Median Home Value	$311,300	$343,200
Median Rent	$1,536	$1,431
Housing Units	6,286	1,536,049

	Cromwell	State
Owner-Occupied	68	65%
Detached or Semi-Detached	63	70%
Vacant	7	8%

Figure 2.3. Town of Cromwell Demographics

2.2. Climate

Average weather data in Cromwell was sourced from the Weather Spark website (weatherspark.com).

In Cromwell, the summers are warm and humid, the winters are very cold, and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from 21°F to 83°F and is rarely below 6°F or above 91°F.

The warm season lasts for 3.5 months, from May 31 to September 15, with an average daily high temperature above 74°F. The hottest day of the year is July 20, with an average high of 83°F and low of 66°F.

The cold season lasts for 3.3 months, from December 1 to March 11, with an average daily high temperature below 46°F. The coldest day of the year is January 30, with an average low of 21°F and high of 36°F.

The wetter season lasts 4.7 months, from March 26 to August 17, with a greater than 28% chance of a given day being a wet day. The chance of a wet day peaks at 34% on May 30. The drier season lasts 7.3 months, from August 17 to March 26. The smallest chance of a wet day is 22% on January 29. Rain falls throughout the year in Cromwell. The greatest quantity of rain falls during the 31 days centered around October 3, with an average total accumulation of 3.8 inches.

The snowy period of the year lasts for 5.0 months, from November 10 to April 9, with a sliding 31-day liquid-equivalent snowfall of at least 0.1 inches. The most snow falls during the 31 days centered around January 26, with an average total liquid-equivalent accumulation of 0.9 inches.

The windier part of the year lasts for 5.8 months, from October 29 to April 22, with average wind speeds of more than 5.5 miles per hour. The windiest day of the year is February 26, with an average hourly wind speed of 7.0 miles per hour.

2.3. Government Style

The Town's municipal government operates under a Town Charter. Effective with the general election held in November 2013, the Town changed to a Town Council/Town Manager form of government. The legislative power of the town is vested in a combination of a mayor and the six-member Town Council, with a Board of Finance responsible for presenting fiscal operating budgets for Referendum approval.

2.4. Development Trends

Development overall has been moderate but consistent since the last plan update. Changes in development include residential and commercial projects such as:

- Small infill projects (completed)
- A 75-home development - Carrier on Field Road - Arbor Meadows (completed)
- New hotel on 372 (completed)
- Some redevelopment such as a former hotel (completed)
- 267 new apartment units at 100 Berlin Road (anticipated)
- 60 new apartment units at 186 Shunpike Road (anticipated)
- Redevelopment on River Road (future potential)

Residential development is largely not occurring in floodplains. The Town consistently applies the Riparian Protection District, local flood regulations (via the Flood Plain District), and State Building Code for new commercial development in floodplains.

The new development noted has been, or is being, constructed to current building codes and zoning standards. While any new development arguably increases vulnerability to some hazards, construction to new codes and standards mitigates, to some extent, the increase in vulnerability. All new and proposed developments are located in areas where allowed by zoning. The redevelopment projects noted (e.g., the former hotel) are anticipated to reduce vulnerability through being improved to higher codes and standards. Nearly all of the new development is being added in areas already densely developed, reducing the sprawl of potential vulnerability. The redevelopment on River Road being considered is in a flood prone area and is anticipated to be designed in a way that reduces overall vulnerability.

2.5. Town-Specific Hazard Concerns

Municipal staff reported several specific hazard concern issues, which are listed below. The information below is intended to supplement the hazard specific analysis completed in Section 2, of Volume I of this plan. Not all hazards impacting Cromwell are discussed in this annex. Full analysis is included in Volume 1.

A note: To preserve the reader's ability to align RiverCOG-Level and town-level hazard identification and risk analysis, the order of the following hazards aligns with the order of hazards in Volume I. Individual towns have ranked these hazards differently. This town-level ranking can be found in Section 3.3 Hazard Risk Ranking.

2.5.1. Severe Winter Weather

Winter storms are one of the most significant hazards for the Town of Cromwell, with the winter storm of early 2026 providing a reminder that winter storm events require significant expenditures. The Public Works Department continues to handle snowstorms. Roof collapses are a concern during snow events, as occurred in 2011. A major ice storm can cause major road closures and power outages.

2.5.2. Flooding

Flooding along the Mattabasset and Connecticut Rivers are generally of the most concern in Cromwell. The most vulnerable areas to flooding are located within the mapped, low-lying flood plains of the Connecticut River and Mattabasset River. Structures in or adjacent to flood hazard areas are generally aged or older buildings, including many homes in the River Road area. There are 3 Repetitive Loss properties in Cromwell. Cromwell's Main Street and the regional Mattabasset Wastewater Treatment Plant are also at risk in the event of exceptional river flooding. In recent years, pump-outs have been deployed to a home on Field Road due to repeated water in basement. The water that flooded the basement, however, is not associated with any watercourse.

Aside from potential flood losses at buildings, the Town has experienced significant losses to infrastructure. During a flood event of September 2018, the Town lost one of its three dams on Shadow Lane (the Northern Pond Dam). The flooding from Tropical Storms Elsa, Fred, Henri, and Ida in 2021 impacted Cromwell to varying degrees. In particular, the remnants of Tropical Storms Ida caused severe flooding in Cromwell. Significant sinkhole and washout damages occurred, severely damaging the TPC Highlands golf course and the adjacent rail line.

The Connecticut River and Mattabasset River are tidally influenced in Cromwell. Sea level rise will have long-term consequences to tidal water surface elevations of the Connecticut River, Mattabasset River, and associated wetlands. In the long term, changes to flood water surface elevations could be noticed. Researchers[4] in Connecticut believe that Connecticut River communities should plan for about half of the vertical sea level rise projected for Long Island Sound. In other words, the State-mandated planning threshold of 20 inches by 2050 could translate to ten inches of vertical flooding added to tidal flooding along the Connecticut River and Mattabasset River by 2050. Nevertheless, over the five-year timeframe for this plan, changes in horizontal flood extents associated with this vertical increment are not likely to be noticeable.

2.5.3. Dam Breach

Dams, due to both the risk of their failure and their inability to operate effectively during flood conditions due to poor maintenance, are of high concern to the Town. Based on review of the CT DEEP State Dam Registrations, the Town of Cromwell has 14 dams within its borders. Eight are listed as negligible or low hazard, two are listed as unclassified (with one noted as breached) and four listed as moderate hazard. Figure 2.4 shows the location of registered dams within Cromwell. Moderate, Significant, and High Hazard-class dams are presented in Table 2.1. A full list of dams is provided in Appendix B. As noted above, during a flood event of September 2018, the Town lost one of its three dams on Shadow Lane (the Northern Pond Dam).

[4] Robert Thorson, UConn, via presentation at the UConn Law School in April 2026

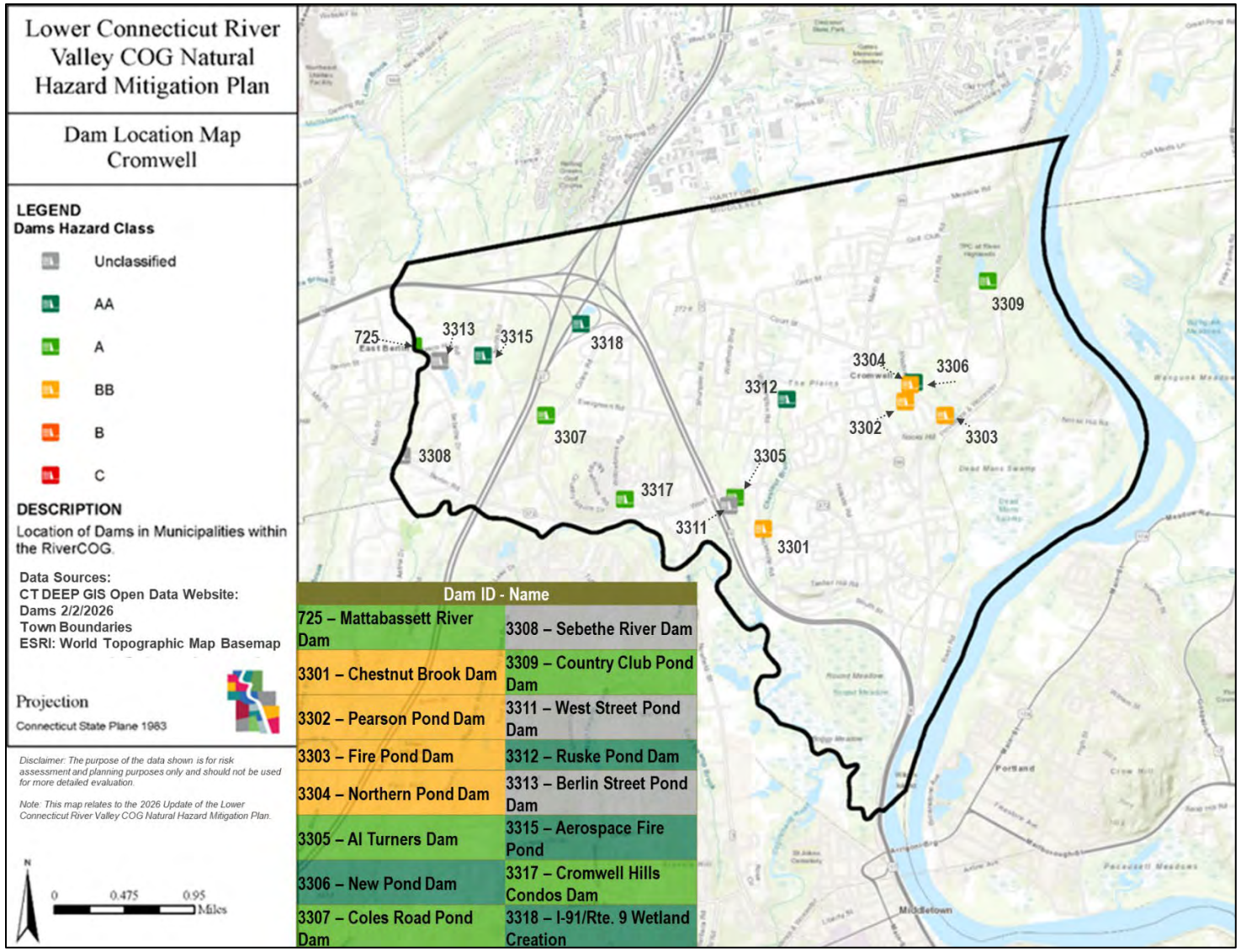


Figure 2.4. Location of Dams, Cromwell, CT

Table 2.1. Moderate, Significant and High Hazard Dams, Cromwell, CT

CT Dam #	Dam Name	Hazard Class	Owner
3301	Chestnut Brook Dam	BB-Moderate	Private
3302	Pierson Pond Dam	BB-Moderate	Private
3303	Fire Pond Dam	BB-Moderate	Cromwell Fire District
3304	Northern Pond Dam	BB-Moderate	Town of Cromwell

The subject plan update seeks approval under Element G of the Local Plan Review Tool, for potential HHPD eligibility. High hazard dams in the RiverCOG region were introduced and described in the multi-jurisdiction document. Emergency Action Plans (EAP) were obtained and reviewed to understand the people, critical facilities, and community assets in dam failure inundation areas.

Although Cromwell does not host a high hazard dam in its borders, one high hazard dam in Middletown (Mount Higby Reservoir Dam) has an extensive inundation area that extends into Cromwell. The Mount Higby Reservoir Dam is owned by the City of Middletown. An EAP was prepared and accepted by DEEP. Fall Brook begins at the outlet of the spillway, and is joined by the flow from Adder Reservoir through the Fall Brook diversion. Eventually, Fall Brook flows into Sawmill Brook, which then joins the Mattabasset River. The inundation area included the following parts of Middletown (provided as reference):

- The Water Treatment Plant and associated buildings;
- Homes near the intersection of Partridge Lane and Country Club Road;
- Homes near Sachem Drive;
- Homes near Lancaster Court, including those accessed from Miner Street;
- Homes on Miner Street near Miner Hills Drive;
- The area on Smith Street east of Interstate 91, including an industrial complex, some commercial buildings, and several large multi-family apartment buildings;
- Interstate 91 between Exit 20 and Exit 21;
- The underpasses carrying Smith Street beneath the highway;
- Most of the industrial park between Interstate 91 and Middle Street and along Industrial Park Road;
- The apartment complex on Russet Lane in Middletown;
- Route 372 east of Interstate 91 in Cromwell and areas south of the Mattabasset in Middletown, including numerous commercial properties as well as residential areas on Coles Road and West Lake Drive;
- The Liberty Bank and CVS plaza on Route 372;
- Residential areas on Cromwell Hills and Cedarland Court and the commercial triangle formed by Route 372, Shunpike Road, and Route 524; and
- Numerous commercial properties along Newfield Street along the Mattabasset downstream into Middletown.

After Sawmill Brook reaches its confluence with the Mattabasset River, backwater conditions are expected upstream (westward) into the Town of Cromwell (in the RiverCOG region) and the Town of Berlin (not in the RiverCOG region). The backwater in Cromwell would affect the commercial area along Route 372 near the Berlin line, including Walmart and numerous residential and commercial properties leading east on Route 372 towards Interstate 91. The inundation area extends eastward as well, and ends at the large swamp associated with the lower Mattabasset River affected by backwater conditions from the Connecticut River. In general, numerous structures in Cromwell are anticipated to be affected if the dam were to fail.

2.5.4. Thunderstorms and Severe Weather

Severe weather events have affected Cromwell over the years. For example, during the event of September 2018 described above, power was lost at the large Walmart in Cromwell due to strong wind and fallen trees which damaged transformers in town.

2.5.5. Hurricanes and Tropical Storms

Hurricanes pose the most catastrophic damage potential of any natural disaster phenomenon. Along with hurricanes come strong winds which result in power outages and fallen trees and debris that cause blocked roads in Cromwell. As noted above, the flooding from Tropical Storms Elsa, Fred, Henri, and Ida in 2021 impacted Cromwell to varying degrees. In particular, the remnants of Tropical Storms Ida caused severe flooding in Cromwell.

2.5.6. Tornado

Although relatively rare in CT, the threat of tornado could cause significant damages to life and property in the Town of Cromwell. Overall, residents throughout Cromwell are equally susceptible to the chance of a tornado occurrence. However, a strong tornado would likely cause more damage in the more densely developed areas.

2.5.7. Earthquakes

The entire town could be affected by an earthquake in this region; however, impacts could vary locally. In Cromwell and the surrounding region, recorded impacts have been limited to shaking to the extent that things were knocked off shelves and people were alarmed. Structural damage has been limited to building components such as chimneys and buildings in poor repair; but failing structures have caused property damage in nearby towns. Anything higher than a “minor” earthquake is very unlikely in Cromwell; however, the potential does exist. The majority of buildings in Cromwell have two stories (or fewer) and are wood-framed, which would minimize damage from earthquakes.

2.5.8. Drought and Wildfire

Cromwell is small enough in land area that a drought would occur town-wide. Severe droughts are not frequently occurring natural events, but flash droughts have been occurring with regularity.

When they do occur, the most at-risk populations are those residents with shallow wells. Fortunately, most residents in Cromwell are customers of the water utility, Cromwell Fire District. Municipalities and water utilities often ask for the public's help in conserving water during dry periods to prevent the depletion of water supplies. However, Cromwell Fire District relies on groundwater supplies that are recharged by the Connecticut River, and therefore the system is very drought resilient. Interconnections with adjacent water systems in the future will further enhance drought resilience.

Droughts can also exacerbate wildfire conditions. The threat of wildfires for people living near wildland areas or using recreational facilities in wilderness areas is real. Dry conditions at various times of the year increase the potential for wildfires.

2.5.9. Extreme Temperature

Extreme cold spells do occur periodically, typically between the months of December and March. Although cold temperatures are normal during the winter months, occasionally temperatures can drop below freezing for extended periods, sometimes as low as 0°F. Low-income housing residents and the elderly in homes without sufficient heat sources are particularly vulnerable. Town officials have planned and continue to update the accommodations of shelters and warming centers in their community. Warming centers are used by those that either have insufficient heat sources or for times of power outages.

Extreme heat and heat waves are a possibility during the summer months, particularly between June and August. A heat wave in Connecticut is defined as a period where the high temperature reaches at least 90°F for three consecutive days. The elderly in homes without air conditioning are vulnerable. Town officials have identified cooling centers for those desiring a place to go to cool off.

2.5.10. Terrestrial Invasive Species

Terrestrial invasive species include those typically found in Connecticut River. However, the Town did not identify any significant challenges that exceed those identified Statewide.

2.5.11. Aquatic Invasive Species

Aquatic invasive species include those typically found in the Connecticut River and its tributaries. However, the Town did not identify any significant challenges that exceed those identified regionally.

2.5.12. Tree Diseases and Pests

Since the 2021 plan update, the Town of Cromwell has removed trees that have been damaged or killed as a result of other hazards and have also removed trees damaged by disease and pestilence such as the emerald ash borer.

3. Hazard Risk

3.1. Historical Events

Table 3.1 lists the Federal Disaster declarations for Middlesex County, for which Cromwell requested assistance.

Table 3.1. Cromwell Natural Hazard Events

Type of Event	Date	Preliminary Damage Assessment
Snow Event (DR-3176)	03/11/2003	$25,609.59
Snow Event (DR-3200)	02/17/2005	$56,322.71
Severe Storm – Snow (DR-4046)	11/17/2011	$321,781.74
Hurricane Event (DR-4023)	09/02/2011	$65,491.17
Hurricane Event (DR-4087)	10/30/2012	$9,907.95
Winter Weather Event (DR-4106)	03/21/2013	$116,041.69
Severe Winter Storm (DR-4213)	04/08/2015	$1,637.50
Tropical Storm Isaias (DR-4580	1/12/2021	$224,583.32

3.2. Recent Events

The following is a summary of events experienced in Cromwell since the 2021 plan update:

- The flooding from Tropical Storms Elsa, Fred, Henri, and Ida in 2021 impacted Cromwell to varying degrees. In particular, the remnants of Tropical Storms Ida caused severe flooding that created a 70-foot-wide sinkhole on the 13th hole of TPC River Highlands golf course. Furthermore, the washout exposed a pipeline and suspended railroad tracks in mid-air. The image to the right in courtesy of the Connecticut Insider.



- Cromwell is located relatively close to the large wildfire on Lamentation Mountain in Berlin and Meriden that occurred in 2024 and provided assistance to the firefighting efforts.

3.2.1. FEMA Public Assistance (PA)

Public assistance is often provided by FEMA after Presidentially declared disasters. Funding is typically for extraordinary expenses incurred by the community such as public safety and public works overtime, certain equipment and contracted resources and debris cleanup. Table 3.2 and Table 3.3 list PA reimbursements in Cromwell.

Table 3.2. Hurricane Wind Event PA Reimbursements, Cromwell, CT

Disaster #	4023	4087	4580
Incident Dates	**Aug-Sep 2011 (T.S. Irene)**	**Oct-Nov 2012 (Super Storm Sandy)**	**Jan 2021 (Tropical Storm Isaias**
Declaration	**9/2/2011**	**10/30/2012**	**1/12/2021**
Entity	**FEMA PA Reimbursement**	**FEMA PA Reimbursement**	**FEMA PA Reimbursement**
State	**$**	**$**	**$**
Municipal	**$**	**$**	**$**
Nonprofit	**$**	**$**	**$**
Total	**$55,402**	**$68,178**	**$62,856**
Annualized	**$2,052**	**$2,525**	**$2,328**

Table 3.3. Winter Storm PA Reimbursements, Cromwell, CT

Disaster #	3176	3200	4046	4106	4213
Incident Dates	Feb 2003	Jan 2005	Oct 2011	Feb 2013	Jan 2015
Declaration	3/11/03	2/17/05	11/17/11	3/21/13	04/08/15
Entity	FEMA PA Reimbursement	FEMA PA Reimbursement	FEMA PA Reimbursement	FEMA PA Reimbursement	FEMA PA Reimbursement
State	$	$	$		
Municipal	$	$	$		
Nonprofit	$0	$0	$0		
Total	$25,610	$56,323	$321,782	$116,042	$1,638
Annualized	**$949**	**$2,086**	**$11,918**	**$4,298**	**$61**

3.3. Hazard Risk Ranking

Cromwell participated in the regional hazard ranking conducted by the Hazard Mitigation Planning Team. shows the scoring for the various ranking parameters that were used. The probability of each

hazard is determined by assigning a level, from unlikely to highly likely, based on the likelihood of occurrence from historical data. The total impact value includes the affected area, primary impact, and secondary impact levels of each hazard. Level of Community Concern reflects the perceived risk of each hazard as indicated by respondents to question 6 of the community survey. This question asks, "How concerned are you about each of the following hazards impacting your home, business, community, or organization?" and received 157 responses. Note that for Cromwell, the level of community concern was lowered slightly based on input from the planning team.

Each of these five criteria are assigned weights, as well as point values for each of their responses. Each level's score is reflected in the matrix. The total score for each hazard is the probability score multiplied by its importance factor times the sum of the impact level scores multiplied by their importance factors. Based on this total score, the hazards are separated into three categories based on the hazard level they pose to the communities: Significant, Moderate, Limited. Table 3.5. Hazard Ranking Parameters provides a summary of the categories used to rank the hazards and their weighted values for the Composite Hazard Risk Index.

Table 3.4. Hazard Ranking Parameters

Criteria	Weight	1 Point	2 Points	3 Points	4 Points
Hazard Probability	2.0	**Unlikely** Less than 1% probability in next 100 years or has a recurrence interval of greater than every 100 years.	**Somewhat Likely** Between 1 and 10% probability in next year or has a recurrence interval of 11 to 100 years.	**Likely** Between 10 and 100% probability in next year or has a recurrence interval of 10 years or less	**Highly Likely** Near 100% probability in next year or happens every year.
Impact – Affected Area	0.8	**Isolated** Less than 1% of area affected	**Small** Between 1 and 10% of area affected	**Medium** Between 10 and 50% of area affected	**Large** Between 50 and 100% of area affected
Impact – Primary Impact	0.7	**Negligible** 1 to 10% of people or property	**Limited** 10% to 25% of people or property	**Critical** 25 to 50% of people or property	**Catastrophic** >50% of people or property
Impact – Secondary Impact	0.5	**Negligible** No loss of function, downtime, and/or evacuations	**Limited** Minimal loss of function, downtime, and/or evacuations	**Moderate** Some loss of function, downtime, and/or evacuations	**High** Major loss of function, downtime, and/or evacuations
Level of Community Concern	1.0	**Low Concern**	**Moderate Concern**	**High Concern**	-

The hazard risk ranking generated from this exercise, along with consideration of available data, was used to prioritize the level of effort assigned to further analysis of each hazard in the vulnerability analysis and lost estimation sections. All the participating communities agreed upon the results of the hazard ranking for the overall region. Based on the results of the exercise, the hazards were ranked as follows in Table 3.5. Hazard Ranking Parameters. Cromwell endorsed the ranking as accurate for the Town.

Table 3.5. Summary of Potential Hazard Impacts.

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
Aquatic Invasive Species	Semi-quantitative, supplemented by state and municipal figures, recommend survey	**Highly Likely - 4**	**Large - 4**	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant
Terrestrial Invasive Species	Semi-quantitative, supplemented by state and municipal figures, recommend survey	**Highly Likely - 4**	**Large - 4**	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant
Tree Infestation	Semi-quantitative, supplemented by state and municipal figures, recommend survey	**Highly Likely - 4**	**Large - 4**	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant
Hurricanes	Hazus for wind	Likely - 3	**Large - 4**	Critical - 3	Moderate - 3	High Concern - 3	15.8	Significant

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
Winter Storms (Snow, Ice, Wind, including Nor'easters)	Historic analysis for probability and annualized damages	**Highly Likely - 4**	**Large - 4**	Negligible - 1	Moderate - 3	Moderate Concern - 2	15.4	Significant
Flood – Riverine and Inland Flooding (Riverine, Drainage)	Hazus, SLR Overlay, FS Model Overlay, Historic data and damages for additional probability	Likely - 3	Medium - 3	Critical - 3	**High - 4**	High Concern - 3	15.5	Significant
Extreme Heat and Cold	Qualitative based on historic	Likely - 3	**Large - 4**	Negligible - 1	Limited - 2	High Concern - 3	13.9	Moderate
Severe Weather (thunderstorms, downbursts, hail, lightning)	Historic analysis for probability and annualized damages	**Highly Likely - 4**	Small - 2	Negligible - 1	Limited - 2	Moderate Concern - 2	13.3	Moderate
Flood – Coastal Flood (tidal aspects of Connecticut River flooding that are affected by sea level rise)	Hazus, SLR Overlay, FS Model Overlay, Historic data and damages for additional probability	Likely - 3	Medium - 3	Limited - 2	Moderate - 3	Moderate Concern - 2	13.3	Moderate

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
Wildfire	Historic analysis for probability and annualized damages	Likely - 3	Small - 2	Critical - 3	Moderate - 3	Moderate Concern - 2	13.2	Moderate
Tornadoes	Historic analysis for probability and annualized damages - pulling in surrounding counties	Likely - 3	Isolated - 1	**Catastrophic - 4**	Limited - 2	Moderate Concern - 2	12.6	Moderate
Earthquakes	Hazus, 3 scenarios	Somewhat Likely - 2	Small - 2	**Catastrophic - 4**	**High - 4**	Low Concern - 1	11.4	Limited
Drought	Historic analysis for probability and annualized damages - some qualitative	Likely - 3	Medium - 3	Negligible - 1	Limited - 2	Low Concern - 1	11.1	Moderate
Flooding from Dam Failure	Dam Inundation areas, Historic analysis for probability and annualized damages	Unlikely - 1	Small - 2	Limited - 2	Moderate - 3	Moderate Concern - 2	8.5	Limited

3.3.1. National Flood Insurance Program (NFIP) Participation

FEMA reimburses communities for hazard losses through programs including Public Assistance (PA) and the National Flood Insurance Program (NFIP). Combining PA and flood insurance payments can give an estimate for total losses to a community.

Substantial improvements and substantial damages occur infrequently in town. All new construction and substantial improvements located within the 100-year floodplain must conform to minimum elevation requirements and construction standards so as to minimize flood damage. Substantial improvements are defined as any combination of improvements, the cost of which equals or exceeds 50% of the market value before improvement started. The floodplain manager (public works director) is responsible for administering the substantial improvement and substantial damage provisions codified in the floodplain management regulations. This is typically done in close coordination with the building official and the planning and zoning department. In the event of a major disaster, resulting in a number of substantially damaged buildings that would overwhelm town staff, the town would reach out to the state NFIP coordinator's office for assistance in training additional staff.

Repetitive Loss Property Detail

Overall, the National Flood Insurance Program (NFIP) Cromwell has, to date, paid claims totaling $403,210 Cromwell has 3 residential Repetitive Loss (RL) properties and no Severe Repetitive Loss (SRL) properties. Two of the RL properties are within the floodway of the Connecticut River. The other is in Zone X on an unnamed stream. There are 57 policies in effect providing $20.4 million in coverage.

4. Capability Assessment

This section discusses capabilities and operational procedures that Cromwell undertakes that contribute to or have the potential to contribute to hazard mitigation. It also notes deficiencies in those capabilities that could be addressed to strengthen resilience.

4.1. Critical Facilities

Public and private utility facilities are vital to maintaining or restoring normal services to areas of Town before, during, and after a natural disaster.

According to the latest update to the Plan of Conservation and Development, the Town of Cromwell is largely developed. Infrastructure throughout town includes Interstate 91, Ct Route 9, a railroad, the Buckeye Petroleum Pipeline, and the regional Mattabasset District Sewage Treatment Plant (which was reconstructed in 2016-2017). Municipal sewer (Town) and water (Cromwell Fire District) are provided throughout much of the town. Existing development is concentrated within sewer treatment and/or water service areas which are also identified in the State POCD as Growth and Neighborhood Conservation Areas. Commercial development is occurring within the strip adjacent to Route 372 between Route 9 and I-91. This area is zoned for business development. The town of Cromwell has eight identified critical facilities, two of

which are in the 500-year floodplain. Additionally, there are five health-related facilities, not included on the town's list but considered critical facilities by the State of Connecticut.

Figure 4.1 shows the location of critical facilities in Cromwell. These facilities were verified during the meetings in 2025 and 2026 for this plan update.

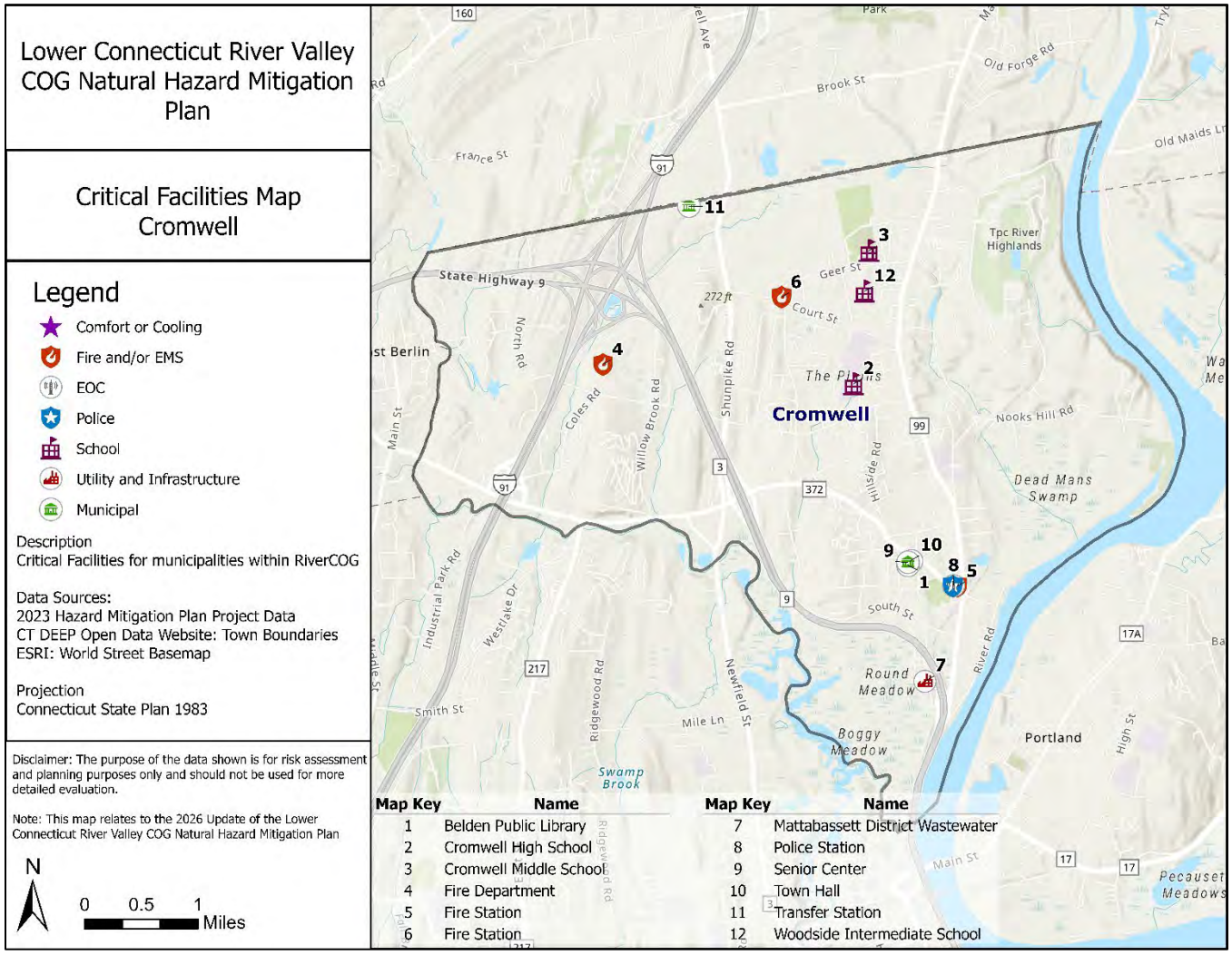


Figure 4.1. Location of Critical Facilities in Cromwell

Table 4.1 lists critical facilities identified by the Town.

Table 4.1. Critical Facilities

Facility	Type	Address	Flood Zone	Generator	Notes
Woodside Intermediate School	Municipal	30 WOODSIDE ROAD	No		
Cromwell Middle School	Municipal				This building has a gymnasium and AC,

Facility	Type	Address	Flood Zone	Generator	Notes
					and can be used as a shelter
Town Hall**	Municipal	41 WEST STREET	No	X	Town Hall is primary shelter in town.
Fire Station	EMS	82 COURT STREET	No		
Fire Station	EMS	105 COLES ROAD	No	X (upgrade needed)	
Fire Station	EMS	3 WEST STREET	500-year (0.2 PCT Annual Chance Flood Hazard)	X	
Police Station**	Law Enforcement	5 WEST STREET	500-year (0.2 PCT Annual Chance Flood Hazard)		
Cromwell Transfer Station	Municipal	100 COUNTY LINE DRIVE	No		
Cromwell High School	Municipal	34 Evergreen Rd.	No		
Library*	Municipal		No		
Public Works	Municipal		No	X	
Covenant Senior Living	Private		No		
Cromwell Fire District Water Supply Wellfield	Municipal (Fire District)	NA	Yes	X	
Sewer pumping stations	Municipal	NA	Vary	X (some upgrades needed)	

* Can be used as cooling center

As a result of the meetings that took place in 2025 and 2026 as part of the plan update process, the following information about critical facilities in Cromwell was noted:

- In February of 2021, a new public works facility was installed outside of a regulatory floodplain. This facility has standby power.
- The Town Hall and Library were designated for use as cooling centers. Additionally, the police department community room can be used as a backup if 24-hour access is needed.
- Generator needs: Coles Road Fire House needs to be upsized to power the entire facility, and sewer pumping stations might have generator needs.

- Cromwell Middle School was added as a critical facility. The school has a gymnasium and air conditioning and can be used as a shelter.

4.2. Municipal Capabilities

The Town of Cromwell has a variety of natural hazard mitigation capabilities, including local regulations and ordinances, operational protocols, and emergency response capabilities. Following is a list of some highlighted capabilities identified by Municipal staff.

4.2.1. New Capabilities and Completed Actions

Since the last plan update in 2021, there have been many examples of capabilities in Cromwell:

- The town retained an engineer to complete a study on two Shadow Lane dams due to concerns with Shadow Brook and undersized infrastructure downstream.
- Designs have been completed for several stream crossings.
- Designs have been completed and are ready for construction of public water system interconnections with MDC, Berlin, and Middletown.
- Cromwell Fire District installed a new generator in 2026 for standby power
- Manually operated fixed-in-place flood gates were installed in 2026 to reduce risks to drivers at the two underpasses of concern.
- Wildfire drills/exercises are conducted, and fire personnel assisted with the Lamentation Mountain wildfire in nearby Berlin.

4.2.2. Regulations and Ordinances

The Town of Cromwell participates in the National Flood Insurance Program (NFIP). The Town of Cromwell uses the State Building Code for code compliance to ensure safe structures which withstand 110 mph wind speed and appropriate snow load.

Cromwell employs Best Management Practices (BMPs) for stormwater management for most new development.

The Town has the authority to order backup water supplies to be installed in new subdivisions when water for firefighting is not available from Cromwell Fire District's local distribution system.

Plan of Conservation & Development: Cromwell has an open space acquisition policy that helps protect areas prone to flooding and other natural hazards from future development. For example, the Cromwell Plan of Conservation and Development lists desired public open space acquisitions including properties with demonstrable mitigation benefits.

Mattabasset River Watershed Initiative: Cromwell supports the goals of the Mattabasset River Watershed Plan. MRWI organizes workshops and provides outreach materials on storm water and flood plain management materials. In addition, MRWI actively promoted open space preservation and protection adjacent to the local river and other critical areas to ensure the proper functioning of the watershed.

4.2.3. Operations and Procedures

Cromwell maintains a Debris Management Plan. The Public Works department monitors culverts and bridges that clog by maintaining debris collections and for prevention of ice damming; continually researches funding opportunities for culvert and bridge maintenance; monitors Flood Warnings from DEEP and DEMHS; and monitors private compliance with CGS §22a-402(b)-(f) dam inspection requirements. Local dam owners including the municipality are responsible for periodic evaluations of their dams and making repairs as needed. The Public Works department assumes the primary responsibility for municipal building and critical infrastructure. The Public Works Crew maintain and stabilize stream and roadbed embankments as allowable by State agencies and local boards and commissions. The Public Works department maintains a list of contractors that may be available for debris removal and management, and updates this list as needed.

4.2.4. Capital Improvements

The Capital Improvement Plan addresses *municipal improvements* including, but not limited to rights-of-way, land, housing, or utilities for public purposes. Mitigation actions from this NHMP should be included in the CIP. Larger items such as bridge and culvert replacements and elevation of roads are included in the 5-year CIP. The CIP should be reviewed often so that it can include new mitigation action items each time the NHMP is updated and annually. This is a good way for the town to prioritize mitigation items and use the Capital Improvement Program (CIP) to set aside funds for infrastructure improvements to reduce loss of life and property during natural hazard (NH) events.

4.2.5. Plan Integration with Other Planning Mechanisms

The Town of Cromwell references the NHMP into its Sustainable CT document as well as its Plan of Conservation and Development (POCD). There is new legislation (P.A. 25-33) that now requires cities and towns to incorporate climate vulnerability (specifically including flooding) and resilience strategies into POCDs. Chester plans to comply with that new requirement during the next POCD Update and will likely expand its current reference to this plan. Further, communities are now required to develop and maintain affordable housing plans. The mitigation plan will help inform siting criteria within that plan.

Additionally, the town of Cromwell uses the mitigation plan to inform its 5-year capital improvement plan and associated annual budgets. Cromwell staff reported that the plan has not been formally incorporated into any other planning documents.

4.2.6. Outreach, Education, Communication, and Warnings

Cromwell has always had a robust Emergency Management program in place. The town has an Emergency Operations Center that has access to WebEOC for current information and assets available for the emergency response and recovery modes.

Cromwell is a participant in the Everbridge Mass Communication system which allows it to share real time disaster notifications to all residents and businesses simultaneously. The Social Services Department assists in notifications of people with functional and other special needs.

The emergency management team maintains multimedia communications to stay tuned to local media and DEMHS (e-mail) for bulletins. The EM team monitors NOAA NWS broadcasts for potentially hazardous conditions. The Public is notified to stay tuned to local media for severe weather bulletins. Reminders are also sent to residents about the dangers of driving through rushing waters and going near downed wires.

The Town of Cromwell has, on occasion, maintained mutual aid agreements with neighboring municipalities and plans to continue this practice. A statewide mutual aid framework is also in place. Cromwell has designated responders in place within the Public Health and Public Works departments.

The Town works closely with the State in preparing for the needs of people with functional needs. Sheltering activities includes participating in local and regional exercises. The Town can set up and often will set up shelters, cooling centers, and heating centers when needed for residents during extreme cold and heat events. The Town regularly identifies personnel resources for assisting shelter setup and operation. As noted above, Cromwell Middle School became operational as a critical facility since the 2021 plan was adopted, as the school has a gymnasium and air conditioning, and can be used as a shelter. The Town Hall and Library have been designated for use as cooling centers; additionally, the police department community room can be used as a backup if 24-hour access is needed.

Cromwell supports the educational goals of the Mattabasset River Watershed Plan. MRWI organizes workshops and provides outreach materials on storm water and flood plain management materials. In addition, MRWI actively promoted open space preservation and protection adjacent to the Local River and other critical areas to ensure the proper functioning of the watershed.

4.2.7. Other Capabilities

Table 4.2, Table 4.3, and Table 4.4 list legal, regulatory, technical, administrative and financial capabilities that support hazard mitigation.

Table 4.2. Legal and Regulatory Capability

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Codes, Ordinances & Requirements					
Building Code	Yes	Yes	No	Yes	All municipalities enforce the State Building Code
Zoning Code	Yes	No	No	No	Enabled by State, but authority of the Town
Subdivisions	Yes	No	No	No	
Post Disaster Recovery	Yes	No	No	No	
Real Estate Disclosure	Yes	No	No	Yes	State requirement
Growth Management	No	No	No	No	
Site Plan Review	Yes	No	No	No	

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Special Purpose (flood management, critical areas)	Yes	Yes	No	Yes	State flood management Statutes and regulations
Planning Documents					
General Plan	Yes	No	No	Yes	POCD required every ten years. POCD is current.
Floodplain or Basin Plan	No	No	No	No	
Stormwater Plan	Yes	No	No	Yes	MS4 Community
Capital Improvement Plan	Yes	No	No	No	
Habitat Conservation Plan	No	No	No	No	
Economic Development Plan	Yes	No	No	No	Regional Comprehensive Economic Development Strategy
Emergency Response Plan	Yes	No	No	Yes	LEOP templates provided by DEMHS
Post Disaster Recovery Plan	No	No	No	Yes	LEOP templates provided by DEMHS

Table 4.3. Administrative and Technical Capability

Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Planning & Zoning
Engineers or professionals trained in building or infrastructure construction practices	Yes	Engineering and Public Works
Planners or engineers with an understanding of natural hazards	Yes	Planning & Zoning and Engineering
Staff with training in benefit/cost analysis	No	
Floodplain manager	Yes	Public Works Director
Surveyors	No	
Personnel skilled or trained in GIS applications	Yes	Planning, with support available from RiverCOG
Emergency manager	Yes	Emergency Management
Grant writers	Yes	Municipal Staff

Table 4.4. Financial Resources

Financial Resources	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	Yes
Withhold Public Expenditures in Hazard-Prone Areas	Yes (State)
State Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	No

Gaps in Capabilities

No major gaps in capabilities were described by the Local Planning Team. Standby power needs typically are identified every few years and presently include sewer pumping stations.

5. Hazard Mitigation Action Plan

This section presents the progress made since the 2021 action plan and establishes new goals, objectives and actions identified for the 2026-2030 planning horizon.

5.1. Previous Mitigation Actions Disposition

During the process of developing the 2021 Cromwell Hazard Mitigation Plan, several hazard mitigation actions were identified to be pursued during the five-year planning horizon that followed. Table 5.1 presents the actions listed in that document, and the status of those actions.

Table 5.1. Status of Previous Mitigation Strategies and Actions.

Action	Description	Status	Notes
01	**Maintaining Shelter Supplies** Maintain an inventory of cots, blankets, food supplies, and other supplies for emergency	Completed	

Action	Description	Status	Notes
	shelters and provide additional supplies where necessary.		
02	**Reduce and Manage Debris** Update and implement the debris management plan, including the Tree Management Plan. Ensure budget allocates appropriate money necessary to maintain and remove dead, dying, dangerous, and diseased trees in rights-of-way and other town-owned land, especially along the CT River.	Completed	
03	**Promote Private Property Mitigation** Support residents search for funding for elevation and flood proofing their property by disseminating HMA grant information, educating real estate agents, and making HMA informational brochures and pamphlets available at public places such as town halls and libraries. Maintain a public webpage with relevant links and necessary contact information for floodplain managers and town officials. Support home/business owners with benefit cost analysis. (new)	Carry Forward	The Town has done some outreach. Some of this occurs as part of MS4 outreach. The same types of flooding are unchanged. Town may support residential elevations.
04	**Implement mitigation strategies** identified for South Street near railroad overpass and at Nooks Hill Road near the railroad overpass to prevent street and property flooding in those areas.	Carry Forward with revision as noted to right	Consulting engineer recommended dredging along a good distance to help restore a defined watercourse. Fixed-in-place, manually operated gates were installed in 2026). The action has been converted into two new actions: gate management and sediment removal.
05	**Mitigate Riverside Drive Bank Erosion** Perform an engineering study on the river bank adjacent to Riverside Drive. Install heavy rain drains to limit rainfall erosion and investigate bank stabilization projects. Assist homeowners in finding solutions to protecting property near the area of erosion, including grant funding.	Deleted	This problem appears to have been resolved.
06	**Inventory Generators at Essential Facilities** Some non-critical facilities are essential for public function during an emergency, such as grocery stores, Walmart, and gas stations. For these essential facilities, inventory which have functional generators. Encourage gas stations and grocery stores without generators to identify funding for them and provide technical assistance.	Carry Forward	New standby power has not likely been deployed. Grocery stores and gas stations will be the new focus.

Action	Description	Status	Notes
	(new)		
07	**Dam Inundation Study** Perform dam inundation studies or identify dam inundation mapping to identify the flood risk posed by the loss of the Northern Pond Dam and the two additional dams on Shadow Lane, and any potential future dam failure.	Completed	The study is complete. Risks downstream of dams will be addressed through new actions such as working with property owners, replacing crossings, and conducting dam tabletop exercises.
08	**Support Repetitive Loss Properties** Provide information, support, and financial advice to homeowners of Repetitive Loss properties regarding possible mitigation activities. Assist with grant applications and associated benefit cost analysis.	Carry Forward	As noted above, the Town may support residential elevations.
09	**Replace Culverts prone to Flooding** Identify and replace culverts along the Connecticut River that contribute to flooding and water quality issues.	Carry Forward	Individual culvert studies have been conducted and this action has been divided into separate new actions.
10	**Protect Historic and Cultural Resources.** Use recently published GIS inventory or historic and cultural resources, along with published best management practices to inform owners of methods and resources to make at risk resources more resilient	Carry Forward	Cromwell reportedly does not have many historic resources at risk of flooding. There are some older homes, but most are on higher ground. There are a few older homes near the Connecticut River but nothing specific has been done about improving their resiliency.

5.2. Updated Mitigation Goals, Objectives, and Strategies

As noted in Section 3 of Volume 1, all the RiverCOG participating communities, including Cromwell, participated in setting regional goals and objectives. Cromwell has confirmed these goals and objectives valid for the Town's annex. The three goals and objectives are as follows:

Goal 1: Promote implementation of sound flood management and other natural hazard mitigation principles on a regional and local level. Note: Covers future development through policy, planning, regulation, emergency services, and environmental strategies.

- **Objective for Goal 1:** To promote the development, improvement and implementation of programs, policies, regulations, and emergency services that result in the reduction of long-term risks to life and property.

Goal 2: Implementation of effective natural hazard mitigation projects at the regional and local level. Note: Covers infrastructure and building related projects – the existing built environment.

- **Objective for Goal 2:** To enhance the ability of RiverCOG, other regional entities, and local communities to reduce or eliminate risks to life and property from natural hazards through cost-effective hazard mitigation projects, including avoidance.

Goal 3: Increase research, planning and outreach activities for the mitigation of natural hazards on a regional and local level. Note: Covers the human component of mitigation via outreach and education, and integration with other planning and continuous improvement through increase research.

- **Objective for Goal 3:** To increase general awareness of the region's natural hazards and encourage State agencies, local communities, and the public to be proactive in taking actions to reduce long-term risk to life and property.

Cromwell identified a series of new actions and hazard mitigation needs to consider:

- A refinement and expansion of options for reducing flood damage and risks to drivers at South Street near railroad overpass, from sediment removal to operation of gates
- A refinement and expansion of options for reducing flood damage and risks to drivers at Nooks Hill Road near the railroad overpass, from sediment removal to operation of gates
- Replacing stream crossings
- Invasive reed (phragmites) removal
- Efforts such as tabletop drills for dams, developing mutual aid agreements, and purchasing wildfire fighting equipment
- Working with CIRCA to advance Resilient Connecticut studies
- Constructing public water system interconnections between CFD and adjacent systems

A total of 17 of the 21 actions are considered new actions or significant revisions to the actions from 2021.

5.2.1. Prioritization of Mitigation Strategies

In considering which projects, processes, and other measures to undertake in the upcoming plan period, municipal and regional officials evaluated the need to address problems and vulnerabilities in their communities against the communities' resources and capabilities. To prioritize mitigation strategies, a set of criteria commonly used by public administration officials and planners was applied to each proposed strategy. The method, called STAPLEE, is outlined in FEMA planning documents such as Developing the Mitigation Plan (FEMA 386-3) and Using Benefit-Cost Review in Mitigation Planning (FEMA 386-5). STAPLEE stands for the "Social, Technical, Administrative, Political, Legal, Economic, and Environmental" criteria for making planning decisions. Benefit-cost review was emphasized in the prioritization process. Criteria were divided into potential benefits (pros) and potential costs (cons) for each mitigation strategy. The following questions were asked about the proposed mitigation strategies:

Social:

- Benefits: Is the proposed strategy socially acceptable to the community?

- Costs: Are there any equity issues involved that would mean that one segment of the community could be treated unfairly? Will the action disrupt established neighborhoods, break up voting districts, or cause the relocation of lower-income people? Is the action compatible with present and future community values?

Technical:

- Benefits: Will the proposed strategy work? Will it reduce losses in the long term with minimal secondary impacts?
- Costs: Is the action technically feasible? Will it create more problems than it will solve? Does it solve the problem or only a symptom?

Administrative:

- Benefits: Does the project make it easier for the community to administrate future mitigation or emergency response actions?
- Costs: Does the community have the capability (staff, technical experts, and/or funding) to implement the action, or can it be readily obtained? Can the community perform the necessary maintenance? Can the project be accomplished in a timely manner?

Political:

- Benefits: Is the strategy politically beneficial? Is there public support both to implement and maintain the project? Is there a local champion willing to see the project to completion? Can the mitigation objectives be accomplished at the lowest cost to the community (grants, etc.)?
- Costs: Have political leaders participated in the planning process? Do project stakeholders support the project enough to ensure success? Have the stakeholders been offered the opportunity to participate in the planning process?

Legal:

- Benefits: Is there a technical, scientific, or legal basis for the mitigation action? Are the proper laws, ordinances, and resolutions in place to implement the action?
- Costs: Does the community have the authority to implement the proposed action? Are there any potential legal consequences? Will the community be liable for the actions or support of actions or for lack of action? Is the action likely to be challenged by stakeholders who may be negatively affected?

Economic:

- Benefits: Are there currently sources of funds that can be used to implement the action? What benefits will the action provide? Does the action contribute to community goals such as capital improvements or economic development?

Costs: Does the cost seem reasonable for the size of the problem and the likely benefits? What burden will be placed on the tax base or local economy to implement this action? What proposed actions should be considered but be tabled for implementation until outside sources of funding are available?

Each proposed mitigation strategy presented in this plan was evaluated and quantitatively assigned a "benefit" score and a "cost" score for each of the seven STAPLEE criteria as outlined below:

- For potential benefits, a score of "1" was assigned if the project will have a beneficial effect for that criterion or a "0" if the project would have a negligible effect or if the questions were not applicable to the strategy.
- For potential costs, a score of "-1" was assigned if the project would have an unfavorable impact for that criterion or a "0" if the project would have a negligible impact or if the questions were not applicable to the strategy.
- Technical and Economic criteria were double weighted (multiplied by two) in the final sum of scores.
- The total benefit score and cost score for each mitigation strategy was summed to determine each strategy's final STAPLEE score.

Although a community may implement recommendations as prioritized by the STAPLEE method, an additional consideration is important for those recommendations that may be funded under the FEMA mitigation grant programs. To receive federal funding, the mitigation action must have a benefit-cost ratio (BCR) that exceeds a value of 1.0. Calculation of the BCR is conducted using FEMA's Benefit Cost Analysis (BCA) toolkit. The calculation method may be complex and vary with the mitigation action of interest. Calculations are dependent on detailed information such as property value appraisals, design and construction costs for structural projects, and tabulations of previous damages or NFIP claims. The BCR scoring system used is outlined in Table 5.2.

Table 5.2. BCR Scoring System

Scoring	Benefits	Costs
Low: 0-1 points	Few would benefit; the impacts being addressed are not severe; benefits may be short term	Likely to be done by existing personnel with little impact on budget; not complicated to accomplish. Costs to implement is likely to be under $10,000.
Medium: 2-3 points	Benefits may be felt by many in the community; the action may solve a problem or otherwise benefit the community for several years	May need additional funding or studies; may require change in practices; costs to implement may be between $10,000 and $100,000
High: 4-5 points	Benefits would accrue to many in the community; benefits may accrue to the most vulnerable or those not able to recover on their own; benefits would be long term and may permanently protect from damages	Likely to cost over $100,000 and require obtaining funding outside of operating budget; complicated, lengthy process to implement

The STAPLEE method accounts for cost-benefit considerations both directly (through the "Economic" category) and indirectly (through general consideration of costs and benefits of actions). Additionally, the range of estimated costs of each strategy are included in the STAPLEE table. The assumed costs of projects and generalized presentation of the benefits accruing from them are not based on specific detailed cost estimates as that level of analysis is not appropriate for this type of planning effort. For some projects, such as routine or recurring operations that are established practices and conducted with municipal general operating funds and existing staff, the STAPLEE results can be the only explicit comparison of costs and benefits. For projects for which bonding and/or grant funding will be sought, more in-depth evaluations of costs and benefits will be required. As project scopes are detailed, benefits and costs can be identified with more precision, and the benefit-cost ratio which results from a full benefit-cost analysis may differ from the planning-level STAPLEE results presented here.

It should be noted that higher BCRs do not necessarily correspond to high priorities, nor do low BCRs or BCRs under 1.0 correspond to low-priority projects. An important project with a high priority to the community may have a lower BCR because of its complexity, assumed high expense, and other costs. Communities should not be discouraged or deterred from further consideration of projects that have low BCRs or BCRs less than 1.0 until additional, more specific evaluations of the costs and benefits have been undertaken.

5.2.2. 2021-2026 Prioritized Hazard Mitigation Actions

In addition to the regional mitigation actions endorsed by Cromwell and outlined in Section 3 of Volume 1 of the regional plan, the Town identified or carried over from the last update, ranked and evaluated the actions in Table 5.3. For each identified action, the goal and objective it addresses is noted. Additionally, a description, lead agency, indication of costs and potential funding sources, and an estimated timeline for completion is included. Also included are the hazards addressed by a specific action.

Figure 4.2 shows the locations of the projects listed in Table 5.3 with spatial elements that have been carried forward or are new additions. Additionally, completed projects identified in Table 5.1 with spatial elements are also shown on the map. Projects carried forward and new projects are identified by their activity number (from Table 5.3) while completed projects are identified by the description of the project completed. As every completed project location with a spatial element is part of the dam inundation study, with the exception of one project location (Maintaining Shelter Supplies), those completed project locations are not labeled in Figure 4.2.

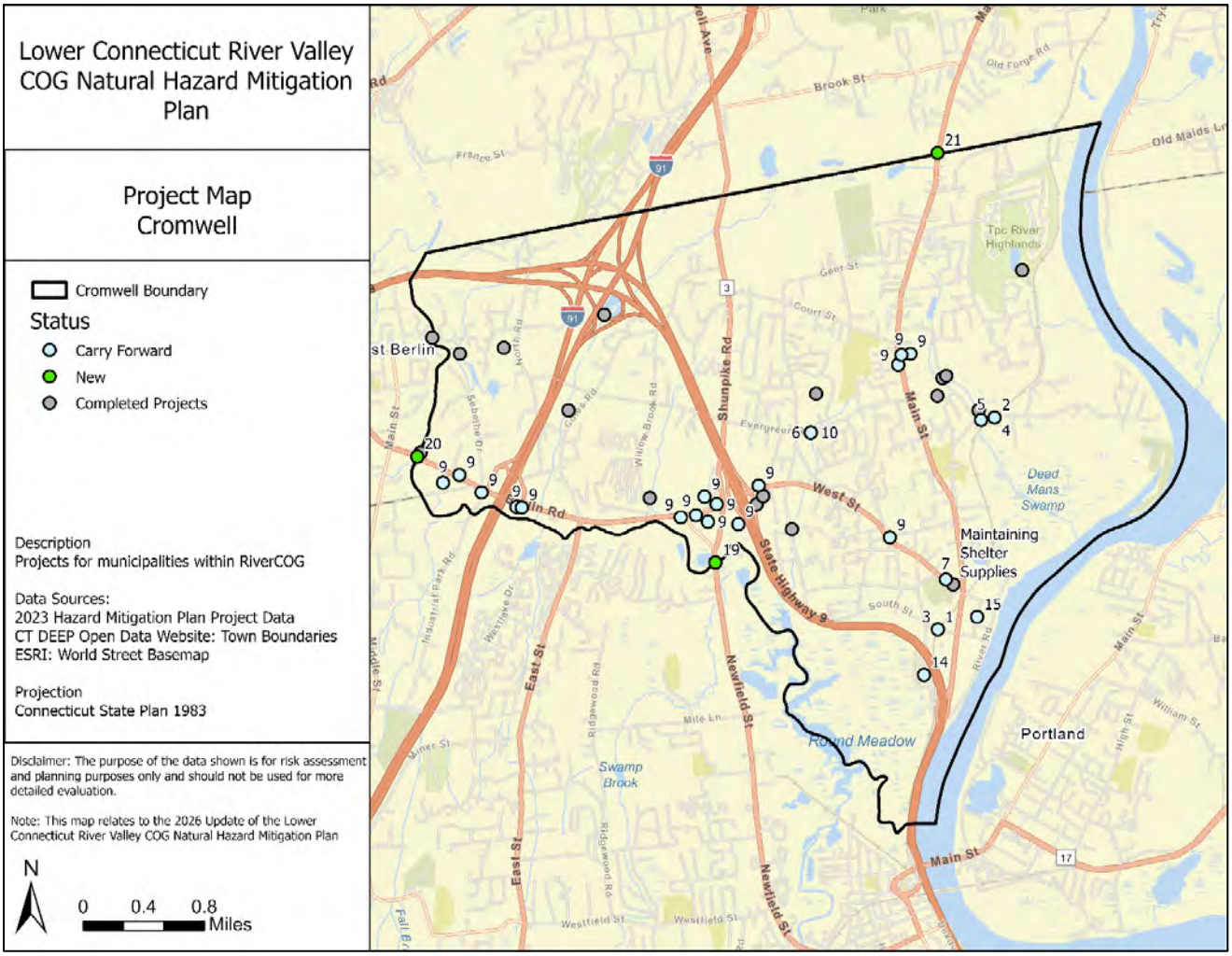


Figure 4.1. Carried Forward, New, and Completed Projects in Cromwell

Table 5.3. Cromwell Hazard Mitigation Strategies and Prioritization

KEY: SW= Severe Weather, TW = Tornado/Wind, ET = Extreme Temperatures, WS=Winter Storm, F = Flood, TI = Tree Damage and Invasive Species, WF = Wildfire, D = Drought, E = Earthquake, CC = Climate Change

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
1	2	**Pursue Sediment Removal at South Street** near railroad overpass to reduce street and property flooding in those areas.	PW	$25,000-$50,000	FEMA HMA, STEAP, OB, CIP	2029-2030	F, CC	1	0	0	0	1	0	1	0	0	0	0	0	0	0	3/low
2	2	**Pursue Sediment Removal near Nooks Hill Road** near the railroad overpass to reduce street and property flooding in those areas.	PW	$25,000-$50,000	FEMA HMA, STEAP, OB, CIP	2029-2030	F, CC	1	0	0	0	1	0	1	0	0	0	0	0	0	0	3/low

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria													Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
3	2	**Utilize the new flood gates/barriers at South Street** near railroad overpass to reduce flood damage risks in these areas. This action includes construction; or if construction is complete, this action includes maintenance and routine exercising of gate deployment.	PW, EMD	$10,000-$25,000	CIP, OB	2026 and then ongoing	F, CC	1	0	1	0	1	0	0	0	1	0	0	0	1	0	6/high
4	2	**Utilize the new flood gates/barriers for Nooks Hill Road** near the railroad overpass to reduce flood damage risks in these areas. This action includes construction; or if construction is complete, this action includes maintenance and routine exercising of gate deployment.	PW, EMD	$10,000-$25,000	CIP, OB	2026 and then ongoing	F, CC	1	0	1	0	1	0	0	0	1	0	0	0	1	0	6/high

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria													Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
5	1	**Nonresidential Property Flood Mitigation** Ensure that commercial properties on Nooks Hill Road receive information related to FEMA grants for flood mitigation inclusive of floodproofing and potential acquisitions	Planning	$0-$1,000 + staff costs	OB for outreach, FEMA HMA for grants	Annually through 2031	F, CC	0	0	1	0	0	0	0	0	0	0	1	0	1	0	5/med
6	2	**Replace stream crossings on Evergreen Road** to reduce overtopping and washout risks	PW	$100,000-$500,000	FEMA HMA, LOTCIP, STEAP, CIP	2027-2028	F, CC	1	0	1	0	1	0	1	0	0	0	1	0	1	0	8/high
7	2	**Replace Cromwell Creek crossing at West Street** to reduce overtopping and washout risks	PW	$100,000-$500,000	FEMA HMA, LOTCIP, STEAP, CIP	2028-2029	F, CC	1	0	1	0	1	0	1	0	0	0	1	0	1	0	8/high
8	2	**Conduct invasive reed (*phragmites*) removal** where the reed impedes stream conveyance and leads to flooding.	PW	$25,000-$50,000	DEEP, OB	2027-2028	TI, F, CC	1	0	0	0	0	0	1	0	0	0	0	0	1	0	3/low

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria													Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
9	3	**Inventory Generators at Essential Facilities** Some non-critical facilities are essential for public function during an emergency, such as grocery stores, Walmart, and gas stations. For these essential facilities, inventory which have functional generators. Encourage gas stations and grocery stores without generators to identify funding for them and provide technical assistance.	PW, EMD	$0-$1,000 + staff costs	OB	2027-2028	All	1	0	0	0	0	0	1	0	0	0	1	0	0	0	4/med
10	2	**Floodproof sewer pumping station** downstream of Northern Pond Dam and Shadow Lane	PW	$100,000-$500,000	FEMA HMA, CWSRF, CIP	2027-2028	F, CC	1	0	1	0	1	0	0	0	1	0	1	0	1	0	8/high
11	1, 3	**Conduct tabletop exercises (drills) for Class C dams** that could impact Cromwell.	PW, EMD	$0-$1,000 + staff costs	OB	2027 and then every two years	F, CC	1	0	1	0	1	-1	0	0	0	0	0	0	1	0	4/med

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria													Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
12	2, 3	**Residential Property Flood Mitigation** Support residents' search for funding for elevation and flood proofing their properties by disseminating HMA grant information, educating real estate agents, and making HMA information available. Maintain a Town webpage with relevant links and necessary contact information for floodplain managers and town officials. Support home/business owners with benefit cost analysis.	Planning	$0-$1,000 + staff costs	OP for outreach, FEMA HMA for grants	Annually through 2031	F, CC	1	0	1	0	1	-1	1	0	0	0	1	0	1	0	7/high
13	2, 3	**Repetitive Loss Properties** Provide information, support, and financial advice to homeowners of Repetitive Loss properties regarding possible mitigation activities. Assist with grant applications and associated benefit cost analysis.	Planning	$0-$1,000 + staff costs	OP for outreach, FEMA HMA for grants	Annually through 2031	F, CC	1	0	1	0	1	-1	1	0	0	0	1	0	1	0	7/high

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
14	1	**Resilient Connecticut Program Deployment** Work with CIRCA to develop scope of work for study and concept design in the resilience opportunity area related to Mattabasset WWTP	Planning	$0-$1,000 + staff costs	CIRCA	2028-2031	All	1	0	1	0	1	0	0	0	0	0	1	0	1	0	7/high
15	1	**Resilient Connecticut Program Deployment** Work with CIRCA to develop scope of work for study and concept design in the resilience opportunity area related to residential and critical facility flood risks east of the town center to River Road	Planning	$0-$1,000 + staff costs	CIRCA	2027-2030	All	1	0	1	0	1	0	1	0	0	0	1	0	1	0	8/high

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria													Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
16	2, 3	**Protect Historic and Cultural Resources** Use GIS inventory for historic and cultural resources, along with published best management practices to inform owners of methods and resources to make at risk resources more resilient	Planning, HDC	$0-$1,000 + staff costs	SHPO, OP	2027-2028	F, CC	1	0	1	0	1	0	1	0	0	0	1	0	1	0	8/high
17	3	**Equipment** Acquire additional equipment for wildfire fighting.	CFD	$100,000-$500,000	AFGP	2027-2028	WF	1	0	1	0	1	0	1	0	0	0	0	0	1	0	6/high
18	3	**Mutual Aid** Develop and maintain mutual aid planning frameworks for wildfire support.	CFD, EMD	$0-$1,000 + staff costs	OP	2027-2028	WF	1	0	1	0	1	0	1	0	1	0	0	0	1	0	7/high
19	2	**Interconnection** Construct the public water system interconnection with Middletown	CFD	>$1M	DWSRF, FEMA HMA, STEAP, CIP	2028-2029	D	1	0	1	0	1	0	1	0	1	0	0	0	1	0	7/high

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria													Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
20	2	**Interconnection** Construct the public water system interconnection with Berlin WCC	CFD	>$1M	DWSRF, FEMA HMA, STEAP, CIP	2029-2030	D	1	0	1	0	1	0	1	0	1	0	0	0	1	0	7/high
21	2	**Interconnection** Construct the public water system interconnection with MDC	CFD	>$1M	DWSRF, FEMA HMA, STEAP, CIP	2030-2031	D	1	0	1	0	1	0	1	0	1	0	0	0	1	0	7/high

LOWER CONNECTICUT RIVER VALLEY COUNCIL OF GOVERNMENTS
HAZARD MITIGATION PLAN 2026 UPDATE

TOWN OF DEEP RIVER MUNICIPAL ANNEX

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1. Contact Information

1.1. Point of Contact

Table 1.1. Town of Deep River Contact Information

Information	Town of Deep River
Contact Name	Carol Doak-Jones
Address	174 Main Street Deep River, CT 06417
Telephone	860-526-6030
Email	firstselectman@deepriverct.us

1.2. Local Planning Team

The following representatives listed in Table 1.2 participated in meetings and provided input, data, and counsel toward the development of Volume 1 and this Deep River, Connecticut Annex.

Table 1.2. Town of Deep River Planning Team

Name	Title
Carol Doak-Jones*	**First Selectman**
Adam Kerop	Fire Marshal/Assistant Fire Chief
Eric Waltke	Public Works Supervisor
Cynthia Torres	Emergency Management Director
Sara Connor	Sustainable Deep River

1.3. Lower Connecticut River Valley Council of Governments

Table 1.3. RiverCOG Contact Information

Information	RiverCOG Information
Contact Name	Margot Burns – Senior Environmental Planner
Address	RiverCOG 145 Dennison Rd. Essex, CT 06426
Telephone	(860) 581-8554 x 702
Email	mburns@rivercog.org

2. Jurisdiction Profile

2.1. Town Profile

Deep River is in the southern part of Middlesex County in south-central Connecticut. It is bordered on the north by the Town of Chester, on the west by the Town of Killingworth, on the south by the Towns of Essex and Westbrook, and on the east by the Connecticut River. **Figure 2.1** shows the location and corporate boundaries of Deep River.

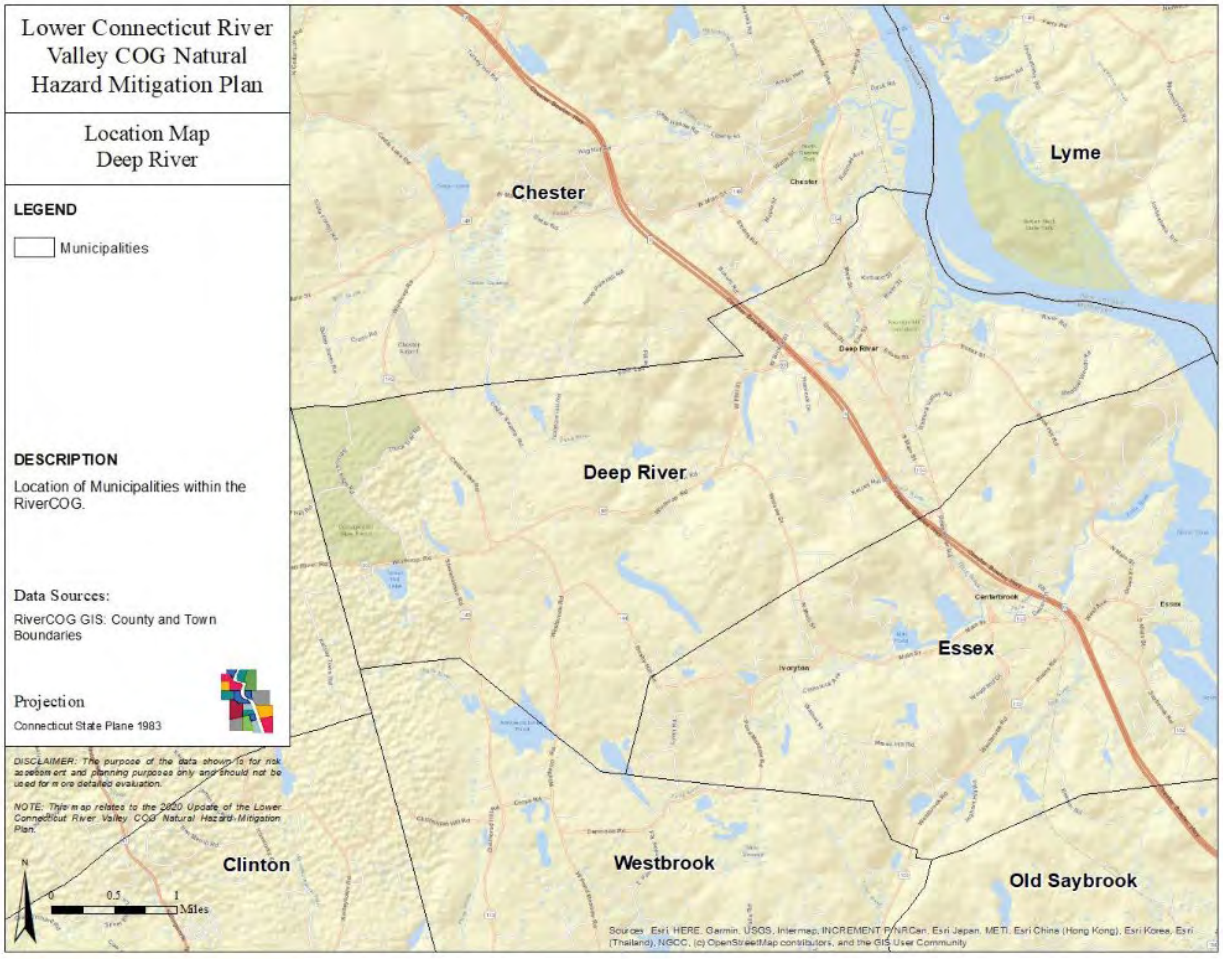


Figure 2.1. Deep River Location

The town includes lowland areas along the Connecticut River that are affected by tides and rolling hills with ledge outcrops in western areas of the town. Elevations range from near sea level above the Connecticut River to approximately 450 feet in the surrounding hills. Glacial till covers bedrock over approximately 70 percent of the town; stratified drift covers the remainder of the town.

There are numerous waterways leading to the Connecticut River as well as extensive shoreline along the Connecticut River, which account for most of the flooding in Deep River. The Deep River itself

flows from its headwaters in the Cockaponset Forest eastward through residential areas into Deep River's densely developed older industrial/ commercial district, paralleling Route 154 until it bypasses the sewage plant before entering the Connecticut River. These areas are most susceptible to flooding. The floodway along the CT River is most at risk of annual spring flooding after the snow in northern New England begins to melt and flow downstream.

The land area of Deep River is about 19% residential, 11% institutional, 45% committed open space, less than 1% commercial, and 3.4% industrial. Low density development has occurred along existing town roads. Commercial uses are located primarily in the village area and along Route 154, with additional commercial activity on the riverfront. These commercial areas serve as the primary grocery and service areas for the towns of Chester, Deep River and to some extent, Essex. Industrial uses include extensive earth removal operations in the Plattwood area on the south side of Route 80. Cockaponset State Forest, part of which is located in the northwest part of town along the Deep River, is a natural resource area.

Ecological and environmental assets in Deep River include inland wetlands, ponds, lakes, cranberry bogs, and large tracts of uninterrupted forest. Deep River has focused on preserving wetlands. Figure 2.2 shows land cover in Deep River.

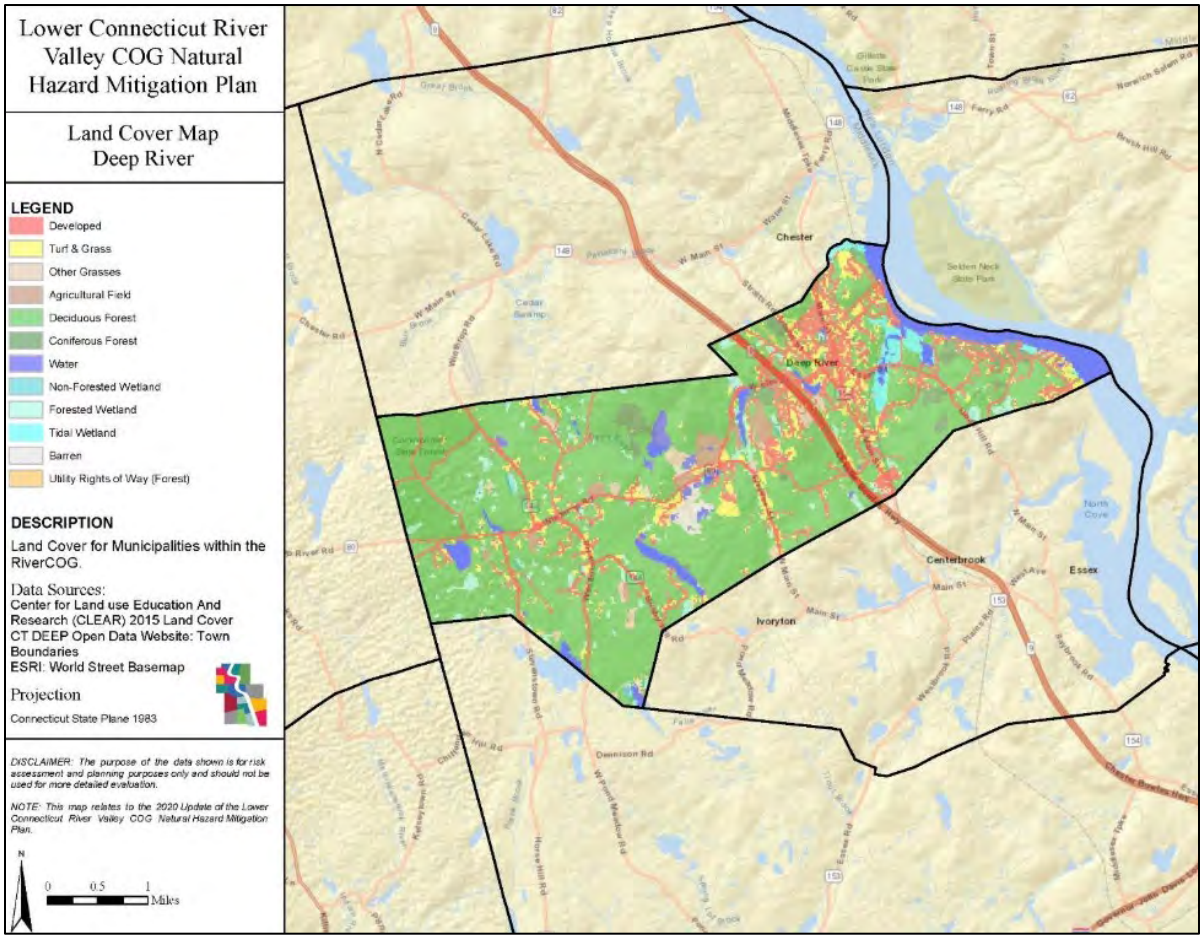


Figure 2.2. Deep River Land Cover

Deep River has a variety of transportation options. The town is served by CT Route 9, a major north-south limited access highway, as well as major arterials CT Routes 154, 80, and 145. Smaller town roads act as collectors to bring people to larger roads. The town is also served by two public bus routes (both along Routes 154 and 9) with a stop in the center of town, and a Dial-a-Ride service, by the 9 Town Transit District. In addition, the Valley Railroad runs along the river providing tourists with the ability to travel by train or by river boat to view the scenery. The 2023 American Community Survey (ACS) reported a town population of approximately 4,432 people, which represents a 1.1% decrease from 2019.[1]

Figure 2.3 provides a demographic profile for Deep River.[2]

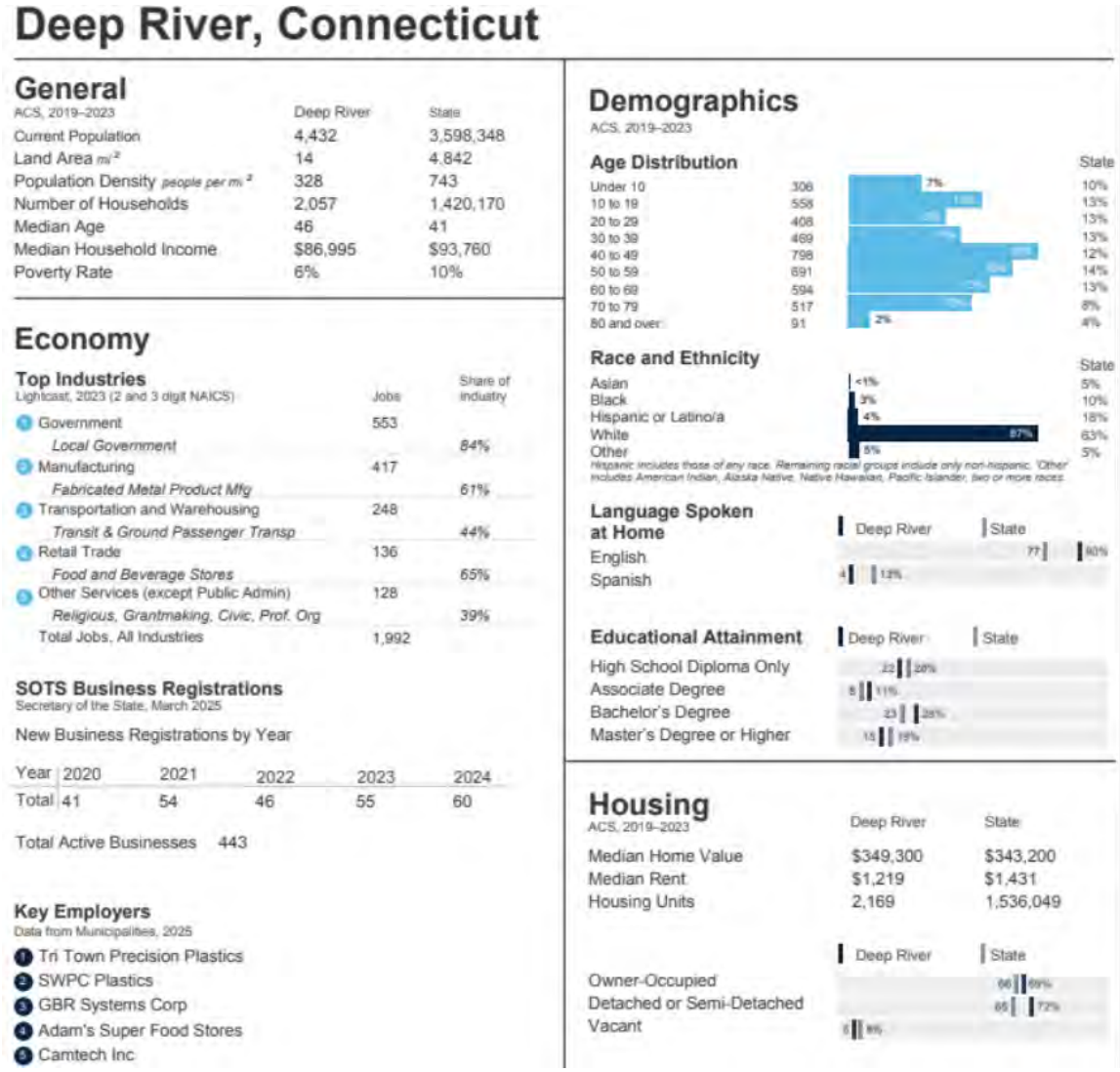


Figure 2.3. Town of Deep River Demographics

[1] https://s3-us-west-2.amazonaws.com/cerc-pdfs/2025/DEEP RIVER.pdf
[2] - Published on Town of DEEP RIVER, CT *(Source: Connecticut Data Collaborative)*

2.2. Climate

Average weather data in Deep River was sourced from the Weather Spark website (weatherspark.com). Over the course of the year, the temperature typically varies from 23°F to 81°F and is rarely below 9°F or above 89°F. The warm season lasts for 3.4 months, from June 2 to September 15, with an average daily high temperature above 73°F. The hottest day of the year is July 20, with an average high of 81°F and low of 66°F. The cold season lasts for 3.4 months, from December 1 to March 13, with an average daily high temperature below 46°F. The coldest day of the year is January 30, with an average low of 23°F and high of 38°F.

Deep River does not experience significant seasonal variation in the frequency of wet days (i.e., those with greater than 0.04 inches of liquid or liquid-equivalent precipitation). The frequency ranges from 23% to 33%, with an average value of 27%. The most rain falls during the 31 days centered around April 2, with an average total accumulation of 3.9 inches. The snowy period of the year lasts for 4.7 months, from November 16 to April 7, with a sliding 31-day liquid-equivalent snowfall of at least 0.1 inches. The most snow falls during the 31 days centered around January 27, with an average total liquid-equivalent accumulation of 0.7 inches.

The windier part of the year lasts for 6.2 months, from October 14 to April 21, with average wind speeds of more than 6.9 miles per hour. The windiest day of the year is January 30, with an average hourly wind speed of 8.8 miles per hour.

2.3. Government Style

Deep River has a Selectman/Town Meeting form of government. The First Selectman is the chief elected official and chairman of a three-member Board of Selectmen, who collectively serve as the executive branch. The Town Meeting serves as the legislative branch. The Town encourages involvement in community activities, boards, and commissions. Meeting dates are posted online and on the public bulletin board in the Town Hall.

2.4. Development Trends

There is currently little new development taking place in Deep River; however, there are large parcels in Town that are available for development and may see activity in the near future:

- Hoopole Road: In 2019, a 12-lot subdivision was approved for a parcel. Construction has not yet begun.
- Mount St. John School: An 80-acre parcel along the Connecticut River, which was once the Mount St. John School, is being explored for redevelopment.
- Cedar Lake Road: There are approximately 100-acres off Cedar Lake Road that are available for development.

None of these potential development sites are in a flood hazard area.

One potential challenge related to redevelopment is that public water service and sewer service are not available in all parts of Deep River. This may limit some redevelopment.

While the potential development sites listed would add people and property to the town, none are located in floodplain areas. Generally, any new development introduces potentially new vulnerabilities. All new developments will be constructed to modern building code standards and in accordance with stormwater, zoning, and other regulations, thereby mitigating potential future vulnerabilities. The one noted redevelopment will also include upgrades to new codes and standards, resulting in a net decrease in vulnerability.

2.5. Town-Specific Hazard Concerns

Municipal staff reported several specific hazard concern issues, which are listed below. The information below is intended to supplement the hazard specific analysis completed in Section 2, of Volume I of this plan.

A note: To preserve the reader's ability to align RiverCOG-Level and town-level hazard identification and risk analysis, the order of the following hazards aligns with the order of hazards in Volume I. Individual towns have ranked these hazards differently. This town-level ranking can be found in Section 3.3 Hazard Risk Ranking.

2.5.1. Severe Winter Weather

Winter storms are very likely to occur in Deep River. They have caused significant damage and are second only to hurricanes in terms of the potential damage they can cause in Deep River.

Ice jams have caused damage to private and municipal boating facilities. A severe ice jam and related flooding poses a risk to private and municipal marinas and other infrastructure. Weather advisories that are issued throughout the winter and the extent to which the storms may impact the residents of Deep River. These alerts are typically issued by NOAA in advance of a winter storm to allow people to take precautions ahead of the storm and to encourage people to limit travel on roads.

2.5.2. Flooding

Flooding - Riverine and Inland Flooding

Most residential use in Deep River does not lie within a flood zone, so major flooding does not pose a major threat of building loss. Flooding is a concern for the low-lying parcels along the Connecticut River, as well as along Deep River near Cedar Swamp Road, and at the firehouse particularly with the Elm Street Bridge. Cedar Swamp Road may be at risk with regard to impeded access and egress. The Hemlock neighborhood is also a concern with regard to isolation due to flooding. Other areas subject to flooding include those near the Deep River, Pratt Read Reservoir, Rogers Pond, Post and Pratt Coves and the Connecticut River. Roads subject to frequent minor flooding as well as more significant riverine flooding include portions of Essex Street, Kirtland Street, West Elm Street, Union Street, Tower Lake Road, and River Street.

Basement flooding has been a problem, especially when heavy precipitation is paired with power outages during a storm, which eliminates the effectiveness of sump pumps.

There is a sluiceway on Deep River owned by the owner of 12 Bridge Street behind the former Pratt Read factory (but unrelated to the Pratt Read dam). The sluiceway must be managed to maintain water levels at high enough stage for aesthetics while not flooding the basements of adjacent buildings. Up to 12 adjacent properties can be affected by flooding if the sluice is not properly managed. For many years, the Public Works has been operating the sluiceway on behalf of the former owner, but the Town is concerned about the potential liability of this handshake arrangement. Recently, a new owner took control of the property and the sluiceway.

Flooding - Coastal Flood

Much of the flooding experienced along the Connecticut River is tidally influenced and therefore may be considered coastal. For the purpose of this annex, flooding along the Connecticut River and Pratt Cove will be considered coastal, whereas flooding along the Deep River will be considered riverine.

In some cases, flooding events are exacerbated by inadequate stormwater management infrastructure; during times of high tides and storm surge, stormwater drainage along the Connecticut River can back up and cause flooding. Areas with inadequate stormwater management infrastructure include Essex Street, River Street, Union Street, West Elm and the Fire House, and River Street and Town Landing. In particular, Essex Street and the Town Landing can experience shallow flooding during king tides and during coastal storm events.

Shoreline Change

Shoreline change associated with erosion along the tidal Connecticut River and Pratt Cove may be a concern.

Sea Level Rise

Sea level rise will have long-term consequences to tidal water surface elevations of the Connecticut River and associated wetland systems. In the long term, changes to flood water surface elevations could be noticed. Over the five-year timeframe for this plan, changes are not likely to be noticeable.

Researchers[3] in Connecticut believe that Connecticut River communities should plan for about half of the vertical sea level rise projected for Long Island Sound. In other words, the State-mandated planning threshold of 20 inches by 2050 could translate to ten inches of vertical flooding added to tidal flooding along the Connecticut River by 2050. Nevertheless, over the five-year timeframe for this plan, changes in horizontal flood extents associated with this vertical increment are not likely to be noticeable.

[3] Robert Thorson, UConn, via presentation at the UConn Law School in April 2026

Flash Flooding

The Town has limited concerns regarding flash flooding. The areas of most concern for flash flooding include the Town Landing and Essex Street due to rapid changes in the stage of the Connecticut River.

2.5.3. Dam Breach

A concern for the Town is existing dams, especially privately owned, which require repair and maintenance. Deep River has 17 dams within its borders according to the CT DEEP. Three are classified as either significant or high hazard dams. Sixteen dams in Deep River are privately owned and are in various states of repair. Specific dams of concern include Bushy Hill Dam and Star Lake Dam. One small dam is owned by the town, and one Class A (low hazard) dam is owned by CT DEEP. Figure 2.4 shows the location of all dams within Deep River. Moderate (Class BB), Significant (Class B) and high hazard-class (Class C) dams are presented in Table 2.1.

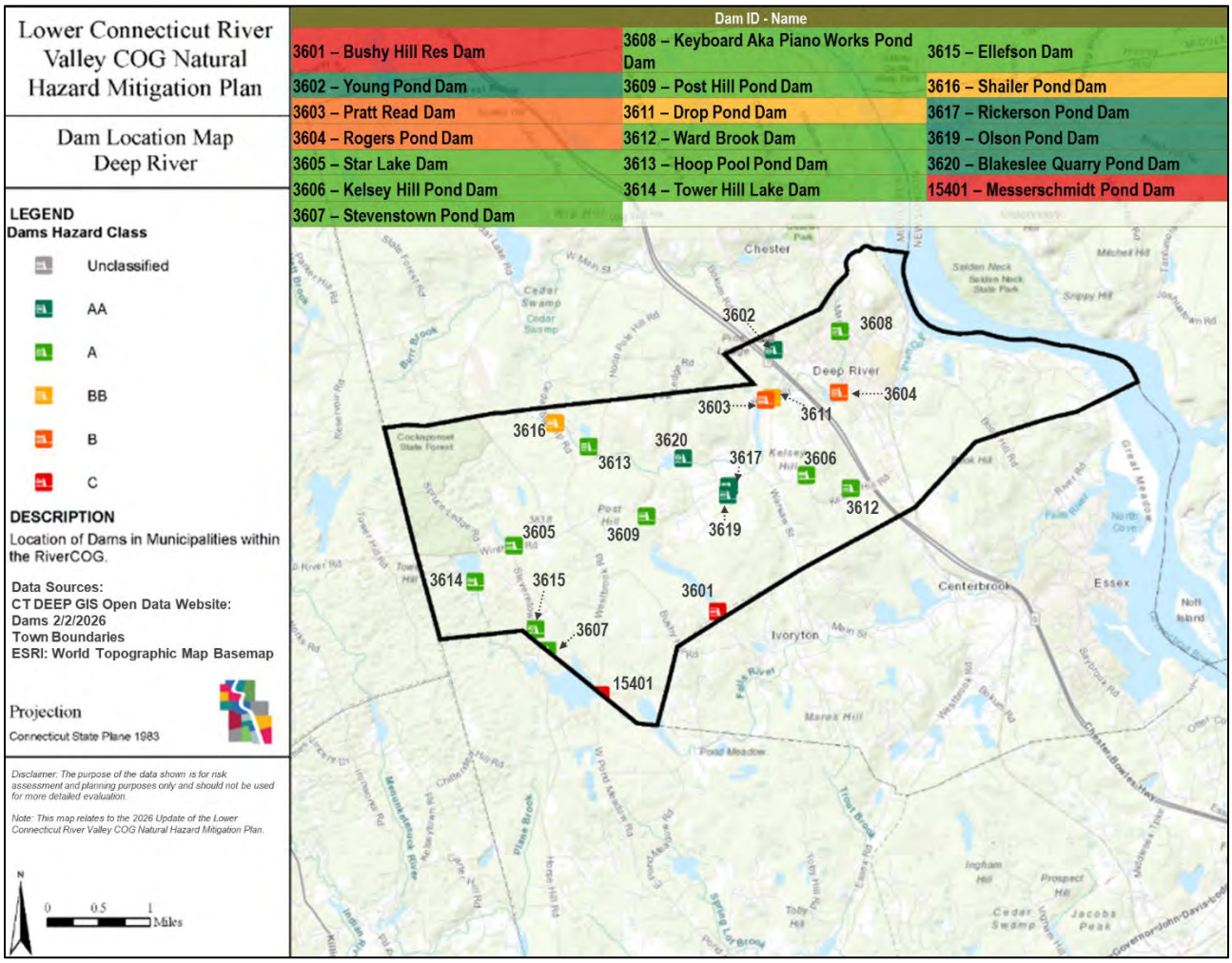


Figure 2.4. Location of Dams, Deep River, CT

Table 2.1. Moderate, Significant and High Hazard Dams, Deep River, CT

CT Dam #	Dam Name	Hazard Class	Owner
3601	BUSHY HILL POND	C-High	INCARNATION CAMP, INC
3603	PRATT READ DAM	B-Significant	KELSEY FALLS ASSOCIATION
3604	ROGERS POND DAM	B-Significant	Carlson
3611	DROP POND	BB-Moderate	KATHERINE N. PAULSON- TRUSTEE
3616	SHAILER POND DAM	BB-Moderate	SHAILER FARM LLC

A dam break would release a significant amount of water at high velocity with significant pressure and could cause significant flooding downstream of the dam. This wall of water could cause other dams to break.

The subject plan update seeks approval under Element G of the Local Plan Review Tool for potential HHPD grant program eligibility. One high hazard dam is located in Deep River: the Bushy Hill Pond Dam. This dam was introduced and described in the multi-jurisdiction document. This dam is owned by a private entity. The dam impounds an unnamed tributary of Falls River upstream of the Ivoryton and Centerbrook sections of the neighboring Town of Essex. In June 1982, neighboring Essex was severely affected by flooding as a result of the complete failure of the Bushy Hill Dam. The town suffered dramatic flooding with the failure of the dam in Deep River which collapsed and sent a wall of water crashing down the Falls River in Essex. The annex document for the Town of Essex should be reviewed for additional information related to Bushy Hill Pond Dam.

Emergency Action Plans (EAPs) were obtained and reviewed to understand the people, critical facilities, and community assets in the dam failure inundation areas. However, according to DEEP, an EAP has not been prepared for Bushy Hill Pond Dam. In general, very few properties in Deep River are at risk of a dam breach, and none of them are developed. The Town is concerned about loss of flood storage in certain ponds due to increased siltation. For example, Keyboard Pond water levels have become notably shallower due to siltation.

2.5.4. Thunderstorms and Severe Weather

Deep River has experienced significant road blockages due to downed trees and tree limbs following winter storm and high wind events. An increase in the number of dead or dying trees throughout Town has presented problems during storms and high wind events.

The economic core of Deep River is vulnerable to loss of electricity and communication services due to downed utility lines. The local energy utility, Eversource, targets its tree maintenance and trimming activities along the main trunk lines of its distribution network. This is a change since previous years, where the utility proactively performed maintenance along all lines.

2.5.5. Hurricanes and Tropical Storms

Because of the frequency of hurricanes and their potential severity, they are the natural disaster likely to cause the greatest damage. During a hurricane, winds and rain will affect the entire town

while storm surges and coastal flooding will affect coastal areas. As a southern Connecticut community, Deep River is likely to experience hurricanes and tropical storms. High wind events are a concern for roads and municipal infrastructure due to the forested landscape and extreme tree damage caused by Emerald Ash Borer and Gypsy Moth.

The flooding and winds from Tropical Storms Elsa, Fred, Henri, and Ida in 2021 impacted Deep River to varying degrees.

2.5.6. Tornado

Historically there have been tornados and microburst wind events in other parts of the state. Thus, these events should not be dismissed entirely. Severe thunderstorms have been known to occur and spawn small tornados. Damage from sheer downburst winds has been suspected as another source of damage in the state. Deep River's historical tornado action is near the Connecticut state average, which is 25% smaller than the overall U.S. average.[4]

Overall, residents throughout Deep River are equally susceptible to the chance of a tornado occurrence. However, a strong tornado would likely cause more damage in the more densely developed Deep River Center area. Other areas of town, particularly the west end of town, which tends to be less developed may not sustain as much property damage.

2.5.7. Earthquakes

The entire town could be affected by an earthquake in this region; however, impacts could vary locally. The most severe earthquake in Connecticut's history occurred at East Haddam on May 16, 1791. A Magnitude 4.0 earthquake in southern Connecticut occurred on November 3, 1968. It cracked plaster in Madison, furniture shifted in Deep River, and small items fell and broke. As recently as March 23, 2011 the village of Moodus in East Haddam, just north of Deep River experienced a 1.3 on the Richter scale tremor.

In Deep River and the surrounding region, recorded impacts have been limited to shaking to the extent that things were knocked off shelves and people were alarmed. Structural damage has been limited to building components such as chimneys and buildings in poor repair; but failing structures have caused property damage in nearby towns.

2.5.8. Drought & Wildfire

As with all the towns in the region, Deep River is small enough that a drought would likely be town wide. Drought also can exacerbate potential for small wildfires and hinder the ability of the Town to control outbreaks. In particular, the Town notes that many people do not secure burning permits and therefore burn even when a permit would not have been granted due to potential fire conditions.

Severe droughts are not frequently occurring natural events, but flashy droughts have been occurring with some regularity. A significant portion of the population in Deep River relies on ground water for

[4] (Source: City Data)

domestic water supply. Under extreme and prolonged drought conditions, these water sources could be affected. Past drought events have impacted some private wells, though those seem to have been isolated problems rather than reflective of more widespread aquifer limitations. A fire is much more likely to spread and cause significant damage when there is high wind, little humidity and a period of no rainfall.

Connecticut traditionally experiences high forest fire danger in the spring from mid-March through May. A small brush fire during dry periods is likely in Deep River. Different areas throughout town are susceptible to different types of fires. Inland areas where thick forest cover is abundant are more susceptible to fires feeding on ground ladder fuels. Areas closer to the densely developed shoreline where more roads are present are more susceptible to fires feeding on surface fuels. The primary area of concern for wildfire is the forested western area of town, much of which is State Forest and where public water supply is not available; without maintenance of roads through forest areas, a large fire in an interior portion of the forest could be a challenge to access.

The Town is also concerned that the spread of invasive species along the Connecticut River could lead to situations in which the thickness of vegetation hinders water access for fire suppression.

2.5.9. Extreme Temperature

Deep River falls in the humid continental climate zone, the same as much of interior Connecticut. All areas of Deep River are equally susceptible to extreme heat and heat waves. Heat waves are a regular summer season event in Connecticut, including Deep River. Extreme heat and heat waves are highly likely during the summer months. As global temperatures continue to climb, it seems likely that heat waves will occur more frequently in the future. Elderly and very young populations, especially those living in homes with no air conditioning are most likely to be adversely impacted by extreme heat. Dehydration, heat stroke, and other negative health effects are likely during high heat events. Physical infrastructure can also be impacted negatively by extreme heat. Heat always brings with it the potential for strong thunderstorms which could knock out power due to downed trees. Asphalt, especially in places where there is not a substantial base can buckle or crack significantly under heat. Drought conditions can also become exacerbated by extended periods of significantly high temperatures.

The Deep River Director of Emergency Management has the authority to designate cooling centers in public buildings during heat waves. Cooling centers can be successful in helping vulnerable populations ride out the worst of the heat, providing them with a cool place to stay along with water.

Extreme cold spells do occur periodically, typically between the months of December and March. Although cold temperatures are normal during the winter months, occasionally temperatures can drop below freezing for extended periods, sometimes as low as 0^{o}F. Low-income housing residents and the elderly in homes without sufficient heat sources are particularly vulnerable. Town officials have planned and continue to update the accommodations of shelters and warming centers in their community. Warming centers are used by those that either have insufficient heat sources or for times of power outages.

2.5.10. Terrestrial Invasive Species

Invasive species are an emerging challenge for the Town of Deep River. Terrestrial invasive species include those typically found in Connecticut. Town planners have noticed an increase in townwide in invasive plants, especially Knotweed. The garden club is working on reducing some stands of knotweed.

2.5.11. Aquatic Invasive Species

Aquatic invasive species include those typically found in the Connecticut River and its tributaries. Hydrilla and water chestnut are a concern for the Town. The Army Corps is doing some treatment in the area. One invasive water chestnut was found in Plattwood Park Pond. It was hand pulled. The Town is also in the 5th year of using phragmites treatment.

2.5.12. Tree Diseases and Pests

Since the 2021 plan update, the Town has removed trees that have been damaged or killed as a result of other hazards, and have also removed trees damaged by disease and pestilence such as the emerald ash borer. Spotted lantern fly is a concern and is hosted often on tree of heaven.

2.5.13. Other Hazards

Emergency Access

The Town has specifically identified loss of access to neighborhoods via Cedar Swamp Road, as well as loss of access to the Hemlock Terrace neighborhood, as concerns.

Energy Reliability

Deep River is concerned about storms that can lead to isolation and power outages through the flooding of roads and the downing of trees and limbs. The Town has observed a high number of dead trees, which pose a risk to egress and power supply during wind and winter weather events.

There is only one private gas station in Town, and it does not have emergency power. This is the main source of fuel for municipal vehicles. The Public Works Facility has some diesel storage on site. The Town is interested in expanding the fuel storage capacity of the Public Works Facility.

3. Hazard Risk

3.1. Recent Events

The following is a summary of recent events experienced in Deep River since the 2021 plan update.

- There were no major flood, wind, drought, earthquake, or wildfire incidents in Deep River. A number of minor to moderate incidents occurred that were handled by Town staff as “business as usual” events.

- A major winter storm occurred on January 25, 2026 and brought approximately 17 inches of snow to Deep River. This was the highest amount of snow since 2013.

3.2. Historical Events

Table 3.1 lists the Federal Disaster declarations for Middlesex County, for which Deep River requested assistance.

Table 3.1. Deep River Natural Hazard Events

Type of Event	Date	Preliminary Damage Assessment
Hurricane Event (DR-4023)	09/02/2011	$87,362
Hurricane Event (DR-4087)	10/30/2012	$102,281
Winter Weather Event (DR-4106)	03/21/2013	$54,494
Flood Event (DR-4410)	12/5/2018	$16,624
Wind Event (DR-4410)	12/5/2018	$24,249
Tropical Storm Isaias (DR-4580)	1/12/2021	$119,169

The most recent flood event of note occurred in September 2018 during a flood that affected most of Connecticut from the Fairfield area east-northeastward to the Lebanon area. Heavy rain resulted in flooding in areas along Cedar Swamp Road, and nearly overtopped Route 80 (Elm Street at Union Street) next to the fire house. While the flooding did not impact egress, a larger event could have impeded evacuation for the residents in the area. In the fall of 2019, the Town received public assistance from FEMA to address some infrastructure repairs. The following are impacts from hazard events in the recent past:

- A past heavy rain event left residents without power, ultimately eliminating the capacity of sump pumps, and allowing basement flooding to occur. The Town assisted a small number of residents with pump outs.
- Ice jams on the Connecticut River in the past resulted in the damage and replacement of privately-owned marina and municipal pilings.
- Past drought events have impacted private wells, though the few private wells that reported problems appeared to be isolated, as the surrounding neighborhoods and adjacent properties were not impacted.
- There were some communication issues during a previous storm event when a cell phone tower stopped functioning. The cause of the disruption is unclear.

FEMA's public assistance (PA) program provides reimbursement to communities after federally declared disasters. Funding is typically for public works and public safety extraordinary expenses (overtime), administrative expenses, debris cleanup, and public damages.

Total PA reimbursements (1998-2025) to the community were as follows:

- Flood Events: $24,249 ($898 annually)
- Hurricane (Wind) Events: $308,812 ($11,437 annually)
- Winter (Snow) Storm Events: $54,494 ($2,018 annually)

Table 3.2 through Table 3.4 show PA reimbursements to Deep River between 2011 and 2025 for flood, wind, and winter weather events, respectively.

Table 3.2. Flood Event PA Reimbursements, Deep River, CT

Disaster #	4410
Incident Dates	Sep 2018
Declaration	12/05/2018
Entity	FEMA PA Reimbursement
State	$
Municipal	$
Nonprofit	$
Total	$24,249
Annualized	**$898**

Table 3.3. Hurricane Wind Event PA Reimbursements, Deep River, CT

Disaster #	4023	4087	4580
Incident Dates	Aug-Sep 2011 (T.S. Irene)	Oct-Nov 2012 (SuperStorm Sandy)	Jan 2021 (Tropical Storm Isaias)
Declaration	9/2/2011	10/30/2012	1/12/2021
Entity	FEMA PA Reimbursement	FEMA PA Reimbursement	FEMA PA Reimbursement
State	$	$	$
Municipal	$	$	$
Nonprofit	$	$	$
Total	$87,362	$102,281	$119,169
Annualized	**$3,236**	**$3,788**	**$4,414**

Table 3.4. Winter Storm PA Reimbursements, Deep River, CT

Disaster #	4106
Incident Dates	3/21/13

Disaster #	4106
Declaration	4106
Entity	FEMA PA Reimbursement
State	$
Municipal	$
Nonprofit	$
Total	$54,494
Annualized	**$2,018**

3.3. Hazard Risk Ranking

Deep River participated in the regional hazard ranking conducted by the Hazard Mitigation Planning Team. Table 3.5 shows the scoring for the various ranking parameters that were used. The probability of each hazard is determined by assigning a level, from unlikely to highly likely, based on the likelihood of occurrence from historical data. The total impact value includes the affected area, primary impact, and secondary impact levels of each hazard. Level of Community Concern reflects the perceived risk of each hazard as indicated by respondents to question 6 of the community survey. This question asks "How concerned are you about each of the following hazards impacting your home, business, community, or organization?" and received 157 responses.

Each of these five criteria are assigned weights, as well as point values for each of their responses. Each level's score is reflected in the matrix. The total score for each hazard is the probability score multiplied by its importance factor times the sum of the impact level scores multiplied by their importance factors. Based on this total score, the hazards are separated into three categories based on the hazard level they pose to the communities: Significant, Moderate, Limited. Table 3.5. Hazard Ranking Parameters provides a summary of the categories used to rank the hazards and their weighted values for the Composite Hazard Risk Index.

Table 3.5. Hazard Ranking Parameters

Criteria	Weight	1 Point	2 Points	3 Points	4 Points
Hazard Probability	**2.0**	**Unlikely** Less than 1% probability in next 100 years or has a recurrence interval of greater than every 100 years.	**Somewhat** Likely Between 1 and 10% probability in next year or has a recurrence interval of 11 to 100 years.	**Likely** Between 10 and 100% probability in next year or has a recurrence interval of 10 years or less	**Highly Likely** Near 100% probability in next year or happens every year.
Impact – Affected Area	**0.8**	**Isolated** Less than 1% of area affected	**Small** Between 1 and 10% of area affected	**Medium** Between 10 and 50% of area affected	**Large** Between 50 and 100% of area affected

Criteria	Weight	1 Point	2 Points	3 Points	4 Points
Impact – Primary Impact	**0.7**	**Negligible** 1 to 10% of people or property	**Limited** 10% to 25% of people or property	**Critical** 25 to 50% of people or property	**Catastrophic** >50% of people or property
Impact – Secondary Impact	**0.5**	**Negligible** No loss of function, downtime, and/or evacuations	**Limited** Minimal loss of function, downtime, and/or evacuations	**Moderate** Some loss of function, downtime, and/or evacuations	**High** Major loss of function, downtime, and/or evacuations
Level of Community Concern	**1.0**	**Low Concern**	**Moderate Concern**	**High Concern**	**-**

The hazard risk ranking generated from this exercise, along with consideration of available data, was used to prioritize the level of effort assigned to further analysis of each hazard in the vulnerability analysis and lost estimation sections. Based on the results of the exercise, the hazards were ranked as follows in Table 3-6: Summary of Potential Hazard Impacts on the next page. Deep River staff concurred with the results of the hazard ranking for the overall region and endorsed the ranking as accurate for the Town.

3.3.1. National Flood Insurance Program (NFIP) Participation

Deep River joined the NFIP in 1973 and entered the regular phase of the program in 1981. There are currently 17 policies in force in Deep River, providing approximately $9.3 million in coverage, with paid losses to date totaling $149,877.

Repetitive Loss Property Detail

Deep River has two residential buildings at a single address, one of which is a repetitive loss (RL) property. It has received two paid losses totaling $11,290. The other building is a severe repetitive loss (SRL). It has had five paid losses totaling $99,891. Both properties are in the floodplain of the Connecticut River.

Table 3.6. Summary of Potential Hazard Impacts.

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
Aquatic Invasive Species	Semi-quantitative, supplemented by state and municipal figures, recommend survey	**Highly Likely - 4**	**Large - 4**	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant
Terrestrial Invasive Species	Semi-quantitative, supplemented by state and municipal figures, recommend survey	**Highly Likely - 4**	**Large - 4**	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant
Tree Infestation	Semi-quantitative, supplemented by state and municipal figures, recommend survey	**Highly Likely - 4**	**Large - 4**	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
Hurricanes	Hazus for wind	Likely - 3	**Large - 4**	Critical - 3	Moderate - 3	High Concern - 3	15.8	Significant
Winter Storms (Snow, Ice, Wind, including Nor'easters)	Historic analysis for probability and annualized damages	**Highly Likely - 4**	**Large - 4**	Negligible - 1	Moderate - 3	Moderate Concern - 2	15.4	Significant
Flood – Riverine and Inland Flooding (Riverine, Drainage, Coastal Surge, Sea Level Rise - includes flooding from Nor'easters)	Hazus, SLR Overlay, FS Model Overlay, Historic data and damages for additional probability	Likely - 3	Medium - 3	Limited - 2	Moderate - 3	High Concern - 3	14.3	Significant
Extreme Heat and Cold	Qualitative based on historic	Likely - 3	**Large - 4**	Negligible - 1	Limited - 2	High Concern - 3	13.9	Moderate
Severe Weather (thunderstorms, downbursts, hail, lightning)	Historic analysis for probability and annualized damages	**Highly Likely - 4**	Small - 2	Negligible - 1	Limited - 2	Moderate Concern - 2	13.3	Moderate

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
Wildfire	Historic analysis for probability and annualized damages	Likely - 3	Small - 2	Critical - 3	Moderate - 3	Moderate Concern - 2	13.2	Moderate
Drought	Historic analysis for probability and annualized damages - some qualitative	Likely - 3	Medium - 3	Negligible - 1	Limited - 2	High Concern - 3	13.1	Moderate
Tornadoes	Historic analysis for probability and annualized damages - pulling in surrounding counties	Likely - 3	Isolated - 1	**Catastrophic - 4**	Limited - 2	Moderate Concern - 2	12.6	Moderate
Earthquakes	Hazus, 3 scenarios	Somewhat Likely - 2	Small - 2	**Catastrophic - 4**	**High - 4**	Low Concern - 1	11.4	Limited
Flooding from Dam Failure	Dam Inundation areas, Historic analysis for probability and annualized damages	Unlikely - 1	Small - 2	Limited - 2	Moderate - 3	Moderate Concern - 2	8.5	Limited

4. Capability Assessment

This section discusses capabilities and operational procedures that Deep River undertakes that contribute to or have the potential to contribute to hazard mitigation. It also notes deficiencies in those capabilities that could be addressed to strengthen resilience.

4.1. Critical Facilities

Public and private utility facilities are vital to maintaining or restoring normal services to areas of town before, during, and after a natural disaster. Figure 4.1 shows the location of critical facilities in Deep River which are identified at the regional level.

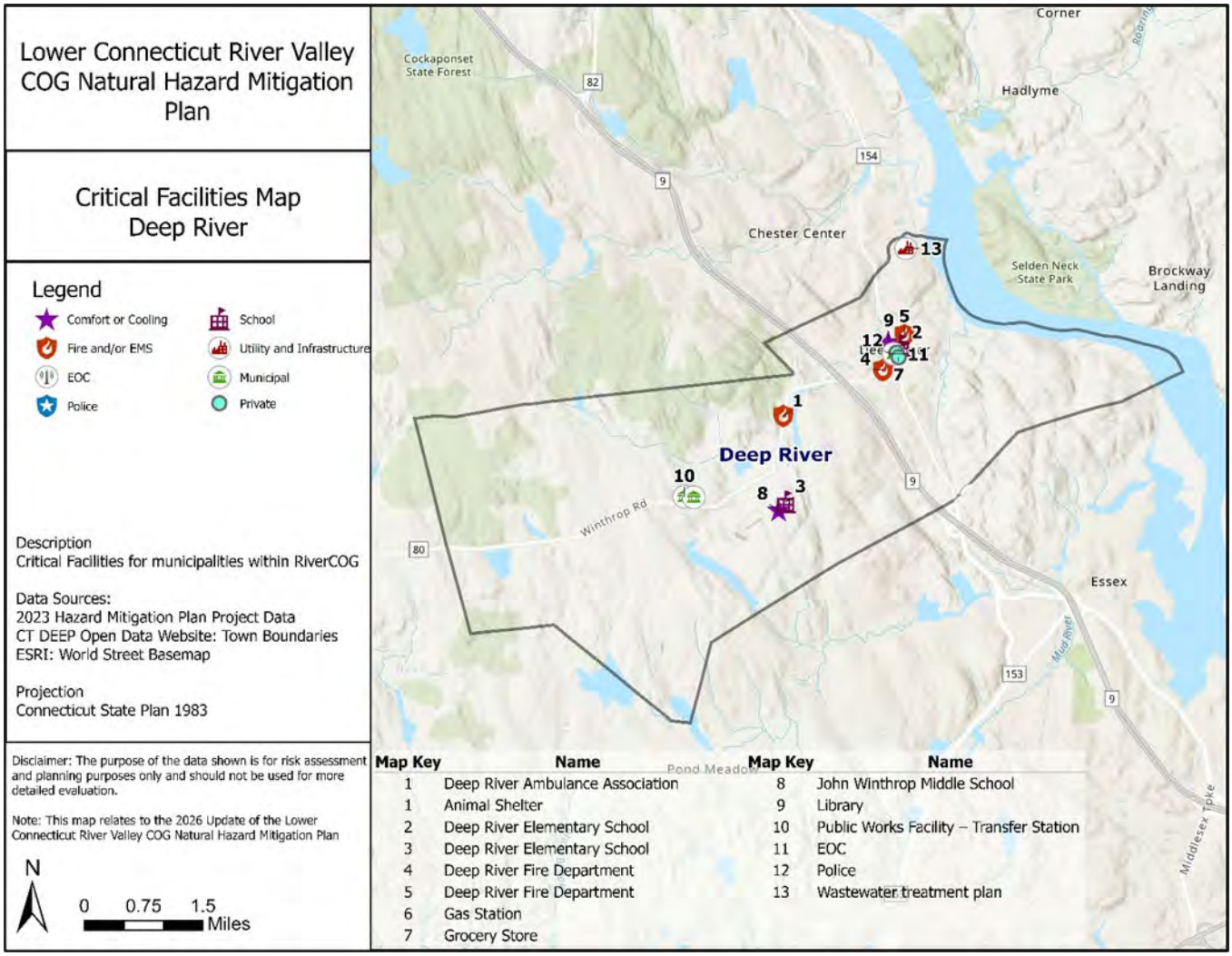


Figure 4.1. Location of Critical Facilities in Deep River

Note that while Valley Regional High School is included on the map and listed by the State as a critical facility, it is not included in the table below of Town- and regionally-identified critical facilities. Table 4.1 lists these critical facilities.

Table 4.1. Critical Facilities

Facility	Type	Address	Flood Zone	Generator	Notes
Deep River Fire Department	EOC Emergency Response	34 River Street	No	Yes	River Street Station & Museum
Town Hall	Municipal	174 Main Street	No	Yes	Cooling center
Library	Municipal	150 Main Street		No	Cooling center
Deep River Fire Department	Emergency Response	57 Union Street	Yes, 100-year, Zone AE.	Yes	
John Winthrop Middle School	Emergency Shelter	1 Winthrop Road	No, but impacted	Yes	Regional Shelter not in flood zone but entrance and two of three roads leading to the school can be inundated.
Public Works Facility – Transfer Station	Municipal	206 Winthrop Road	No	Portable	
Deep River Elementary School	Municipal	12 River Street	No	No	
Deep River Ambulance Association	Emergency Response	284 West Elm Street	No	No	
Wastewater treatment plan	Municipal	99 Winter Avenue	Adjacent	Yes	
Grocery Store	Community	193 Main Street	No	Yes	Currently Adams Hometown Market
Gas Station	Community	177 Main Street	No	No	Currently Cumberland Farms
Sewer Pumping Stations (one selected)	Municipal	73 Union Street	Yes – some	Yes	
Kirtland Commons (Housing Authority)	Municipal	60 Main Street	Yes, Zone AE	Yes	

Deep River uses many of its public buildings for minor natural hazard events, such as cooling centers during heat waves. John Winthrop Middle School, the Town's principal shelter, serves as the emergency shelter for Chester and Essex as well. The regional shelter does not accommodate pets but is capable of providing food, a place to sleep and shower as well as charging of personal electronic devices. Materials to operate the shelter are stored in each of the three communities and there is a need to inventory what each Town is holding for the regional shelter. The library was not listed in the prior edition of this plan, but is used as a cooling center and is therefore a critical facility.

Public and private utility facilities are vital to maintaining or restoring normal services to areas of town before, during, and after a natural disaster. Sanitary sewer service is provided throughout the town by the Deep River WPCA. Public water systems located in the town are owned and operated by Connecticut Water Company and small community system providers. Electricity is provided by Eversource. Public and private utility facilities are subject to the same loss of power, potable water, communications, and accessibility as is the community they serve.

4.2. Critical Facility Assessment from Sustainable and Resilient Communities Planning Support

The critical facilities located in Deep River were evaluated through a scoring process for the Climate Vulnerability Assessment funded by the Connecticut Sea Grant's Sustainable and Resilient Communities (SRC) program. The work was completed in 2026. Ranked scores were assigned to each category of flood characterization tool as follows:

Table 4.2. Flood Susceptibility, Vulnerability, and Risk Scoring Rubric

FEMA Flood Zone	Flood CCVI Score	Flood Susceptibility Score	Hurricane Surge Zone
1 = none	1 = low	1 = none	1 = none
2 = close to A zone	2 = low/mod	2 = mod	2 = cat 4
3 = 0.2%	3 = mod	3 = mod/high	3 = cat 3
4 = A or AE	4 = mod/high	4 = mod/very high	4 = cat 2
5 = AE and floodway	5 = high	5 = very high	5 = cat 1

The table below summarizes the aggregated scores. The range of scores for all facilities assessed in Deep River is 3 to 11.

Table 4.3. Flood Susceptibility, Vulnerability, and Risk Scores for Critical Facilities

Facility	Address	FEMA Flood Zone	Flood CCVI Score	Flood Susceptibility Score	Hurricane Surge Zone	Flood Summary Score
Deep River Fire Department	34 River Street	No	Low-Moderate	NA	NA	4

Facility	Address	FEMA Flood Zone	Flood CCVI Score	Flood Susceptibility Score	Hurricane Surge Zone	Flood Summary Score
Town Hall	174 Main Street	No	Low-Moderate	NA	NA	4
Library	150 Main Street	Yes, Parking in Zone AE.	Low-Moderate	Moderate to Very High	NA	7
Deep River Fire Department	**57 Union Street**	**Yes, Zone AE.**	**Low-Moderate**	**Moderate to Very High**	**NA**	7
John Winthrop Middle School	**1 Winthrop Road**	**No, but impacted**	**Low**	**Moderate to Very High**	**NA**	4
Public Works Facility – Transfer Station	206 Winthrop Road	No	Low	NA	NA	3
Deep River Elementary School	12 River Street	No	Low	NA	NA	3
Deep River Ambulance Association	284 West Elm Street	No	Low-Moderate	Moderate	NA	4
Wastewater treatment plant	99 Winter Aven	Adjacent	Moderate-High	Moderate to Very High	Cat 1-4	11
Grocery Store	193 Main Street	No	Low	NA	NA	3
Gas Station	177 Main Street	No	Low-Moderate	NA	NA	4
Sewer Pumping Stations (one selected)	**73 Union Street**	**Yes – some**	**Moderate**	**Very High**	**No**	8
Kirtland Commons (Housing Authority)	**60 Main Street**	**Yes, Zone AE**	**Moderate**	**Very High**	**No**	8

Critical facilities in **bold text** were selected for additional analysis due to their relatively high summary scores or criticality to the region. Field survey was completed as part of the study, and recommendations were developed to reduce flood damage at the sewer pumping station, 57 Union Street fire station, and Kirtland Commons. Recommendations were also developed regarding the potential for washout of the access road to the middle school, which is a regional shelter. Furthermore, a subset of the critical facilities were carried forward to a scope development for future study funded by FEMA, DCRF, or CIRCA.

4.3. Municipal Capabilities

The Town of Deep River has a variety of natural hazard mitigation capabilities, including local regulations and ordinances, operational protocols, and emergency response capabilities. Table 4.4, Table 4.5, and Table 4.6 list legal, regulatory, technical, administrative and financial capabilities that support hazard mitigation.

Table 4.4. Legal and Regulatory Capability

Table 4.4.a. Codes, Ordinances & Requirements

Capability	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Building Code	Yes	Yes	No	Yes	All municipalities enforce the State Building Code
Zoning Code	Yes	No	No	No	Includes Flood Damage Prevention Ordinance
Subdivisions	Yes	No	No	No	
Post Disaster Recovery	Yes	No	No	No	
Real Estate Disclosure	Yes	No	No	Yes	State requirement
Growth Management	No	No	No	No	
Site Plan Review	Yes	No	No	No	
Special Purpose (flood management, critical areas)	Yes	Yes	No	Yes	State flood management statutes and regulations

Table 4.4.b. Planning Documents

Document	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
General Plan	Yes	No	No	Yes	The POCD is current
Floodplain or Basin Plan	No	No	No	No	
Stormwater Plan	Yes	No	No	Yes	MS4 community
Capital Improvement Plan	Yes	No	No	No	
Habitat Conservation Plan	No	No	No	No	
Economic Development Plan	Yes	No	Yes	No	Regional Comprehensive Economic Development Strategy
Emergency Response Plan	Yes	No	No	Yes	LEOP templates provided by DEMHS

Shoreline Management Plan	No	No	No	No	
Post Disaster Recovery Plan	Yes	No	No	Yes	LEOP templated provided by DEMHS

Table 4.5. Administrative and Technical Capability

Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Planning & Zoning, RiverCOG
Engineers or professionals trained in building or infrastructure construction practices	Yes	Nathan L. Jacobson & Associates - Town Engineer
Planners or engineers with an understanding of natural hazards	Yes	Supported by RiverCOG
Staff with training in benefit/cost analysis	No	Supported by RiverCOG
Floodplain manager	Yes	Zoning Enforcement Officer
Surveyors	No	Contracted as needed
Personnel skilled or trained in GIS applications	Yes	Supported by RiverCOG
Emergency manager	Yes	Emergency Management
Grant writers	Yes	Municipal Staff

Table 4.6. Financial Resources

Financial Resources	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	Yes
Withhold Public Expenditures in Hazard-Prone Areas	Yes (State)
State Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	No

Gaps in Capabilities

The Town's capabilities are limited by human and financial resources to handle regular operations, mitigation planning, and emergency response actions. As a small town in Connecticut, Deep River lacks significant staff and financial resources of larger communities to plan, fund, design, and implement mitigation projects. Thus, the Town seeks support of regional partners such as RiverCOG as well as grant programs in order to perform mitigation actions.

Following is a list of some highlighted capabilities identified by municipal staff.

4.3.1. Regulations and Ordinances

The Town of Deep River participates in the National Flood Insurance Program (NFIP) and is committed to continuing NFIP compliance and standards. The most recent FEMA Flood Insurance Study for the community, which identifies Special Flood Hazard Areas (SFHA), is dated February 6, 2013. Deep River enforces NFIP standards within its Zoning and Subdivision Regulations and Building Code (the Zoning Regulations include a Flood Plain District, which aligns with the FEMA-mapped Special Flood Hazard Area, or SFHA). The Zoning Enforcement Officer, Building Official and Town Engineer review and issue permits for new construction and substantial improvements, and conduct follow-up inspections to confirm compliance, within the Flood Plain District. Substantial improvements are defined as "any combination of… improvements… taking place within a ten-year period, in which the cumulative cost equals or exceeds 50% of the market value of the structure."

Other requirements of the Flood Plain District include:

- maintaining records of pre- and post-construction flood elevation and flood proofing certificates
- standards for manufactured homes and recreational vehicles
- increased elevation standards for all new construction of critical facilities in SFHAs

The Subdivision Regulations state that the Board of Fire Commissioners will review subdivision applications and determine whether a Fire Protection Plan is needed; this may include on-site water storage in a fire pond, well, or storage tank. Fire suppression requirements in subdivision and zoning regulations have become more stringent in recent years, such that new developments have more capabilities with regard to wildfire mitigation.

4.3.2. Operations and Procedures

Deep River has a Tree Warden, an active tree maintenance program, and a successful working relationship with the vegetation management department of the local energy provider, Eversource.

The Deep River Public Works Department has an active stormwater infrastructure maintenance schedule which has been successful at keeping infrastructure clear of debris and obstructions, and up to date.

4.3.3. Emergency Response Capabilities

Deep River maintains mutual aid agreements with neighboring municipalities for fire suppression resources. This mutual aid is implemented on a regular basis and has been effective.

The Town maintains a "rainy day" fund that can be allocated for emergency response and recovery if necessary. Town staff feel the fund has a sufficient balance for its needs at this time.

Evacuation routes have been mapped by the Town.

Deep River has the authority to order parking bans and can order evacuations in extreme situations if there is a significant threat of localized flooding.

The Department of Public Works maintains a fleet of trucks and other snow removal equipment and monitors weather forecasts during the winter months to mobilize in advance of storms. The town purchases adequate salt and sand supplies to apply to roads and conducts routine maintenance and replacement of equipment used for snow removal. A maintenance schedule is in place for all snow removal equipment to guarantee that the equipment is in good working order when the need arises. The Board of Finance and the Board of Selectmen work together to ensure proper funding is available to support these mitigation efforts.

Firefighting equipment needs are evaluated and assessed on 5-year, 10-year, and 15-year planning horizons such that the Town can pursue funding for future equipment needs.

4.3.4. Capital Improvements

The Capital Improvement Plan addresses municipal improvements including rights-of-way, land, housing, infrastructure or utilities for public purposes. Mitigation actions from this NHMP should be included in the CIP. Larger items such as bridge and culvert replacements and elevation of roads are included in the 5-year CIP. The CIP should be reviewed often so that it can include new mitigation action items each time the NHMP is updated. This is a good way for the town to prioritize mitigation items and use the Capital Improvement Program (CIP) to set aside funds for infrastructure improvements to reduce loss of life and property during natural hazard events.

4.3.5. Plan Integration with Other Planning Mechanisms

The Town of Deep River uses the mitigation plan to inform its 5-year capital improvement plan and associated annual budgets. Deep River staff reported that the plan has not been formally incorporated into other planning documents. There is new legislation (P.A. 25-33) that now requires cities and towns to incorporate climate vulnerability (specifically including flooding) and resilience strategies into Plans of Conservation and Development. Deep River plans to comply with that new requirement during the next POCD Update. Further, communities are now required to develop and maintain affordable housing plans. The mitigation plan will help inform siting criteria within that plan.

4.3.6. Outreach, Education, Communication, and Warnings

The Town of Deep River posts natural hazard information as well as shelter information on its website prior to and during storm events. The Town also participates in the CT Alerts emergency notification system, allowing people to sign up to receive emergency notifications by text message or automated phone call.

4.3.7. New Capabilities and Completed Actions

Since the last plan update in 2021 there have been many updated capabilities:

- The Town has deployed Community Connect. Community Connect is used to know the location of vulnerable populations during a hazard event. Ongoing work on this project is ensuring that people are using it; the Town is working with the Food Bank, community social services, and the housing authority to get more contacts.
- The Town is actively maintaining a comprehensive, "in-house" GIS database that will provide the Town with immediate capabilities of assessing areas.
- In lieu of developing a formal debris management plan, the Town secured a contract with a farm on Route 145 to chip debris.
- UConn CIRCA identified a resiliency opportunity area (ROAR) in Old Lyme. The potential related action is to "Work with CIRCA to develop a scope of work for study and concept design in the resiliency opportunity area related to the Deep River Center Critical Facilities and Regional Assets.

5. Hazard Mitigation Action Plan

This section presents the progress made since the 2021 action plan and establishes new goals, objectives and actions identified for the 2026-2030 planning horizon.

5.1. Previous Mitigation Actions Disposition

During the process of developing the 2021 Deep River Hazard Mitigation Plan, several hazard mitigation actions were identified to be pursued during the five-year planning horizon that followed. Table 5.1 presents the actions listed in that document, and the status of those actions.

Table 5.1. Status of Previous Mitigation Strategies and Actions.

Action	Description	Status	Details
01	**Business Recovery Plan** - Explore the needs of local businesses and incorporate these needs into a business recovery plan that can then be distributed to town businesses.	Carry Forward with Revisions	Action developed before the 2021 HMP. A plan has not been created although the Economic Development Commission has gotten 300 survey responses. Exact needs for specific businesses are unclear. This needs to be a more supportive action related to outreach and technical assistance. RiverCOG may be able to help with a unified approach for the region.
02	**Landlord Incentives** - Research what kind of incentives would motivate landowners to make the additional investment that would reduce potential damages to their properties and loss of life of their tenants.	Carry Forward	Compliance needs to be maintained as the minimum standard. There needs to be a process in place to identify and administer incentives. Local funding of incentives will be difficult.
03	**Local Social Resources -** In order to assist vulnerable populations during an event, these populations and their location need to be identified. Seek grants and identify a methodology to locate and track locations of these populations (i.e. elderly, disabled, non-English speaking, etc.)	Completed	Voluntary sign-up program (Community Connect) has been deployed. Other contact lists are maintained by the Food Bank and Social Services. Town is also working on an Everbridge subscription for emergency notifications.
04	**Possible Open Space Criteria -** The Conservation Commission will conduct a review of storm surge inundation areas for future open space considerations.	Carry Forward	Land Trust and Town can both pursue this type of criteria. This should be combined with Action DRI-008 moving forward, as the Town is interested in acquiring more open space for parks including expanding existing parks.

Action	Description	Status	Details
05	**Emergency Supply Cache -** Pursue the creation of emergency supply caches that include drinking water and emergency supplies such as cots for sheltering.	Carry Forward with Revisions	The intent of the action has been met; supplies are shared regionally between Chester, Essex, and Deep River who use the Winthrop Middle School as a regional shelter. A formal inventory of the supplies held by each Town is needed. If funding is secured, purchases should focus on non-perishable equipment such as water purification tablets instead of caches of water unless the recurring expense to store emergency water supply is desired.
06	**GIS Database -** Pursue funding to develop and maintain a comprehensive, "in-house" GIS database that will provide the town with immediate capabilities of assessing areas.	Completed	The database is complete for assessment data and can be amended when needed.
07	**State Road Reconstruction -** Collaborate with Connecticut DOT to address the roadways of concern that are under the state's jurisdiction.	Carry Forward	Noteworthy reconstruction projects on State roads have not occurred over the last five years. Essex Street should be elevated as a very high tide will result in flooding.
08	**Land Acquisition -** Pursue funding for acquisitions for both open space and public park creation	Carry Forward	Land Trust acquired land along the Connecticut River in 2021-2022, and other land has been donated to the State as well as to the regional school district. Combine with DRI-004 moving forward, recognizing the role the Land Trust can play in acquiring land.
09	**Public Information -** Develop a preparedness webpage to cover all hazards, and include information such as evacuation routes, hazard areas, shelter location, insurance information, and mitigation efforts property owners can easily pursue. Conduct outreach to RL and SRL owners to encourage review of alternatives.	Carry Forward with Revisions	A dedicated webpage has not been setup to address natural hazards. The Town creates pages and notifications on its webpage prior to natural hazard events that provide pertinent information. The revised action should also incorporate the use of social media as well as an emergency notification system. Given the limited numbers of RL properties in town, specific outreach to these properties does not need to be incorporated into the modified action.

Action	Description	Status	Details
10	**Public Outreach -** Develop a program to inform residents on natural hazards. Include drought and target outreach to socially vulnerable populations. Action items may include: - Collecting readily available brochures and pamphlets and distribute them more widely, - Conduct annual educational outreach in schools to educate on hazards, - Educate and encourage resident on the benefits of elevating above BFE.	Carry Forward with Revisions	Town staff expressed a desire for more education for town officials so that town officials can then educate residents and provide the brochures and pamphlets as supplemental information. The modified action would include attending appropriate trainings.
11	**Debris Management Plan -** Pursue the development of a formal debris management plan. Address the need to increase the capacity of the current debris management site.	Completed	A formal plan was not developed. Instead, a contract was made with a farm to chip debris, and then the chipped material is delivered to the Transfer Station. This keeps the chipped debris out of streams, rivers, and forests.
12	**Firefighting Capabilities -** Equipment needs are evaluated and assessed on a 5, 10- and 15-year planning horizon. Pursue funding for future equipment needs to ensure response capabilities, such an engine and SCBA (breathing apparatus).	Carry Forward with Revisions	This action was focused on emergency response, and some new equipment was obtained. The modified action should focus on coordination with DEEP and DEMHS, a Forest Management Plan, and open burning education. One of the fire houses is floodprone but modifications to or replacement of that structure should be transferred to a different action.
13	**Benefit/Cost Analysis (RL Properties and Buy Outs) –** Evaluate opportunities for public funding of mitigation on private property where public benefits exceed the cost for RL properties or those otherwise eligible for buyout	Deleted	There are very few RL properties in town and the Town has no intention to acquire, or be a subapplicant on behalf of, these properties relative to a FEMA grant. Instead, the Town wants to pursue an action related to the sluiceway at 12 Bridge Street.

5.2. Updated Mitigation Goals, Objectives and Strategies

As noted in Section 3 of Volume 1, all the RiverCOG participating communities, including Deep River, participated in setting regional goals and objectives. Deep River has confirmed these goals and objectives valid for the Town's annex. The three goals and objectives are as follows:

Goal 1: Promote implementation of sound flood management and other natural hazard mitigation principles on a regional and local level. Note: Covers future development through policy, planning, regulation, emergency services, and environmental strategies.

- **Objective for Goal 1:** To promote the development, improvement and implementation of programs, policies, regulations and emergency services that result in the reduction of long-term risks to life and property.

Goal 2: Implementation of effective natural hazard mitigation projects at the regional and local level regional and local level. Note: Covers infrastructure and building related projects – the existing built environment.

- **Objective for Goal 2:** To enhance the ability of RiverCOG, other regional entities, and local communities to reduce or eliminate risks to life and property from natural hazards through cost-effective hazard mitigation projects, including avoidance.

Goal 3: Increase research, planning and outreach activities for the mitigation of natural hazards on a regional and local level. Note: Covers the people component of mitigation via outreach and education, and integration with other planning and continuous improvement through increased research.

- **Objective for Goal 3:** To increase general awareness of the region's natural hazards and encourage State agencies, local communities, and the public to be proactive in taking actions to reduce long-term risk to life and property.

The local planning team of Deep River reviewed these goals and objectives during meetings in June of 2025 and acknowledged that they are still aligned with the priorities of the Town.

5.2.1. Prioritization of Mitigation Strategies

In considering which projects, processes, and other measures to undertake in the upcoming plan period, municipal and regional officials evaluated the need to address problems and vulnerabilities in their communities against the communities' resources and capabilities. To prioritize mitigation strategies, a set of criteria commonly used by public administration officials and planners was applied to each proposed strategy. The method, called STAPLEE, is outlined in FEMA planning documents such as Developing the Mitigation Plan (FEMA 386-3) and Using Benefit-Cost Review in Mitigation Planning (FEMA 386-5). STAPLEE stands for the "Social, Technical, Administrative, Political, Legal, Economic, and Environmental" criteria for making planning decisions. Benefit-cost review was emphasized in the prioritization process. Criteria were divided into potential benefits (pros) and potential costs (cons) for each mitigation strategy. The following questions were asked about the proposed mitigation strategies:

Social:

- Benefits: Is the proposed strategy socially acceptable to the community?
- Costs: Are there any equity issues involved that would mean that one segment of the community could be treated unfairly? Will the action disrupt established neighborhoods, break up voting districts, or cause the relocation of lower-income people? Is the action compatible with present and future community values?

Technical:

- Benefits: Will the proposed strategy work? Will it reduce losses in the long term with minimal secondary impacts?
- Costs: Is the action technically feasible? Will it create more problems than it will solve? Does it solve the problem or only a symptom?

Administrative:

- Benefits: Does the project make it easier for the community to administrate future mitigation or emergency response actions?
- Costs: Does the community have the capability (staff, technical experts, and/or funding) to implement the action, or can it be readily obtained? Can the community perform the necessary maintenance? Can the project be accomplished in a timely manner?

Political:

- Benefits: Is the strategy politically beneficial? Is there public support both to implement and maintain the project? Is there a local champion willing to see the project to completion? Can the mitigation objectives be accomplished at the lowest cost to the community (grants, etc.)?
- Costs: Have political leaders participated in the planning process? Do project stakeholders support the project enough to ensure success? Have the stakeholders been offered the opportunity to participate in the planning process?

Legal:

- Benefits: Is there a technical, scientific, or legal basis for the mitigation action? Are the proper laws, ordinances, and resolutions in place to implement the action?
- Costs: Does the community have the authority to implement the proposed action? Are there any potential legal consequences? Will the community be liable for the actions or support of actions or for lack of action? Is the action likely to be challenged by stakeholders who may be negatively affected?

Economic:

- Benefits: Are there currently sources of funds that can be used to implement the action? What benefits will the action provide? Does the action contribute to community goals such as capital improvements or economic development?
- Costs: Does the cost seem reasonable for the size of the problem and the likely benefits? What burden will be placed on the tax base or local economy to implement this action? What proposed actions should be considered but be tabled for implementation until outside sources of funding are available?

Each proposed mitigation strategy presented in this plan was evaluated and quantitatively assigned a "benefit" score and a "cost" score for each of the seven STAPLEE criteria as outlined below:

- For potential benefits, a score of "1" was assigned if the project will have a beneficial effect for that criterion or a "0" if the project would have a negligible effect or if the questions were not applicable to the strategy.
- For potential costs, a score of "-1" was assigned if the project would have an unfavorable impact for that criterion or a "0" if the project would have a negligible impact or if the questions were not applicable to the strategy.
- Technical and Economic criteria were double weighted (multiplied by two) in the final sum of scores.
- The total benefit score and cost score for each mitigation strategy was summed to determine each strategy's final STAPLEE score.

Although a community may implement recommendations as prioritized by the STAPLEE method, an additional consideration is important for those recommendations that may be funded under the FEMA mitigation grant programs. To receive federal funding, the mitigation action must have a benefit-cost ratio (BCR) that exceeds a value of 1.0. Calculation of the BCR is conducted using FEMA's Benefit Cost Analysis (BCA) toolkit. The calculation method may be complex and vary with the mitigation action of interest. Calculations are dependent on detailed information such as property value appraisals, design and construction costs for structural projects, and tabulations of previous damages or NFIP claims. The BCR scoring system used is outlined in Table 5.2.

Table 5.2. BCR Scoring System

Scoring	Benefits	Costs
Low: 0-1 points	Few would benefit; the impacts being addressed are not severe; benefits may be short term	Likely to be done by existing personnel with little impact on budget; not complicated to accomplish. Costs to implement is likely to be under $10,000.
Medium: 2-3 points	Benefits may be felt by many in the community; the action may solve a problem or otherwise benefit the community for several years	May need additional funding or studies; may require change in practices; costs to implement may be between $10,000 and $100,000
High: 4-5 points	Benefits would accrue to many in the community; benefits may accrue to the most vulnerable or those not able to recover on their own; benefits would be long term and may permanently protect from damages	Likely to cost over $100,000 and require obtaining funding outside of operating budget; complicated, lengthy process to implement

The STAPLEE method accounts for cost-benefit considerations both directly (through the "Economic" category) and indirectly (through general consideration of costs and benefits of actions). Additionally, the range of estimated costs of each strategy are included in the STAPLEE table. The assumed costs of projects and generalized presentation of the benefits accruing from them are not based on specific detailed cost estimates as that level of analysis is not appropriate for this type of planning effort. For some projects, such as routine or recurring operations that are established practices and conducted with municipal general operating funds and existing staff, the STAPLEE results can be the only explicit comparison of costs and

benefits. For projects for which bonding and/or grant funding will be sought, more in-depth evaluations of costs and benefits will be required. As project scopes are detailed, benefits and costs can be identified with more precision, and the benefit-cost ratio which results from a full benefit-cost analysis may differ from the planning-level STAPLEE results presented here.

It should be noted that higher BCRs do not necessarily correspond to high priorities, nor do low BCRs or BCRs under 1.0 correspond to low-priority projects. An important project with a high priority to the community may have a lower BCR because of its complexity, assumed high expense, and other costs. Communities should not be discouraged or deterred from further consideration of projects that have low BCRs or BCRs less than 1.0 until additional, more specific evaluations of the costs and benefits have been undertaken.

5.2.2. 2021-2026 Prioritized Hazard Mitigation Actions

In addition to the regional mitigation actions endorsed by Deep River and outlined in Section 3 of Volume 1 of the regional plan, the Town identified or carried over from the last update, ranked and evaluated the actions in Table 5.3. For each identified action, the goal and objective it addresses is noted. Additionally, a description, lead agency, indication of costs and potential funding sources, and an estimated timeline for completion is included. Also included are the hazards addressed by a specific action.

Figure 5.1 shows the locations of the projects listed in Table 5.3 with spatial elements that have been carried forward. Additionally, completed projects identified in Table 5.1 with spatial elements are also shown on the map. Projects carried forward are identified by their activity number (from Table 5.3) while completed projects are identified by the description of the project completed.

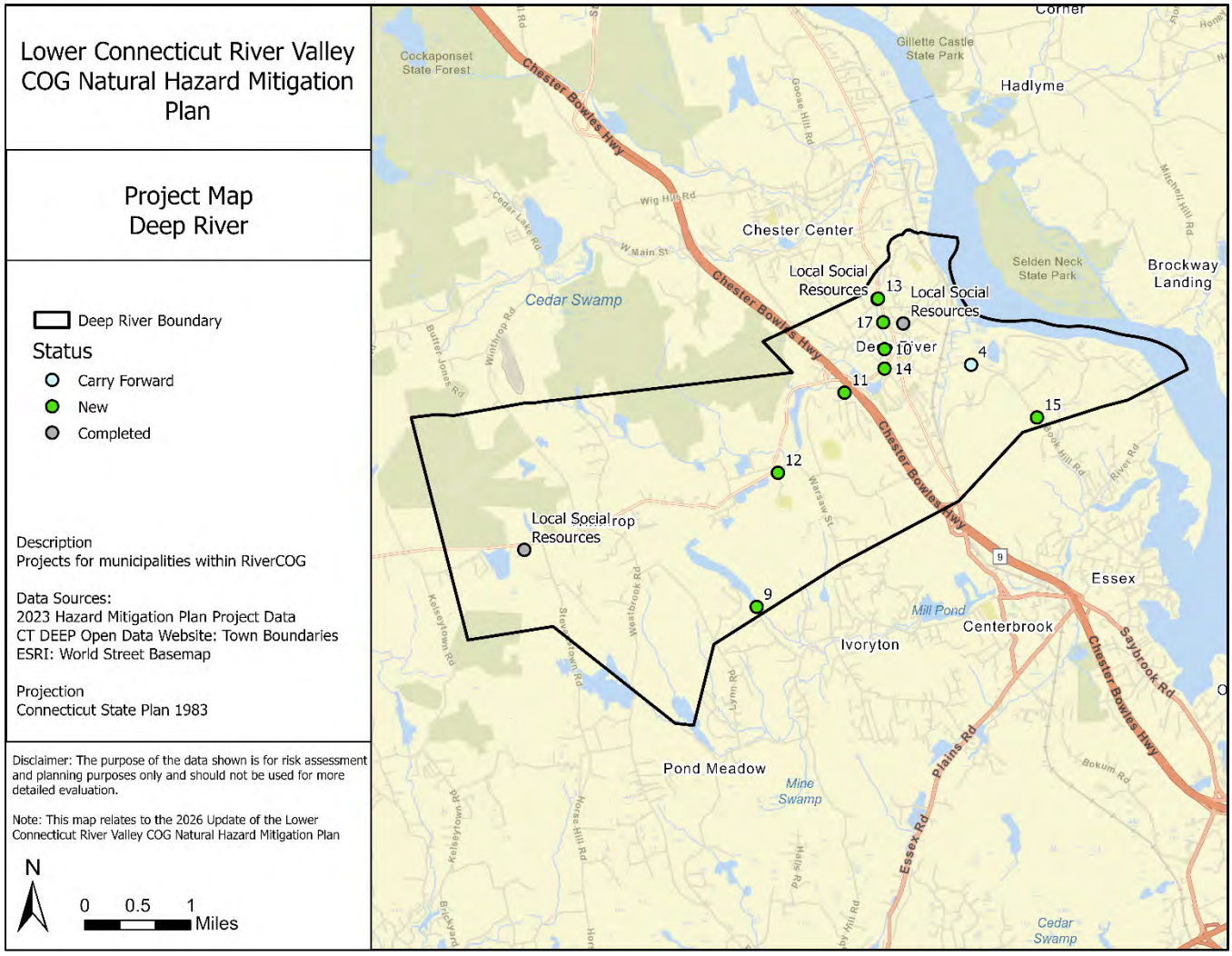


Figure 5.1. Carried Forward, Completed, and Current Projects in Deep River

Table 5.3. Deep River Hazard Mitigation Strategies and Prioritization

KEY: SW= Severe Weather, TW = Tornado/Wind, ET = Extreme Temperatures, WS=Winter Storm, F = Flood, TI = Tree Damage and Invasive Species, WF = Wildfire, D = Drought, E = Earthquake, CC = Climate Change

Town Activity Number	Goal / Objective	Activity	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria															
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	Total STAPLEE Score / Priority
01	1	**Business Recovery Plan** Generate a menu of supportive actions that can be available to local businesses, such as technical assistance as well as potential provision of generators (provided that hookups match the Town's specifications).	Select Board, EDC	$1,000 - $5,000	OB	2027 to 2030	**SW, TW, ET, WS, F, TI, WF, D, E, CC**	1	0	0	0	1	-1	1	0	0	0	1	0	0	0	4/Med

Town Activity Number	Goal / Objective	Activity	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score / Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
02	1	**Landlord Incentives** Research what kind of incentives would motivate land-owners to make the additional investment that would reduce potential damages to their properties and loss of life of their tenants.	Select Board, EDC	$1,000 - $5,000	OB	2027 to 2029	SW, TW, WS, F, E	1	0	1	0	1	0	0	0	1	0	1	0	0	0	7/High
03	1	**Emergency Supply Cache** The Cache is shared between towns. Create an annual inventory of the type and locations of all supply materials and identify opportunities to increase variety of available emergency supply materials, such as bottled water (or water purification tablets/equipment).	EMD	$20,000 - $50,000	OB, Grant	Annually	SW, TW, WS, F, E	1	0	1	0	1	-1	1	0	0	0	0	0	0	0	4/Med

Town Activity Number	Goal / Objective	Activity	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score / Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
04	2	**Road Reconstruction** Collaborate with Connecticut DOT to address the roadways of concern that are under the state's jurisdiction. In particular, Essex Street should be elevated as a very high tide will result in flooding.	DPW, Select Board	$1,000 - $5,000	OB	Annually	F	1	0	1	0	1	-1	1	0	0	0	1	0	1	0	7/High
05	1	**Land Acquisition** In coordination with local land trusts, pursue funding for acquisitions for both open space and public park creation, with consideration given to storm surge inundation areas for future open space.	CIWC, P&Z, Parks & Rec	$50,000- $100,000	Grant	Annually	F, CC	1	0	1	0	1	0	1	0	0	0	1	0	1	0	8/High

Town Activity Number	Goal / Objective	Activity	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria															
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	Total STAPLEE Score / Priority
06	3	**Public Information** Develop a preparedness webpage to cover all hazards, and include information such as evacuation routes, hazard areas, shelter location, insurance information, and mitigation efforts property owners can easily pursue including signing up for the Town's emergency notification system. In addition to the website, explore other methods to communicate the above listed materials, for example social media.	EMD	$5,000 - $10,000	OB	2028	**SW, TW, ET, WS, F, TI, WF, D, E, CC**	1	0	0	0	1	-1	0	0	0	0	0	0	0	0	1/Low

Town Activity Number	Goal / Objective	Activity	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score / Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
07	3	**Public Outreach** Provide funding for Town staff to attend training programs and develop a program to inform residents on natural hazards. Action items may include: - Collecting readily available brochures and pamphlets and distribute them more widely - Conduct annual educational outreach in schools to educate on hazards - Educate and encourage residents on the benefits of elevating above BFE. - Include drought and target outreach to socially vulnerable populations.	EMD	$5,000 - $10,000	OB	2027 to 2029	**SW, TW, ET, WS, F, TI, WF, D, E, CC**	1	0	1	0	1	-1	0	0	0	0	0	0	1	0	4/Med

Town Activity Number	Goal / Objective	Activity	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score / Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
08	1	**Firefighting Capabilities** The Fire Department will coordinate with DEEP and DEMHS to do the following: -Develop a list of potential actions to reduce wildfire hazard in the wildland interface. -Develop a forest management plan. -Develop an outreach campaign on open burn education to increase awareness.	FD	$5,000 to $25,000	OB	2027 to 2028	WF, D	1	0	1	0	1	0	1	0	0	0	1	0	1	0	8/High
09	1	**EAP for Bushy Hill Pond Dam** - Petition the DEEP to require the dam owner to develop an EAP for the dam and share with the emergency management directors of all of the affected towns.	BOS, EMD	$0 to $1,000	OB	2027	F	1	0	1	0	1	0	1	0	0	0	1	0	1	0	8/High

Town Activity Number	Goal / Objective	Activity	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score / Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
10	2	**Resilient Connecticut, SRC, and/or DCRF Program Deployment for Deep River Center:** Work with CIRCA to develop scope of work for study and concept design in the "resilience opportunity area" in Deep River center, which was incorporated into the detailed scope developed under the SRC grant in 2026. The study will include an evaluation of the flood profile through the entire Town center and review options such as modifying dams and crossings.	BOS, EMD	$0 to $1,000 + staff costs	CIRCA, CT Sea Grant, and DEEP (DCRF)	2027 to 2030	All	1	0	1	0	1	0	1	0	0	0	1	0	1	0	8/High

Town Activity Number	Goal / Objective	Activity	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria															
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	Total STAPLEE Score / Priority
11	2	**Evaluate (with Studies and Designs) Potential Mitigation Actions to Reduce Access-Related Risks:** -Hemlock Drive (sole access point to large neighborhood - second egress to High School proposed) -Essex Street due to tidal or other flooding from Connecticut River -Along Hoopole Road downstream of Cranberry Pond -Plains Road at bridge over Deep River	BOS, EMD, FD, PW	$50,000 to $100,000	OB, DCRF	2027 to 2032	F, CC	1	0	1	0	1	0	1	0	1	0	1	-1	1	0	7/High

Town Activity Number	Goal / Objective	Activity	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score / Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
12		**Evaluate (with Studies and Designs) Potential Mitigation Actions to Reduce Washout Risk**: Access road to John Winthrop Middle School (the regional shelter).	BOS, EMD, FD, and COG	$100,000-$500,000	FEMA HMA, STEAP, CIP, DCRF	2027-2028	F, CC	1	0	1	0	1	0	0	0	1	0	1	0	1	0	8/High
13	2	**Evaluate (with Studies and Designs) Potential Mitigation Actions to Reduce Flood Risk**: Housing Authority (Kirtland Commons)	BOS, EMD, FD, PW	$100,000-$500,000	FEMA HMA, STEAP, CIP, DCRF	2029-2030	F, CC	1	0	1	0	1	0	1	0	1	0	1	-1	1	0	7/High
14		**Evaluate (with Studies and Designs) Potential Mitigation Actions to Reduce Flood Risk**: New flood-resistant Fire House at the intersection of Union Street and Elm Street	BOS, EMD, FD, PW	$100,000-$500,000	FEMA HMA, STEAP, CIP, DCRF	2029-2030	F, CC	1	0	1	0	1	0	1	0	1	0	1	-1	1	0	7/High

Town Activity Number	Goal / Objective	Activity	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score / Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
15	2	**Evaluate Potential Mitigation Actions to Reduce Icing Risk** - on Book Hill Road near Essex to mitigate black ice conditions in winter	BOS, PW	$10,000 to $25,000	OB, CIP	2028	WS	1	0	1	0	1	0	1	0	0	0	1	0	1	0	8/High
16	1	**Create Geospatial Inventory of Municipal Bridges and Culverts** - Including infrastructure condition and engineering design storm will help Town to prioritize potential infrastructure for replacement	BOS, PW	$10,000 to $25,000	OB, DCRF	2027 to 2028	F, CC	1	0	1	0	1	0	1	0	0	0	0	0	0	0	5/Med

Town Activity Number	Goal / Objective	Activity	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria															
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	Total STAPLEE Score / Priority
17	1	**Resolve Sluiceway Concerns at 12 Bridge Street** - A privately-owned sluiceway has been managed by the Town for many years to prevent flooding of nearby properties but the Town is concerned about liability. Secure legal opinions from Town Counsel and DEEP regarding continued Town operation of the sluiceway, and consider alternatives such as dam removal to reduce potential flood risk. Coordinate with Action #10 above.	BOS, PW	$10,000 to $25,000 for opinions	DCRF, CIP, OB	2027	F, CC	1	0	1	0	1	0	0	0	1	0	0	0	0	0	5/Med

LOWER CONNECTICUT RIVER VALLEY COUNCIL OF GOVERNMENTS
HAZARD MITIGATION PLAN 2026 UPDATE

TOWN OF DURHAM MUNICIPAL ANNEX

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1. Contact Information

1.1. Point of Contact

Table 1.1. Town of Durham Contact Information

Information	Town of Durham
Contact Name	Brendan Rea (First Selectman)
Address	30 Town House Rd. Durham, CT 06422
Telephone	860.349.3625
Email	brea@townofdurhamct.org

1.2. Local Planning Team

The following representatives listed in Table 1.2 participated in meetings and provided input, data, and council toward the development of Volume I and this Durham, Connecticut Annex.

Table 1.2. Town of Durham Planning Team

Name	Title
Jack Trifilo	Emergency Management Director
John Jenkins	Public Works Foreman
Robert Chadd	Deputy EM Deputy Director
Brendan Rea	First Selectman
Frank DeFelice	Chaiman, Planning and Zoning
Robin Newton*	Town Planner

1.3. Lower Connecticut River Valley Council of Governments

Table 1.3. RiverCOG Contact Information

Information	RiverCOG Information
Contact Name	Margot Burns – Senior Environmental Planner
Address	RiverCOG 145 Dennison Rd. Essex, CT 06426
Telephone	(860) 581-8554 x 702
Email	mburns@rivercog.org

2. Jurisdiction Profile

2.1. Town Profile

The Town of Durham is a rural community of approximately 7,182 residents, located about halfway between Hartford and New Haven. Durham is conveniently situated with easy access to Interstate highway routes 91, 84, 95 and State highway routes 9 and 691.

Figure 2.1 shows the location and corporate boundaries of Durham.

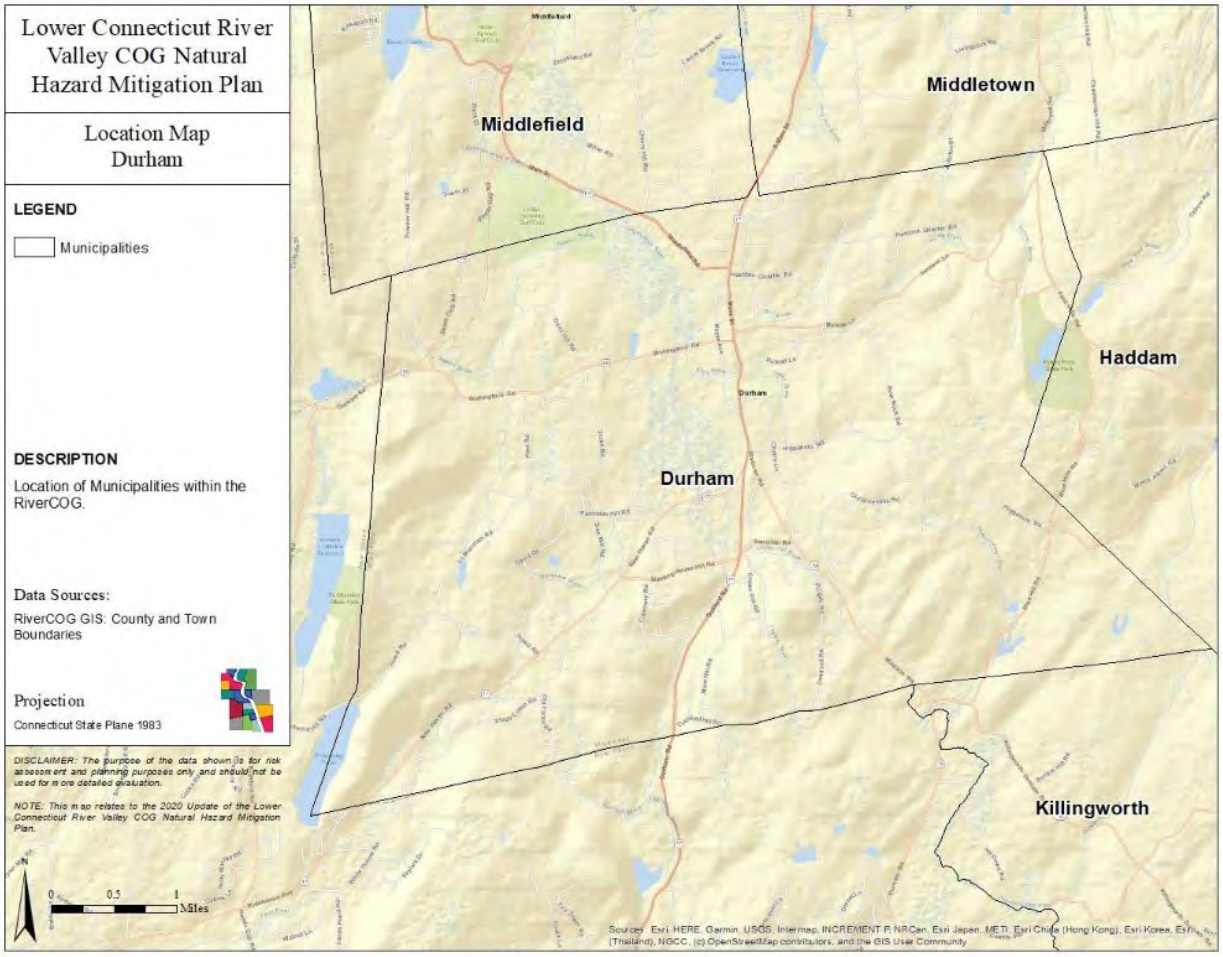


Figure 2.1. Durham Location

Durham is primarily residential, with a few remaining farms and a several small business parks. Three churches are conveniently located on Main Street, along with municipal buildings and a municipal library. The school system and transfer station are regionalized with the neighboring community of Middlefield. Town government is conducted by an elected three-member Board of Selectmen, with the position of First Selectman being full time. The legislative body of the municipality is the Town Meeting.

Durham is a former farming village on the Coginchaug River in central Connecticut. According to the United States Census Bureau, the town has a total area of 23.8 square miles (62 km2), of which, 23.6 square miles (61 km2) is land and 0.2 square miles (40 ha or 0.67%) is water. The town center CDP has a total area of 6.3 square miles (16 km2). 6.3 square miles (16 km2) of it is land and 0.16% is water.

Figure 2.2 shows land cover in Durham.

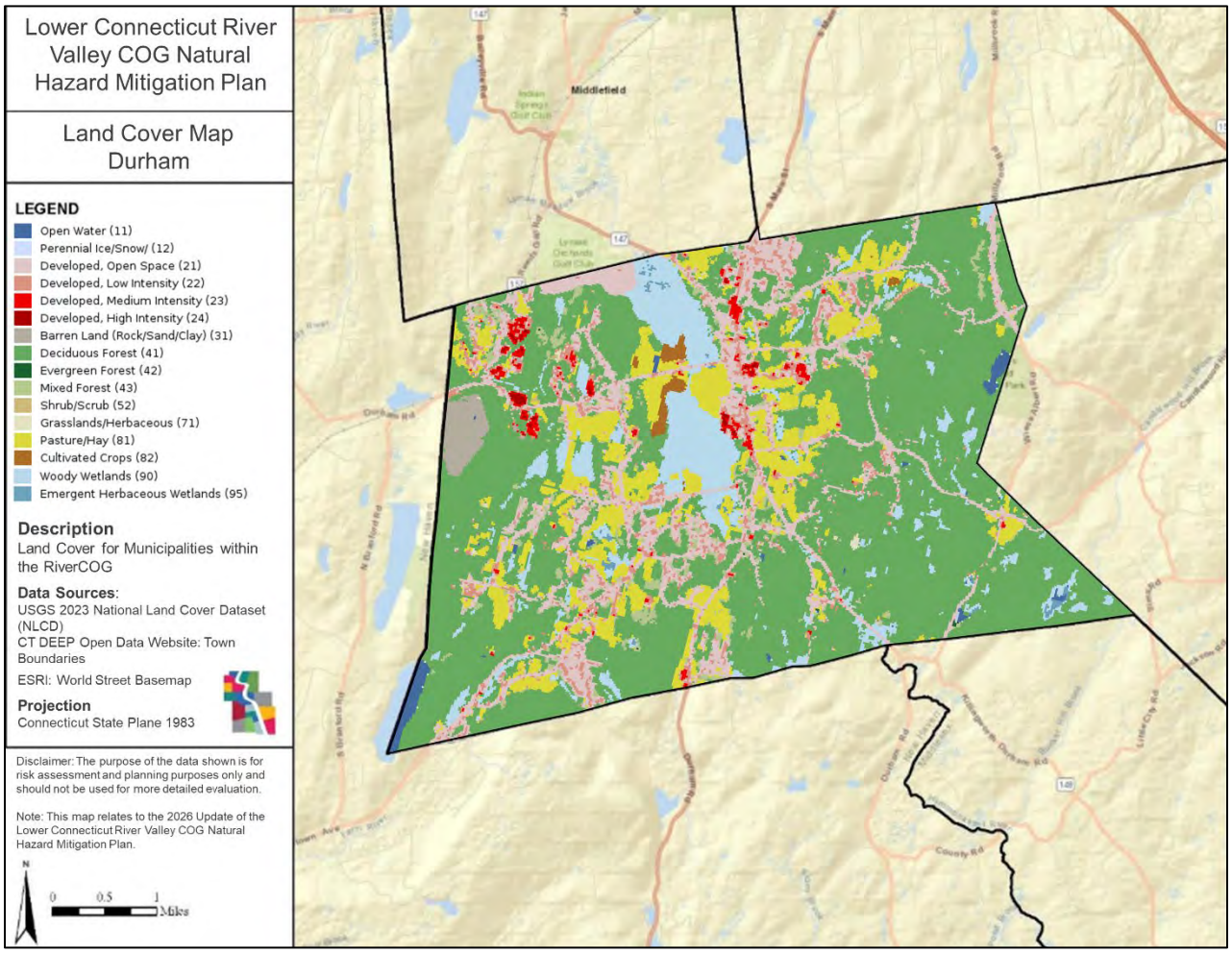


Figure 2.2. Durham Land Cover

The west side of Durham is flanked by the Metacomet Ridge, a mountainous trap rock ridgeline that stretches from the Long Island Sound to almost the Vermont border. Notable features of the Metacomet ridge in Durham include Trimountain, Fowler Mountain, Pistapaug Mountain, and the north tip of Totoket Mountain. The 50-mile (80-kilometer) Mattabasett Trail traverses the ridge. Miller's Pond State Park is located within the town.

Durham is a small rural community where town officials can monitor areas that need special planning and maintain the character of the municipality and safety of its residents and visitors. The main artery through Durham is a state road. It is one of the municipal vulnerabilities to floods, due to insufficient culvert sizes and channel blockages. This is the State's responsibility. The Town of Durham was incorporated in 1708.

According to the 2023 American Community Survey (ACS) the population of Durham is 7,182 which is a 0.5% decrease from 2019 U.S. Census records.[1] Figure 2.3 provides a demographic profile for Durham.

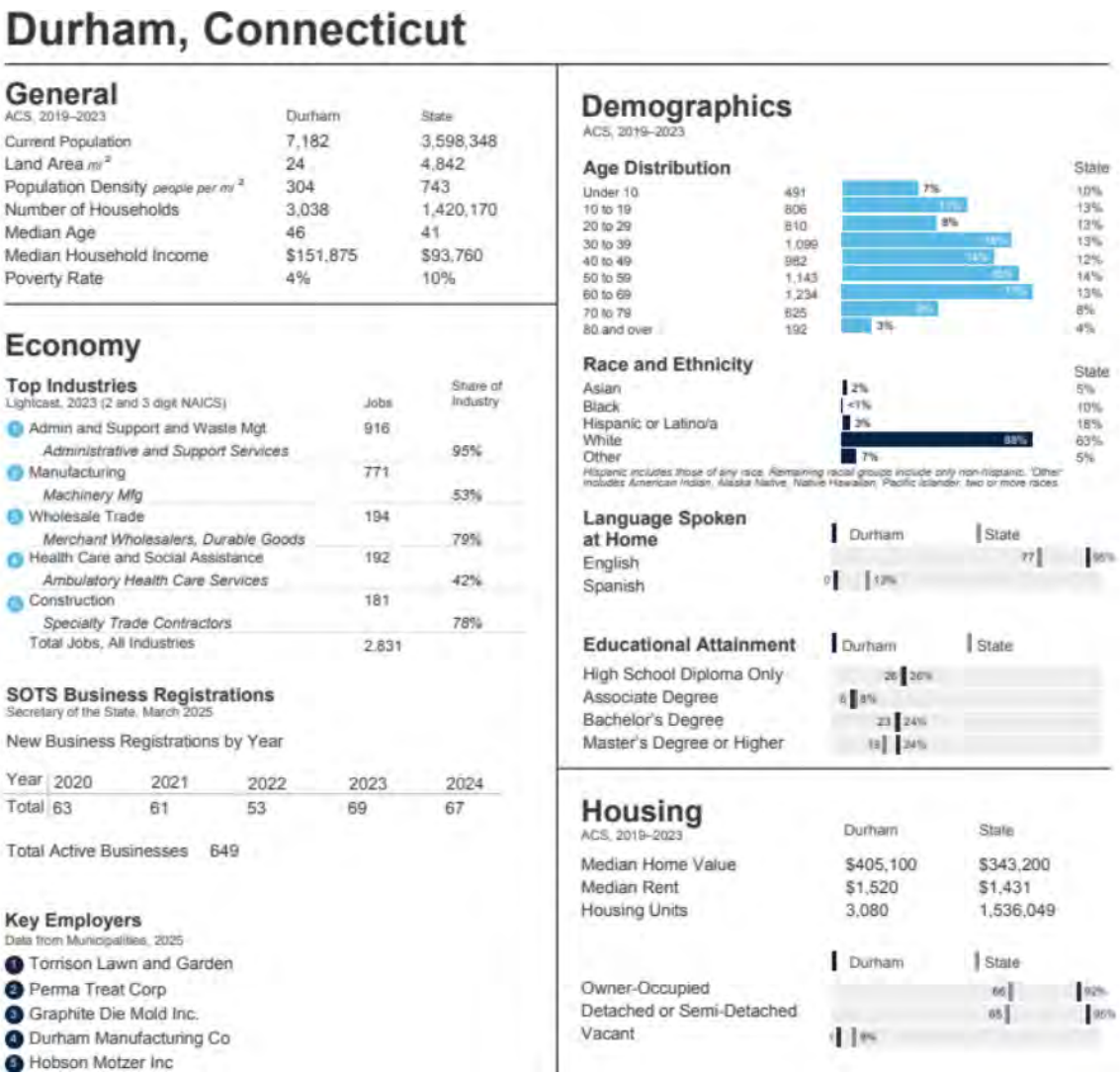


Figure 2.3. Town of Durham Demographics

[1] https://s3-us-west-2.amazonaws.com/cerc-pdfs/2025/Durham.pdf

2.2. Climate

Average weather data in Durham was sourced from the Weather Spark website (weatherspark.com). In Durham, the summers are warm and humid, the winters are freezing and snowy, and it is partly cloudy year round. Over the course of the year, the temperature typically varies from 21°F to 82°F and is rarely below 6°F or above 90°F. The warm season lasts for 3.5 months, from June 1 to September 16, with an average daily high temperature above 73°F. The hottest month of the year in Durham is July, with an average high of 82°F and low of 64°F. The cold season lasts for 3.3 months, from December 2 to March 13, with an average daily high temperature below 45°F. The coldest month of the year in Durham is January, with an average low of 22°F and high of 36°F.

A wet day is one with at least 0.04 inches of liquid or liquid-equivalent precipitation. The chance of wet days in Durham varies throughout the year. The wetter season lasts 4.5 months, from April 1 to August 17, with a greater than 28% chance of a given day being a wet day. The month with the most wet days in Durham is June, with an average of 9.3 days with at least 0.04 inches of precipitation. The drier season lasts 7.5 months, from August 17 to April 1. The month with the fewest wet days in Durham is February, with an average of 6.7 days with at least 0.04 inches of precipitation.

2.3. Government Style

Town government is conducted by an elected three-member Board of Selectmen, with the position of First Selectman being full time. The legislative body of our municipality is the Town Meeting. We encourage involvement in community activities, boards, and commissions. Meeting dates are posted online and on the public bulletin board in the Town Hall.

2.4. Development Trends

There has been little new development in Durham since the last plan. Currently nine homes are under construction, and a new subdivision is proposed. Most development in Durham consists of improvements and renovations to existing buildings. There have been no new developments in floodplains. The Town Planner will assess the viability of Low Impact Development (LID) within the Town and propose regulations for incorporation into site plan approvals where appropriate. The floodplain regulations will be updated to ensure continued compliance with minimum standards.

2.5. Town-Specific Hazard Concerns

Municipal staff reported several specific hazard concern issues, which are listed below. The information below is intended to supplement the hazard specific analysis completed in Section 2, of Volume I of this plan. Not all hazards relevant to Durham are covered in the annex.

A note: To preserve the reader's ability to align RiverCOG-Level and town-level hazard identification and risk analysis, the order of the following hazards aligns with the order of hazards in Volume I.

Individual towns have ranked these hazards differently. This town-level ranking can be found in Section 3.3 Hazard Risk Ranking.

2.5.1. Severe Winter Weather

Winter storms are one of the three most significant hazards for the Town of Durham. Roof collapse is also a major concern during snow events. A major ice storm can cause major road closures and power outages. Since the last plan update, Durham has not received any FEMA Public Assistance for winter storm events. With the exception of the 2025/2026 winter season, winters have seen less disruptive events since the last plan update.

2.5.2. Flooding

Flooding - Riverine and Inland Flooding

Higganum Road near Cherry Lane had a road flooding problem that has been mostly mitigated with State Local Transportation Capital Improvement Program (LOTCIP) funding by replacing an undersized culvert. Parmelee Hill Road at Route 17 floods, but there are no buildings and it has never been a priority. Meeting House Hill Road, at the Coginchaug River ponds from time to time and DOT has done some flood mitigation. Durham differs from the other municipalities in that it does not adjoin the Connecticut River. The streams passing through Durham and under low lying roads are a cause of concern during significant rain events (culvert replaced). Most of Durham's floodplain area is near White Farms where there is little development.

Perhaps the most critical resilience issue facing Durham is the flooding that has resulted from impeded flows of the Coginchaug River. The river flows in a northerly direction through Durham, Middlefield and Middletown, where it discharges to the Mattabesset River before it's confluence with the Connecticut River. Historically, the silt and wooden debris that has accumulated in its channel and culverts was removed periodically, to ensure that flows were sustained; however, this work has not been performed in many years. The result is that the land adjacent to the river which had not normally flooded, now experiences significant flooding. A major resilience goal of the towns of Durham and Middlefield is to have these accumulations of silt and wooden debris removed from the river's channel to alleviate flooding.

Another resilience concern is related to the town's built environment. As storms have increased in intensity and frequency, established engineering practices such as the *Connecticut Stormwater Quality Manual* now suggest (or even require) that the first 1.3 inches of rainfall must be treated. Historically, only the first 1.0 inch of rainfall was required to be treated. This means that many of the town's storm water culverts, pipes, and basins may be undersized to handle future storm events. Upgrading the town's stormwater infrastructure will require investment to strengthen the town's ability to manage flood water in the future.

2.5.3. Dam Breach

Dams, due to both the risk of their failure and their inability to operate effectively during flood conditions due to poor maintenance, are of some concern to the Town. The Town of Durham has a total of 28 dams registered with CT DEEP. The majority are farm dams and are classified as negligible or low hazard. Four dams are classified as moderate hazard (BB) and two as significant hazard (B). There are no high hazard dams in Durham.

Figure 2.4 shows the location of all dams within Durham. Moderate, Significant, and high hazard-class dams are presented in Table 2.1. A full list of dams is provided in Appendix B.

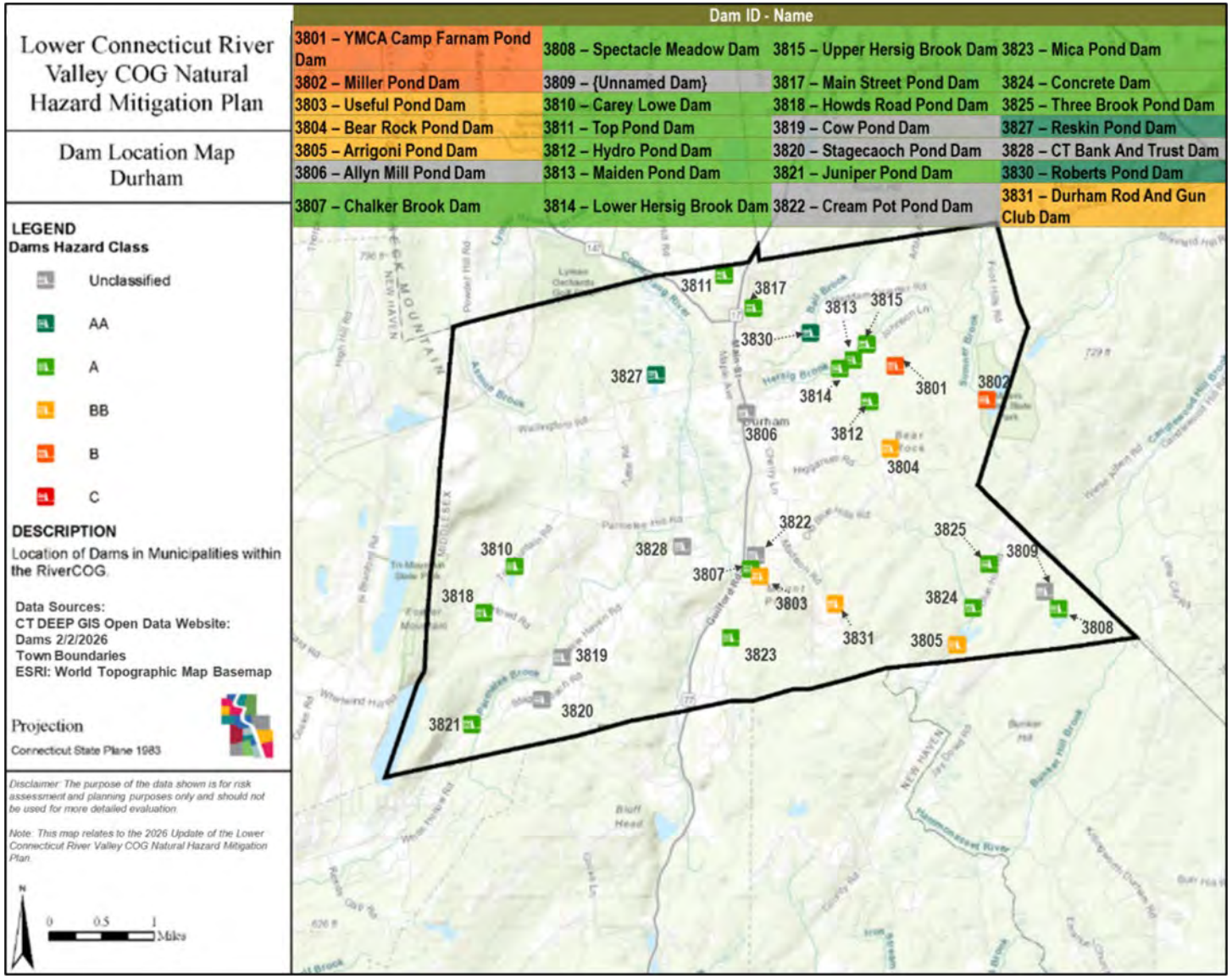


Figure 2.4. Location of Dams, Durham, CT

Table 2.1. Moderate, Significant and High Hazard Dams, Durham, CT

CT Dam #	Dam Name	Hazard Class	Owner	River
3803	USEFUL POND DAM	BB-Moderate	JAMES & SUSAN ARRIGONI	CHALKER BROOK
3804	BEAR ROCK POND DAM	BB-Moderate	LESZEK & BOZENA GAWRON	HERSIG BROOK TRIBUTARY
3805	ARRIGONI POND DAM	BB-Moderate	RICHARD & KATHRYN SPERO	HAMMONASSET RIVER
3831	DURHAM ROD AND GUN CLUB DAM	BB-Moderate	DURHAM ROD AND GUN CLUB	NOT LISTED
3802	MILLER POND DAM	B-Significant	CONNECTICUT DEEP	SUMMER BROOK
3801	YMCA CAMP FARNAM POND DAM	B-Significant	FARNHAM NEIGHBORHOOD CAMP	HERSIG BROOK TRIBUTARY

2.5.4. Hurricanes and Tropical Storms

Hurricanes pose the most catastrophic damage potential of any natural disaster phenomenon. Hurricanes bring strong winds, which result in power outages, fallen trees, and debris that causes blocked roads. Tree maintenance and removal is needed in town to mitigate debris and fallen trees in town. Sheltering is also needed during power outages. Sheltering has been a weakness in the past but has significantly improved over the past few years. Hurricane damage is not as localized as flooding. The effects are town wide. Wet hurricanes also create flooding problems.

2.5.5. Tornado

Although relatively rare in Connecticut, the threat of tornado could cause significant damages to life and property in the Town of Durham. Overall, residents throughout Durham are equally susceptible to the chance of a tornado occurrence. However, a strong tornado would likely cause more damage in the more densely settled areas. There was a microburst in 2015 in Durham that took out electric power to the entire community.

2.5.6. Earthquakes

The entire town could be affected by an earthquake in this region; however, impacts could vary locally. In Durham and the surrounding region, recorded impacts have been limited to shaking to the extent that things were knocked off shelves and people were alarmed. Structural damage has been limited to building components such as chimneys and buildings in poor repair; but failing structures have caused property damage in nearby towns. Anything higher than a “minor” earthquake is very unlikely in Durham; however, the potential does exist. Most buildings in Durham are two stories or less. Most are wood-framed, which are typically less vulnerable to major earthquake damage.

2.5.7. Drought and Wildland Fire

Durham is small enough that a drought would most likely be town wide. Severe droughts are not frequently occurring natural events, but flashy droughts have been occurring with some regularity. When they do occur, the most at-risk populations are those residents with shallow wells. Dangerously low water company reservoirs put everyone on those systems at risk. Droughts can also exacerbate wildfire conditions. Municipalities and water companies often ask for the public's help in conserving water during dry periods to prevent the depletion of water supplies. The threat of wildfires for people living near wildland areas or using recreational facilities in wilderness areas is real. Dry conditions at various times of the year increase the potential for wildfires. One area of concern is the potential for wildfire in large forest tracks. According to DEEP, Connecticut traditionally experiences high forest fire danger during the Spring from mid-March through May. The list of large forests in the region includes Cockaponset State Forest, a forest encompassing over 17,000 acres in the towns of Middletown, Durham, Haddam, Madison, Guilford, and neighboring Chester and Killingworth.

2.5.8. Extreme Temperature

Extreme cold spells do occur periodically, typically between the months of December and March. Although cold temperatures are normal during the winter months, occasionally temperatures can drop below freezing for extended periods, sometimes as low as 0°F. Low-income housing residents and the elderly in homes without sufficient heat sources are particularly vulnerable. Town officials have planned and continue to update the accommodation of shelters in their municipalities. One classification of shelters is warming centers, to be used by those that either have insufficient heat sources or for times of power outages.

Extreme heat and heat waves are a possibility during the summer months, particularly between June and August. A heat wave in Connecticut is defined as a period where the high temperature reaches at least 90°F for three consecutive days. The elderly in homes without air conditioning are vulnerable. Town officials have identified cooling centers for those desiring a place to go to cool off.

3. Hazard Risk

3.1. Historical Events

Table 3.1 lists the Federal Disaster declarations for Middlesex County, for which Durham requested assistance. There have been no presidential disaster declarations since the last update of this plan.

Table 3.1. Durham Natural Hazard Events

Type of Event	Date	Preliminary Damage Assessment
Flood Event (DR-1904)	04/23/2010	$334,123.23
Snow Event (DR-3176)	03/11/2003	$34,616.58
Severe Storm – Snow (DR-3200)	02/17/2005	$57,136.71
Snow Event (DR-4046)	11/17/2011	$236,932.59
Snow Event (DR-4106)	03/21/2013	$66,108.63
Wind/Hurricane Event (DR-1904)	04/23/2010	$1,050.00
Wind/Hurricane Event (DR-4023)	02/09/2011	$94,707.21
Wind/Severe Storm Event (DR-4046)	11/17/2011	$36,425.91
Wind/Hurricane Event (DR-4087)	10/30/2012	$79,965.53
Tropical Storm Isaias (DR-4580)	1/12/2021	$147,474.61

Table 3.2 through Table 3.4 list PA reimbursements in Durham.

Table 3.2. Flood Event PA Reimbursements, Durham, CT

Disaster No.	1904
Incident Dates	Mar-May 2010
Declaration	4/23/2010
Entity	FEMA PA Reimbursement
State	$
Municipal	$
Nonprofit	$
Total	$334,123
Annualized	$12,375

Table 3.3. Hurricane Wind Event PA Reimbursements, Durham, CT

Disaster #	1904	4023	4046	4087	4580
Incident Dates	Mar-May 2010	Aug-Sept 2011	Oct 2011	Oct-Nov 2012	Jan 2021
Declaration	04/23/2010	09/02/2011	11/17/1011	10/30/2012	1/12/2021
Entity	FEMA PA Reimbursement			FEMA PA Reimbursement	FEMA PA Reimbursement
State	$	$	$	$	$
Municipal	$	$	$	$	$
Nonprofit	$	$	$	$	$
Total	$1,050	$94,707.21	$36,425.91	$79,965.53	$147,475
Annualized	**$39**	**$3,508**	**$1,349**	**$2,962**	**$5,462**

Table 3.4. Winter Storm PA Reimbursements, Durham, CT

Disaster #	3176	3200	4046	4106
Incident Dates	Feb 2003	Jan 2005	Oct 2011	Feb 2013
Declaration	3/11/03	2/17/05	11/17/11	3/21/13
Entity	FEMA PA Reimbursement	FEMA PA Reimbursement	FEMA PA Reimbursement	FEMA PA Reimbursement
State	$	$	$	$
Municipal	$	$	$	$
Nonprofit	$0	$0	$0	$0
Total	$34,617	$57,137	$236,933	$66,109
Annualized	**$1,282**	**$2,116**	**$8,775**	**$2,448**

3.2. Hazard Risk Ranking

Durham participated in the updated regional hazard ranking conducted by the Hazard Mitigation Planning Team. Table 3.5 shows the scoring for the various ranking parameters that were used. The probability of each hazard is determined by assigning a level, from unlikely to highly likely, based on the likelihood of occurrence from historical data. The total impact value includes the affected area, primary impact, and secondary impact levels of each hazard. Level of Community Concern reflects the perceived risk of each hazard as indicated by respondents to question 6 of the community survey. This question asks, “How concerned are you about each of the following hazards impacting your home, business, community, or organization?” and received 204 responses.

Each of these five criteria are assigned weights, as well as point values for each of their responses. Each level's score is reflected in the matrix. The total score for each hazard is the probability score multiplied by its importance factor times the sum of the impact level scores multiplied by their importance factors. Based on this total score, the hazards are separated into three categories based on the hazard level they pose to the communities: Significant, Moderate, Limited. Table 3.5. Hazard Ranking Parameters provides a summary of the categories used to rank the hazards and their weighted values for the Composite Hazard Risk Index.

Table 3.5. Hazard Ranking Parameters

Criteria	Weight	1 Point	2 Points	3 Points	4 Points
Hazard Probability	2.0	**Unlikely** Less than 1% probability in next 100 years or has a recurrence interval of greater than every 100 years.	**Somewhat Likely** Between 1 and 10% probability in next year or has a recurrence interval of 11 to 100 years.	**Likely** Between 10 and 100% probability in next year or has a recurrence interval of 10 years or less	**Highly Likely** Near 100% probability in next year or happens every year.
Impact – Affected Area	0.8	**Isolated** Less than 1% of area affected	**Small** Between 1 and 10% of area affected	**Medium** Between 10 and 50% of area affected	**Large** Between 50 and 100% of area affected
Impact – Primary Impact	0.7	**Negligible** 1 to 10% of people or property	**Limited** 10% to 25% of people or property	**Critical** 25 to 50% of people or property	**Catastrophic** >50% of people or property
Impact – Secondary Impact	0.5	**Negligible** No loss of function, downtime, and/or evacuations	**Limited** Minimal loss of function, downtime, and/or evacuations	**Moderate** Some loss of function, downtime, and/or evacuations	**High** Major loss of function, downtime, and/or evacuations
Level of Community Concern	1.0	**Low Concern**	**Moderate Concern**	**High Concern**	-

The hazard risk ranking generated from this exercise, along with consideration of available data, was used to prioritize the level of effort assigned to further analysis of each hazard in the vulnerability analysis and loss estimation sections. All the participating communities agreed upon the results of the hazard ranking for the overall region. Based on the results of the exercise, the hazards were ranked as follows in Table 3.6. Hazard Ranking . Durham endorsed the regional ranking as accurate for the Town. Hazards not relevant to Durham (e.g. coastal flooding) were removed.

Table 3.6. Summary of Potential Hazard Impacts

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
Aquatic Invasive Species	Semi-quantitative, supplemented by state and municipal figures, recommend survey	**Highly Likely - 4**	**Large - 4**	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant
Terrestrial Invasive Species	Semi-quantitative, supplemented by state and municipal figures, recommend survey	**Highly Likely - 4**	**Large - 4**	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant
Tree Infestation	Semi-quantitative, supplemented by state and municipal figures, recommend survey	**Highly Likely - 4**	**Large - 4**	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant
Hurricanes	Hazus for wind	Likely - 3	**Large - 4**	Critical - 3	Moderate - 3	High Concern - 3	15.8	Significant
Winter Storms (Snow, Ice, Wind, including Noreasters)	Historic analysis for probability and annualized damages	**Highly Likely - 4**	**Large - 4**	Negligible - 1	Moderate - 3	Moderate Concern - 2	15.4	Significant

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
Flood – Riverine and Inland Flooding (Riverine, Drainage, Coastal Surge, Sea Level Rise - includes flooding from Nor'easters)	Hazus, SLR Overlay, FS Model Overlay, Historic data and damages for additional probability	Likely - 3	Medium - 3	Limited - 2	Moderate - 3	High Concern - 3	14.3	Significant
Extreme Heat and Cold	Qualitative based on historic	Likely - 3	**Large - 4**	Negligible - 1	Limited - 2	High Concern - 3	13.9	Moderate
Severe Weather (thunderstorms, downbursts, hail, lightning)	Historic analysis for probability and annualized damages	**Highly Likely - 4**	Small - 2	Negligible - 1	Limited - 2	Moderate Concern - 2	13.3	Moderate
Wildfire	Historic analysis for probability and annualized damages	Likely - 3	Small - 2	Critical - 3	Moderate - 3	Moderate Concern - 2	13.2	Moderate
Drought	Historic analysis for probability and annualized damages - some qualitative	Likely - 3	Medium - 3	Negligible - 1	Limited - 2	High Concern - 3	13.1	Moderate

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
Tornadoes	Historic analysis for probability and annualized damages - pulling in surrounding counties	Likely - 3	Isolated - 1	**Catastrophic - 4**	Limited - 2	Moderate Concern - 2	12.6	Moderate
Earthquakes	Hazus, 3 scenarios	Somewhat Likely - 2	Small - 2	**Catastrophic - 4**	**High - 4**	Low Concern - 1	11.4	Limited
Flooding from Dam Failure	Dam Inundation areas, Historic analysis for probability and annualized damages	Unlikely - 1	Small - 2	Limited - 2	Moderate - 3	Moderate Concern - 2	8.5	Limited

3.2.1. National Flood Insurance Program (NFIP) Participation

There are 9 flood insurance policies in force in Durham, providing $3.08 million in coverage. The NFIP has paid claims totaling $24,125 in Durham. There is one residential repetitive loss property in Durham. The repetitive loss property is located in Zone X and has incurred $6,827 in damage from events in 2008 and 2011.

Substantial improvements and substantial damages occur infrequently in town. All new construction and substantial improvements located within the 100-year floodplain must conform to minimum elevation requirements and construction standards so as to minimize flood damage. Substantial improvements are defined as any combination of improvements, the cost of which equals or exceeds 50% of the market value before improvement started. The floodplain manager (town engineer and building official) is responsible for administering the substantial improvement and substantial damage provisions codified in the floodplain management regulations. This is typically done in close coordination with the town planner/zoning enforcement officer. In the event of a major disaster, resulting in a number of substantially damaged buildings that would overwhelm town staff, the town would reach out to the state NFIP coordinator's office for assistance in training additional staff.

4. Capability Assessment

This section discusses capabilities and operational procedures that Durham undertakes that contribute to or have the potential to contribute to hazard mitigation. It also notes deficiencies in those capabilities that could be addressed to strengthen resilience.

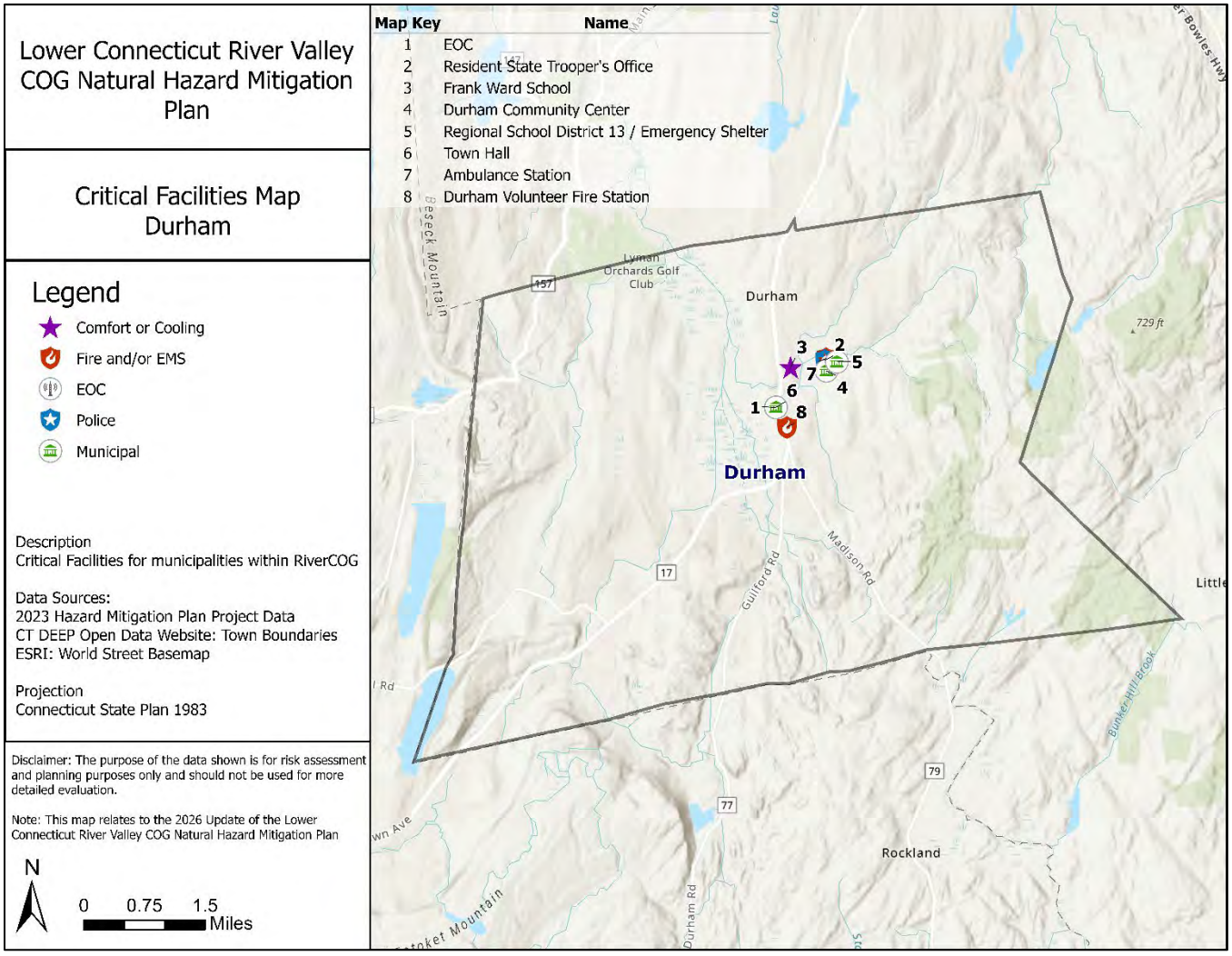
4.1. Critical Facilities

Public and private utility facilities are vital to maintaining or restoring normal services to areas of town before, during, and after a natural disaster.

The Durham Local Planning Team noted the following updates to critical facilities since the 2021 plan update:

- Addresses were corrected for the Regional School District 13, which is an emergency shelter, and for the resident state trooper's office
- The resident state trooper's office now has a generator, as does the Durham Community Center (formerly the Francis E. Korn Elementary School) and Ambulance Station, all of which share a facility
- The Francis E. Korn Elementary School is no longer a school and now serves as a Community Center redundant

Durham has identified seven critical facilities in town. A map of critical facilities in the Town of Durham can be found in Figure 4-1. In addition to the facilities identified by Durham, facilities in the States inventory that are deemed critical by the state are included in the figure. Table 4-1 provides a summary of Critical Facilities identified by Durham.



**Twin maples healthcare center, Dick's Citgo gas station (w/generator) and the Durham Public Works garage were identified in the State critical facility list but were not identified by Durham in Table 4.1. Critical Facilities.*

Figure 4.1. Location of Critical Facilities in Durham

Table 4.1 lists critical facilities identified by the Town.

Table 4.1. Critical Facilities

Facility	Type	Address	Flood Zone	Generator	Notes
Regional School District 13 / Emergency Shelter	Municipal	135 Pickett Lane	No	X	Listed as critical facility according to the recent CAMA database.
Resident State Trooper's Office	State	144 Pickett Lane	No	X	
Durham Volunteer Fire Station	Fire	41 MAIN STREET	No	X	Listed as critical facility according to the recent CAMA database.
Town Hall	Municipal	30 TOWN HOUSE ROAD	No	X	Listed as critical facility according to the recent CAMA database.
Frank Ward School	Municipal	191 MAIN STREET	No		Listed as critical facility according to the recent CAMA database.
Community Center (Formerly Francis E. Korn Elementary School)	Municipal	144 PICKETT LANE	No	X	Listed as critical facility according to the recent CAMA database.
Volunteer Ambulance Station	EMS	144 Pickett Lane	No	X	

4.2. Municipal Capabilities

The Town of Durham has a variety of natural hazard mitigation capabilities, including local regulations and ordinances, operational protocols, and emergency response capabilities. Following is a list of some highlighted capabilities identified by municipal staff.

4.2.1. Regulations and Ordinances

The Town of Durham participates in the National Flood Insurance Program (NFIP). The Town of Durham uses the State Building Code for code compliance to ensure safe structures can withstand 110 mph wind speed and meet appropriate snow loads. The Town of Durham adheres to their Plan of Conservation and Development for managing infrastructure, open space, commercial, and industrial development. The Durham Town Planner is beginning the process of reviewing the local floodplain management regulations and Low Impact Development (LID) Stormwater management standard for updates. The Town of Durham will be reviewing model ordinances for tree maintenance and removal, in order to identify and codify private and public responsibilities. Updates of Zoning Regulation and Inland Wetland Regulations to enhance flood protection, as well as the possibility of

adoption of a drought ordinance are all under consideration, pending the ongoing update of the Durham Plan of Conservation and Development.

4.2.2. Operations and Procedures

Durham does not currently have a Debris Management Plan in place. However, there is a need to have a current plan in place for managing the massive amount of debris that could be associated with potential strong storms. Durham follows its Emergency Operations Plan in case of any emergencies within the town.

4.2.3. Capital Improvements

Capital Improvements address municipal improvements including rights-of-way, land, housing, or utilities for public purposes. Mitigation actions from this NHMP should be included in the CIP. Larger items such as bridge and culvert replacements and elevation of roads are typically included in the 5-year CIP. The CIP should be reviewed often so that it can include new mitigation action items each time the NHMP is updated. An effective way for the town to prioritize mitigation items is to use the Capital Improvement Program (CIP) to set aside funds for infrastructure improvements to reduce loss of life and property during natural hazard (NH) events.

4.2.4. Plan Integration with Other Planning Mechanisms

The Town of Durham references the NHMP in its Plan of Conservation and Development (POCD). There is new legislation (P.A. 25-33) that now requires cities and towns to incorporate climate vulnerability (specifically including flooding) and resilience strategies into POCDs. Durham plans to comply with that new requirement during the next POCD Update. Further, communities are now required to develop and maintain affordable housing plans. The mitigation plan will help inform siting criteria within that plan.

Additionally, Durham uses the mitigation plan to inform its 5-year capital improvement plan and associated annual budgets. Durham staff reported that the plan has not been formally incorporated into any other planning documents.

4.2.5. Outreach, Education, Communication, and Warnings

The Town of Durham, in partnership with the Town of Middlefield, has implemented a state-of-the-art emergency notification system to alert residents about emergencies and other important community news. The emergency notification system, powered by Everbridge, enables the Town of Durham to provide essential information quickly in a variety of situations. The system uses listed phone numbers. You may also enter additional ways of contacting you, such as mobile phones, business phones, and email and text. The Durham Emergency Management Department also has its own webpage and Facebook page available to share information. Additionally, since the 2021 plan, an additional lighted sign board was purchased for use around town during disasters. There are now two.

4.2.6. Other Capabilities

- Durham has completed some channel work on Allyn Brook to improve flooding conditions since the last plan
- Culverts have been updated or replaced in the following areas:
    - Higganum Road
    - Pickett Lane Allyn Brook
    - Pickett Lane Maiden Lane Side
- Winter Weather: There have been no significant changes in snow removal, other than less salt is used in treatment mix
- Fire and Drought:
    - Durham has approximately 100 customers served by public water. There are projects in the pipeline to expand that number by three times.
    - Fire – Since the 2021 plan update, 56 new hydrants have been connected to the Town's municipal water system.
    - Durham avoids using dry hydrants, as there is little direct access to ponds, and they require too much maintenance
    - There are several fire ponds throughout Durham
- Tree Maintenance: Annual tree budget is approximately $85,000.

Table 4.2a and 4.2b, Table 4.3, and Table 4.4 list legal, regulatory, technical, administrative, and financial capabilities that support hazard mitigation.

Table 4.2. Legal and Regulatory Capability

Table 4.2.a. Codes, Ordinances & Requirements

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Building Code	Yes	Yes	No	Yes	All municipalities enforce the State Building Code
Zoning Code	Yes	No	No	No	
Subdivisions	Yes	No	No	No	
Post Disaster Recovery	No	No	No	No	There is a new long-term recovery committee under the direction of the EM Director
Real Estate Disclosure	Yes	No	No	Yes	State requirement
Growth Management	No	No	No	No	
Site Plan Review	Yes	No	No	No	
Special Purpose (flood management, critical areas)	Yes	Yes	No	Yes	State flood management Statutes and regulations

Table 4.2.b. Planning Documents

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Plan of Conservation and Development	Yes	No	No	Yes	POCD required every ten years. Current POCD due to expire August 1, 2026.
Floodplain or Basin Plan	No	No	No	No	
Stormwater Plan	Yes	No	No	Yes	MS4 Community
Capital Improvement Plan	Yes	No	No	No	
Habitat Conservation Plan	No	No	No	No	
Economic Development Plan	Yes	No	No	No	GrowSmart (2016) Regional Plan
Emergency Response Plan	Yes	No	No	Yes	LEOP templates provided by DEMHS
Post Disaster Recovery Plan - in response plan	Yes	No	No	Yes	LEOP templates provided by DEMHS

Table 4.3. Administrative and Technical Capability

Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Planning & Zoning
Engineers or professionals trained in building or infrastructure construction practices	Yes	Consulting Engineer
Planners or engineers with an understanding of natural hazards	Yes	Town Planner
Staff with training in benefit/cost analysis	No	
Floodplain manager	Yes	Town Engineer and Building Official
Surveyors	No	Contract as needed
Personnel skilled or trained in GIS applications	Yes	RiverCOG
Emergency Management Director	Yes	Emergency Management
Grant writers	Yes	Municipal Staff

Table 4.4. Financial Resources

Financial Resources	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	Yes
Withhold Public Expenditures in Hazard-Prone Areas	Yes (State)
State Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	No

Gaps in Capabilities

No current gaps in capabilities were observed by the Local Planning Team.

5. Hazard Mitigation Action Plan

This section presents the progress made since the 2021 action plan and establishes new goals, objectives and actions identified for the 2026-2030 planning horizon.

5.1. Previous Mitigation Actions Disposition

During the process of developing the 2021 Durham Hazard Mitigation Plan, several hazard mitigation actions were identified to be pursued during the five-year planning horizon that followed. Table 5.1 presents the actions listed in that document, and the status of those actions.

Table 5.1. Status of Previous Mitigation Strategies and Actions

Action	Description	Status	Notes
01	HMP Plan Integration Incorporate additional natural hazard mitigation concerns into Zoning Regulations, Subdivision Regulations and Stormwater Management Regulations	Deleted	
02	HMP Plan Integration Incorporate additional natural hazard mitigation concerns into the Inland Wetland Regulations,	Completed	

Action	Description	Status	Notes
	including prevention of runoff near waterways		
03	Capital Improvement Planning Incorporate projects identified in this table to the capital improvement plan annually	Carry Forward	
04	Maintaining Shelters: Update emergency shelters with technology, space, and supplies. Actions include adding repeaters to ensure complete internet coverage in shelters and ensuring full cell coverage. Ensure shelters have installed generators, emergency light towers, and maintain supplies. Build 6-8 bay buildings for Emergency shelter storage.	Completed	
05	Create and implement a Debris Management Plan	Completed	This action is evolving and could benefit from additional planning
06	Reduce and Manage Debris Create and maintain an inventory of dying and dead trees. Ensure budget allocates appropriate money necessary to maintain and remove dead, dying, dangerous, and diseased trees in rights-of-way and other town land.	Completed	
07	Drainage Study for Guire Rd Conduct a drainage study for Guire Road. Replace culverts as needed to reduce flooding	Carry Forward	
08	Drainage Study for Stagecoach Rd Coordinate with CT DOT to conduct a drainage study for Stagecoach Rd near Route 17. Replace culverts with larger culverts to reduce flooding.	Carry Forward	
09	Drainage Study for Pickett Lane Design has been completed for a new culvert on Pickett Lane between Main St and Maiden Lane. Replace culverts to reduce flooding	Completed	

Action	Description	Status	Notes
10	Drainage Study for Haddam Quarter Road Conduct a drainage study for Haddam Quarter Road. Replace culverts as needed to reduce flooding	Completed	
11	Drainage Study for Seward Road Conduct a drainage study for Seward Road. Replace culverts as needed to reduce flooding	Completed	
12	Install redundant internet for the Town Hall to ensure continuity of government should cable go down. Continue using Comcast as primary and acquire the necessary permissions and equipment in order to use the state fiber network as backup during emergency operations. (which would be replacing the old satellite internet backup that was discontinued in 2017/18)	Carry Forward	
13	Report new tranche of culvert work to finance committee to establish a comprehensive analysis and replacement schedule for all culverts	Carry Forward	
14	Upgrades to fire house is needed. Moved to Community Center.	Carry Forward	
15	Microwave Communication Enhancements. Currently Writing a grant, along with (Durham, Chester, Haddam, O.S., Lyme and Colchester) for microwave equipment in the region to enhance communication capabilities	Carry Forward	
16	Diseased and Dead Tree Removal Develop a program to migrate from a tree- to- tree removal operation to a full-on logging operation for efficiency. Pursue a RPIP grant with neighboring communities for regional logging equipment.	Completed	

Action	Description	Status	Notes
17	Drought and Water Use Ordinance Identify Restrictive Use Model Ordinances, conduct literature review and draft and adopt an ordinance. (State Water Plan Provides a Model Ordinance)	Carry Forward	
18	Address Snow Loading on Roofs Inspect sections of flat roof on critical and essential facilities including the high school, middle school, fire department, and library to identify risk from snow load. Investigate mitigation possibilities and implement as needed.	Carry Forward	
19	Plan Integration – POCD. Integrate with Plan of Conservation and Development by incorporating NHMP as an annex.	Carry Forward	

5.2. Updated Mitigation Goals, Objectives, and Strategies

As noted in Section 3 of Volume I, all the RiverCOG participating communities, including Durham, participated in setting regional goals and objectives. Durham has confirmed these goals and objectives valid for the Town's annex. The three goals and objectives are as follows:

Goal 1: Promote implementation of sound flood management and other natural hazard mitigation principles on a regional and local level. Note: Covers future development through policy, planning, regulation, emergency services, and environmental strategies.

- **Objective for Goal 1:** To promote the development, improvement and implementation of programs, policies, regulations, and emergency services that result in the reduction of long-term risks to life and property.

Goal 2: Implementation of effective natural hazard mitigation projects at the regional and local level regional and local level. Note: Covers infrastructure and building related projects – the existing built environment.

- **Objective for Goal 2:** To enhance the ability of RiverCOG, other regional entities, and local communities to reduce or eliminate risks to life and property from natural hazards through cost-effective hazard mitigation projects, including avoidance.

Goal 3: Increase research, planning, and outreach activities for the mitigation of natural hazards on a regional and local level. Note: Covers the human component of mitigation through outreach and

education, and integration with other planning and continuous improvement through increased research.

- **Objective for Goal 3:** To increase general awareness of the region's natural hazards and encourage State agencies, local communities, and the public to be proactive in taking actions to reduce long-term risk to life and property.

During the 2026 Update process, Durham identified two new goals specific to the town:

- Prepare for required investments in infrastructure to mitigate the impact of stronger storms and heavier rain events.
- Petition CT DEEP to remove excessive accumulations of silt and woody debris from the channel of the Coginchaug River.

5.2.1. Prioritization of Mitigation Strategies

In considering which projects, processes, and other measures to undertake in the upcoming plan period, municipal and regional officials evaluated the need to address problems and vulnerabilities in their communities against the communities' resources and capabilities. To prioritize mitigation strategies, a set of criteria commonly used by public administration officials and planners was applied to each proposed strategy. The method, called STAPLEE, is outlined in FEMA planning documents such as Developing the Mitigation Plan (FEMA 386-3) and Using Benefit-Cost Review in Mitigation Planning (FEMA 386-5). STAPLEE stands for the "Social, Technical, Administrative, Political, Legal, Economic, and Environmental" criteria for making planning decisions. Benefit-cost review was emphasized in the prioritization process. Criteria were divided into potential benefits (pros) and potential costs (cons) for each mitigation strategy. The following questions were asked about the proposed mitigation strategies:

Social:

- Benefits: Is the proposed strategy socially acceptable to the community?
- Costs: Are there any equity issues involved that would mean that one segment of the community could be treated unfairly? Will the action disrupt established neighborhoods, break up voting districts, or cause the relocation of lower-income people? Is the action compatible with present and future community values?

Technical:

- Benefits: Will the proposed strategy work? Will it reduce losses in the long term with minimal secondary impacts?
- Costs: Is the action technically feasible? Will it create more problems than it will solve? Does it solve the problem or only a symptom?

Administrative:

- Benefits: Does the project make it easier for the community to administrate future mitigation or emergency response actions?
- Costs: Does the community have the capability (staff, technical experts, and/or funding) to implement the action, or can it be readily obtained? Can the community perform the necessary maintenance? Can the project be accomplished in a timely manner?

Political:

- Benefits: Is the strategy politically beneficial? Is there public support both to implement and maintain the project? Is there a local champion willing to see the project to completion? Can the mitigation objectives be accomplished at the lowest cost to the community (grants, etc.)?
- Costs: Have political leaders participated in the planning process? Do project stakeholders support the project enough to ensure success? Have the stakeholders been offered the opportunity to participate in the planning process?

Legal:

- Benefits: Is there a technical, scientific, or legal basis for the mitigation action? Are the proper laws, ordinances, and resolutions in place to implement the action?
- Costs: Does the community have the authority to implement the proposed action? Are there any potential legal consequences? Will the community be liable for the actions or support of actions or for lack of action? Is the action likely to be challenged by stakeholders who may be negatively affected?

Economic:

- Benefits: Are there currently sources of funds that can be used to implement the action? What benefits will the action provide? Does the action contribute to community goals such as capital improvements or economic development?

Costs: Does the cost seem reasonable for the size of the problem and the likely benefits? What burden will be placed on the tax base or local economy to implement this action? What proposed actions should be considered but be tabled for implementation until outside sources of funding are available?

Each proposed mitigation strategy presented in this plan was evaluated and quantitatively assigned a "benefit" score and a "cost" score for each of the seven STAPLEE criteria as outlined below:

- For potential benefits, a score of "1" was assigned if the project will have a beneficial effect for that criterion or a "0" if the project would have a negligible effect or if the questions were not applicable to the strategy.
- For potential costs, a score of "-1" was assigned if the project would have an unfavorable impact for that criterion or a "0" if the project would have a negligible impact or if the questions were not applicable to the strategy.

- Technical and Economic criteria were double weighted (multiplied by two) in the final sum of scores.
- The total benefit score and cost score for each mitigation strategy was summed to determine each strategy's final STAPLEE score.

Although a community may implement recommendations as prioritized by the STAPLEE method, an additional consideration is important for those recommendations that may be funded under the FEMA mitigation grant programs. To receive federal funding, the mitigation action must have a benefit-cost ratio (BCR) that exceeds a value of 1.0. Calculation of the BCR is conducted using FEMA's Benefit Cost Analysis (BCA) toolkit. The calculation method may be complex and vary with the mitigation action of interest. Calculations are dependent on detailed information such as property value appraisals, design and construction costs for structural projects, and tabulations of previous damages or NFIP claims. The BCR scoring system used is outlined in Table 5.2.

Table 5.2. BCR Scoring System

Scoring	Benefits	Costs
Low: 0-1 points	Few would benefit; the impacts being addressed are not severe; benefits may be short term	Likely to be done by existing personnel with minor impact on budget; not complicated to accomplish. Costs to implement is likely to be under $10,000.
Medium: 2-3 points	Benefits may be felt by many in the community; the action may solve a problem or otherwise benefit the community for several years	May need additional funding or studies; may require change in practices; costs to implement may be between $10,000 and $100,000
High: 4-5 points	Benefits would accrue to many in the community; benefits may accrue to the most vulnerable or those not able to recover on their own; benefits would be long term and may permanently protect from damages	Likely to cost over $100,000 and require obtaining funding outside of operating budget; complicated, lengthy process to implement

The STAPLEE method accounts for cost-benefit considerations both directly (through the "Economic" category) and indirectly (through general consideration of costs and benefits of actions). Additionally, the range of estimated costs of each strategy are included in the STAPLEE table. The assumed costs of projects and generalized presentation of the benefits accruing from them are not based on specific detailed cost estimates as that level of analysis is not appropriate for this type of planning effort. For some projects, such as routine or recurring operations that are established practices and conducted with municipal general operating funds and existing staff, the STAPLEE results can be the only explicit comparison of costs and benefits. For projects for which bonding and/or grant funding will be sought, more in-depth evaluations of costs and benefits will be required. As project scopes are detailed, benefits and costs can be identified with more precision, and the benefit-cost ratio which results from a full benefit-cost analysis may differ from the planning-level STAPLEE results presented here.

It should be noted that higher BCRs do not necessarily correspond to high priorities, nor do low BCRs or BCRs under 1.0 correspond to low-priority projects. An important project with a high priority to the community may have a lower BCR because of its complexity, assumed high expense, and other costs. Communities should not be discouraged or deterred from further consideration of projects that have low BCRs or BCRs less than 1.0 until additional, more specific evaluations of the costs and benefits have been undertaken.

5.2.2. 2021-2026 Prioritized Hazard Mitigation Actions

In addition to the regional mitigation actions endorsed by Durham and outlined in Section 3 of Volume I of the regional plan, the Town identified or carried over from the last update, ranked and evaluated the actions in Table 5.3. For each identified action, the goal and objective it addresses is noted. Additionally, a description, lead agency, indication of costs and potential funding sources, and an estimated timeline for completion is included. Also included are the hazards addressed by a specific action. A legend for the table is as follows: KEY: SW= Severe Weather, TW = Tornado/Wind, ET = Extreme Temperatures, WS=Winter Storm, F = Flood, IS = Invasive Species, WF = Wildfire, D = Drought, E = Earthquake, CC = Climate Change

Figure 5.1 shows the locations of the projects listed in Table 5.3 with spatial elements that have been carried forward. Additionally, completed projects identified in Table 5.1 with spatial elements are also shown on the map. No new projects had a spatial element that was applicable to be added onto the map. Projects carried forward are identified by their activity number (from Table 5.3) while completed projects are identified by the description of the project completed.

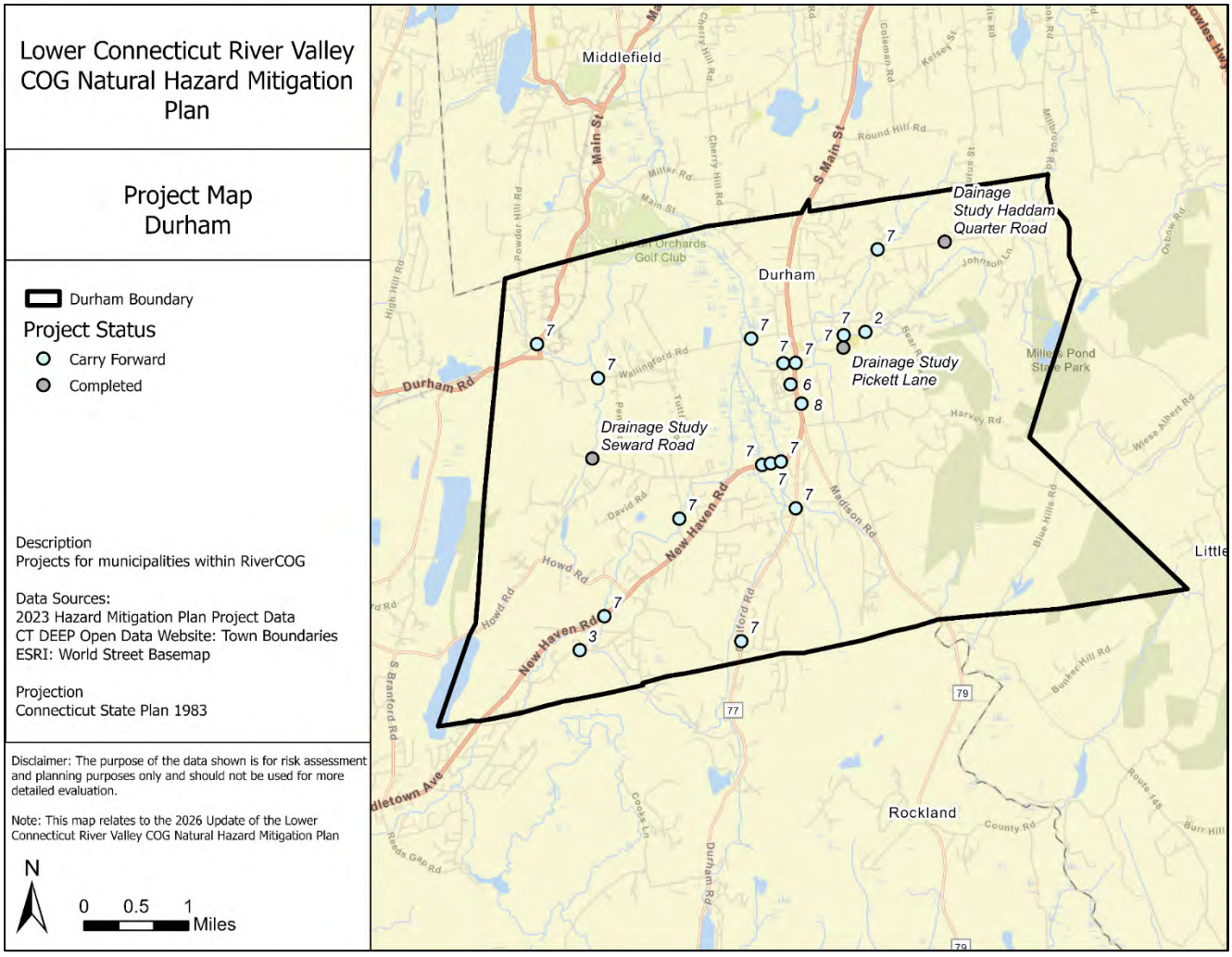


Figure 5.1. Carried Forward and Completed Projects in Durham

Table 5.3. 2021-2026 Prioritized Hazard Mitigation Actions

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
1	1-1	**Capital Improvement Planning** Incorporate projects identified in this table to the capital improvement plan annually. Currently there is funding in the budget for the culvert/bridge replacement for Parmelee Brook crossing on Parmelee Hill road where localized flooding occurs.	All Departments	$0-$10,000	CIP, OP	2026, then annually	SW, TW, ET, WS, F, IS, WF, D, E, CC	1	0	0	0	1	1	1	0	0	0	0	0	0	0	4/H
2	2-1	**Drainage Study for Guire Rd** Conduct a drainage study for Guire Road. Replace culverts as needed to reduce flooding	BOS, PW, BOF	$25,000-$50,000, for study only	HMPG, FMA, CIP, STIP, TIP, RTP	2027-2028	F, SW, WS	1	0	1	1	0	0	1	1	0	0	1	1	0	0	11/H
3	2-1	**Drainage Study for Stagecoach Rd** Coordinate with CT DOT to conduct a drainage study for Stagecoach Rd near Route 17. Replace culverts with larger culverts to reduce flooding.	BOS, PW, BOF	$25,000-$50,000	HMPG, FMA, CIP, STIP, TIP, RTP	2027-2028	F	1	0	1	1	0	0	1	1	0	0	1	1	0	0	11/H
4	2-1	To prepare for investments in townwide infrastructure to meet new rainfall requirements, conduct a townwide inventory and plan for replacement and resizing of key culverts and infrastructure.	PW, Planning	$10,000-$25,000	OP	2027	F	1	0	1	1	0	0	1	1	0	0	1	1	0	0	11/H

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
5	2-1	Work with DEEP and Middlefield for removal of silt and debris from the Coginchaug River	Planning	$1,000-$10,000	OP	2027	F	1	0	1	1	0	0	1	1	0	0	1	1	0	0	11/H
6	3-1	Install redundant internet for the Town Hall to ensure continuity of government should cable go down. Continue using Comcast as primary and acquire the necessary permissions and equipment in order to use the state fiber network as backup during emergency operations. (which would be replacing the old satellite internet backup that was discontinued in 2017/18)	Emergency Management	$5,000 - $10,000	OP	2027	SW, TW, ET, WS	1	1	0	0	0	0	1	1	0	0	0	0	0	0	4/M
7	2-1	Report new tranche of culvert work to finance committee to establish a comprehensive analysis and replacement schedule for all culverts	BOS, PW, BOF	$0-$1,000	FEMA HMGP or other HMA Grants, State Funding	Annually	F	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2/L
8	2-1	Upgrades to fire house is needed. Complete an analysis to determine if a build out of the property to accommodate a public safety complex to house 4Fire, EMS, RST and the Fire Marshal is feasible.	EM, FD, BOS, BOF	$10,000-$25,000	HMGP, OP	2027	WF, D	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2/L

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
9	1-1	Microwave Communication Enhancements. Currently Writing a grant, along with (Durham, Chester, Haddam, O.S., Lyme and Colchester) for microwave equipment in the region to enhance communication capabilities	EM, PW, BOS, BOF			2027	All	1	1	0	0	0	0	1	1	0	0	0	0	0	0	4/M
10	1-1	Drought and Water Use Ordinance Identify Restrictive Use Model Ordinances, conduct a literature review and draft and adopt an ordinance. (State Water Plan Provides a Model Ordinance)	PW, Planning	$10,000-$25,000	HMPG, PDM, CIP, OP	2026-2027	D	0	0	1	0	1	1	0	0	0	0	0	0	0	0	4/L
11	2-1	Address Snow Loading on Roofs Inspect sections of flat roof on critical and essential facilities including the high school, middle school, fire department, and library to identify risk from snow load. Investigate mitigation possibilities and implement as needed.	BD	$1,000 - $10,000	HMPG, FMA, CIP, STIP, TIP, RTP	2027	WS	1	0	0	0	1	1	0	0	0	0	0	0	0	0	3/L

TOWN OF DURHAM PLANNING & ZONING
30 TOWN HOUSE ROAD
DURHAM, CT 06422

January 8, 2026

RE: Comments of the Durham Planning & Zoning Commission following its review of the Regional Natural Hazards Mitigation Plan (2026 Draft)

At its meeting of January 7, 2026 the Planning & Zoning Commission of the Town of Durham voted and unanimously approved a motion to submit the following comments to the Lower Connecticut River Valley Council of Governments ("RiverCOG") in response to the regional agency's proposed *Natural Hazards Mitigation Plan (2026 draft)*:

- The proposed plan contains flood mapping which is significantly different than the current federally-issued FEMA Flood Zone Maps. Federally-issued FEMA Flood Zone Maps are recognized and relied upon by the National Flood Insurance Program (NFIP); as well as by property owners, risk appraisal firms, insurance companies, banks, lending firms, municipalities, and utility companies.

- The presence of this alternative flood map, rather than utilizing the federally-issued FEMA Flood Zone Maps in our Regional Natural Hazards Mitigation Plan, is likely to result in confusion and misapplication. The Planning & Zoning Commission of the Town of Durham commission recommends that this alternative flood map be replaced with an image that accurately depicts the current federally-issued FEMA Flood Zone Maps for the region. As an alternative, this non-FEMA issued flood map may be displayed alongside a flood map that accurately depicts the current federally-issued FEMA Flood Zone Maps. As a second alternative, this non-FEMA issued flood map could be presented as an overlay; with the current federally-issued FEMA Flood Zone Maps serving as the base layer.

- This alternative flood map also contains nomenclature which references *"RiverCOG FEMA Flood Zones"*. These agencies (RiverCOG and FEMA) are independent, and have not jointly issued this map; therefore, this nomenclature is misleading and should be corrected.

- The commission noted that, whereas the federally-issued FEMA Flood Zone Maps are regularly updated for accuracy (e.g.: Portland amended in 2022; Middletown in 2024; Chester's in 2025, etc.), no mechanism for making amendments to this alternative flood map has been established.

- The Planning & Zoning Commission of the Town of Durham has resolved that it will continue to defer to the federally-issued FEMA Flood Zone Maps for planning and zoning purposes.

Thank you for this opportunity to comment on the draft Natural Hazards Mitigation Plan for our region.

Respectfully,

Frank C. DeFelice

Frank C. DeFelice – Chair, Planning & Zoning Commission, Town of Durham

LOWER CONNECTICUT RIVER VALLEY COUNCIL OF GOVERNMENTS
HAZARD MITIGATION PLAN 2026 UPDATE

TOWN OF EAST HADDAM MUNICIPAL ANNEX

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1. Contact Information

1.1. Point of Contact

Table 1.1. Town of East Haddam Contact Information

Information	Town of East Haddam
Contact Name	Todd Gelston, First Selectman
Address	1 Plains Road P.O. Box 385 Moodus, CT 06469
Telephone	(860) 873-5021
Email	admin@easthaddam.org

1.2. Local Planning Team

The following representatives listed in Table 1.2 participated in meetings and provided input, data, and council toward the development of Volume 1 and this East Haddam, Connecticut Annex.

Table 1.2. Town of East Haddam Planning Team

Name	Title
Donald Angersola	Acting Director of Public Works
Richard French	Building Department
Craig Mansfield	Emergency Management Director
Jim Ventres*	Land Use Administrator
Todd Gelston	First Selectman
Donald Angersola	Director of Operations
TBD	Public Works Foreman

**Local Coordinator*

1.3. Lower Connecticut River Valley Council of Governments

Table 1.3. RiverCOG Contact Information

Information	RiverCOG Information
Contact Name	Margot Burns – Senior Environmental Planner
Address	RiverCOG 145 Dennison Rd. Essex, CT 06426

Information	RiverCOG Information
Telephone	(860) 581-8554 x 702
Email	mburns@rivercog.org

2. Jurisdiction Profile

2.1. Town Profile

Until 1650, at least three tribes of Indigenous people inhabited the area of East Haddam: the Wangunks, the Mohegans and the Nehantics. These tribes called the area "Machimoodus", the place of noises, because of numerous earthquakes that were recorded between 1638 and 1899. Loud rumblings, the "Moodus Noises", could be heard for miles surrounding the epicenter of the quakes near Mt. Tom. The land, which is now Haddam and East Haddam, was purchased by settlers from the natives in 1662 for thirty coats – worth about $100. Layout of the highways began in 1669 with Creek Row about ¼ mile east of the River and Town Street "The Great Highway." The first permanent settlers established homesteads along Creek Row in 1685. By 1700, there were thirty families living in East Haddam. Agricultural and timber farming, shipbuilding, tanneries, and blacksmiths were among the early commerce.

Captain John Chapman began ferry service across the Connecticut River in 1695, which ended with the completion of the swing bridge in 1913. East Haddam was incorporated as a separate town from Haddam in 1734. By 1756, there were nearly 2,000 residents, with the Millington District as the most populated. Growth of commerce brought a surge in population to around 3,000 people by the mid-1800s. In the nineteenth century, Moodus was the "Twine Capital of America," with twelve mills in operation. Visitors and residents such as actor William Gillette whose castle home was completed in 1914, were drawn to the area known for its rural charm and natural scenery. The growth of the resort areas of Lake Hayward, Bashan Lake, and Moodus Reservoir began in the early 1900s and was a booming business for the next fifty years.

Figure 2.1 shows the location and corporate boundaries of East Haddam.

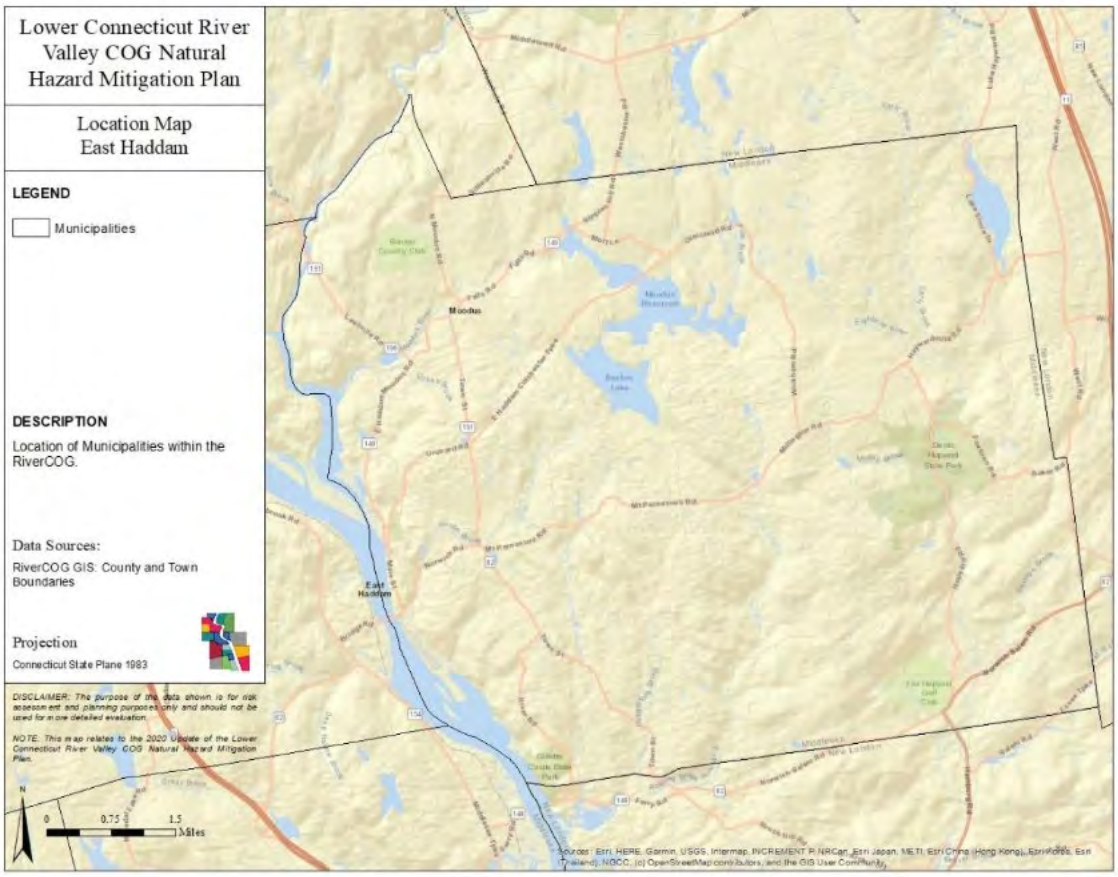


Figure 2.1. East Haddam Location

East Haddam inhabits 56.6 square miles of rolling countryside dotted with old farmsteads, lakes, handsome state parks, and quaint neighborhoods. East Haddam is home to the headwaters of the Eightmile River, which runs through a greenway of protected open space and is a National Wild and Scenic River. The Devil's Hopyard State Park surrounds the Eightmile River as it tumbles over a rushing waterfall and through a hemlock gorge. Along the banks of the Connecticut River standing 200 feet above, visit Gillette Castle State Park, home of William Gillette. Both are relaxing venues for a picnic or hike. The Salmon River borders the town to the North and is a site of a state project to restore anadromous fish to the Connecticut River tributaries. A state-operated boat launching facility allows Connecticut River access at the mouth of Salmon Cove. Three lakes, Bashan, Moodus Reservoir, and Lake Hayward provide recreation and scenic beauty to all who visit. Explore the hillside and listen for the famed "Moodus Noises" - the strange audible rumblings that are seismic in origin and figure prominently in native American lore. You are welcome to share the views of the undisturbed woodlands, miles of dirt roads, and numerous pastures. Figure 2.2 shows land cover in East Haddam.

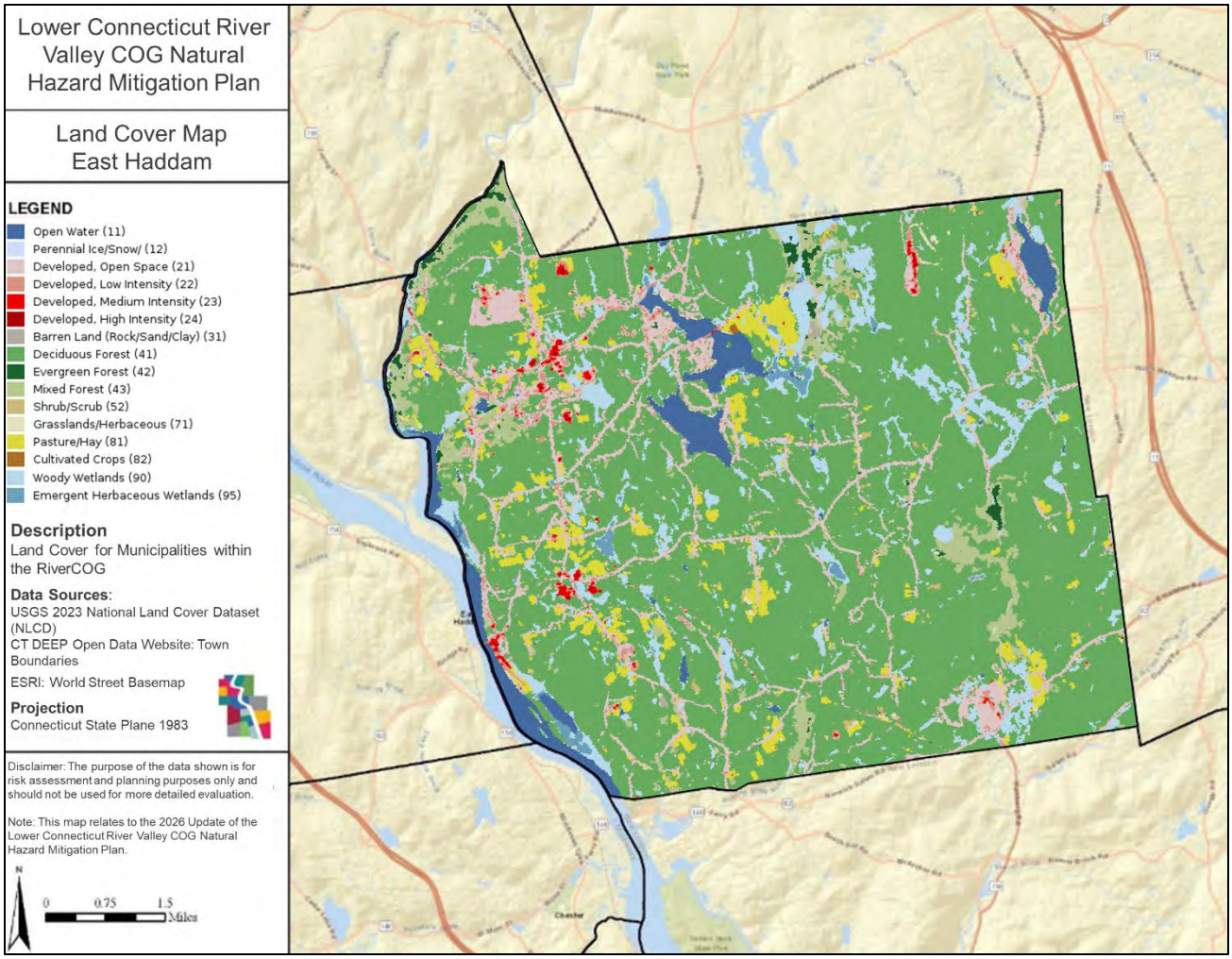
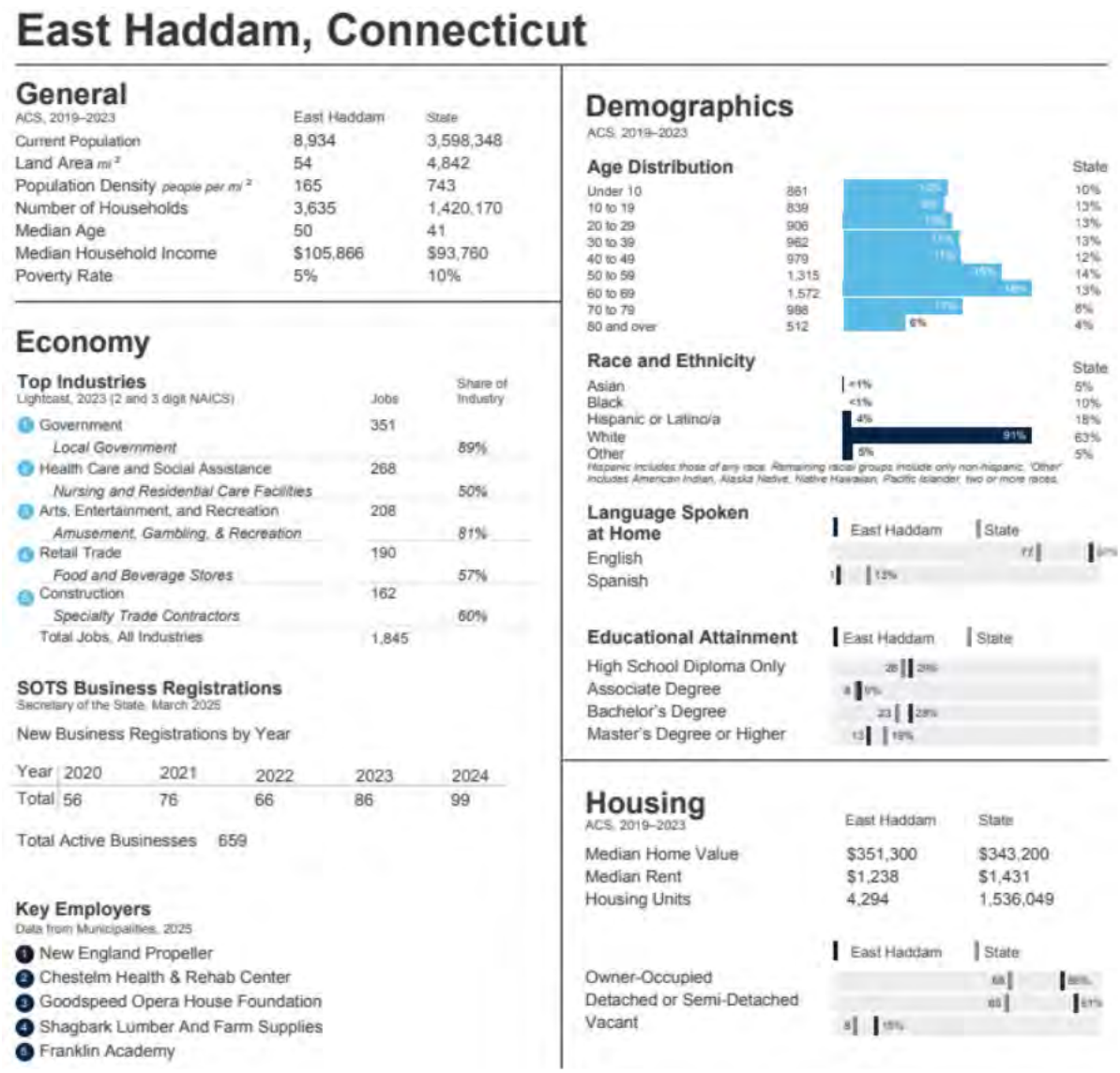


Figure 2.2. East Haddam Land Cover

The Town of East Haddam was incorporated in 1734. As of the 2023 American Community Survey (ACS), there were 8,934 people and 3,635 households residing in the town. The population in the town has decreased by 0.8% since 2019.[1]

The racial makeup of the town was 97.26% White, 0.84% African American, 0.28% Native American, 0.40% Asian, 0.46% from other races, and 0.77% from two or more races. There were 3,635 households out of which 35.2% had children under the age of 18 living with them, 62.3% were married couples living together, 6.9% had a female householder with no husband present, and 28.0% were non-families. 21.4% of all households were made up of individuals and 8.1% had someone living alone who was 65 years of age or older. The average household size was 2.58 and the average family size was 3.02. Figure 2.3 provides a demographic profile for East Haddam.[2]

[1] https://s3-us-west-2.amazonaws.com/cerc-pdfs/2025/East Haddam.pdf
[2] - Published on Town of East Haddam, CT *(Source: Connecticut Data Collaborative)*



East Haddam, Connecticut

General

ACS, 2019–2023

	East Haddam	State
Current Population	8,934	3,598,348
Land Area mi^2	54	4,842
Population Density *people per* mi^2	165	743
Number of Households	3,635	1,420,170
Median Age	50	41
Median Household Income	$105,866	$93,760
Poverty Rate	5%	10%

Economy

Top Industries
Lightcast, 2023 (2 and 3 digit NAICS)

	Jobs	Share of Industry
Government	351	
Local Government		*89%*
Health Care and Social Assistance	268	
Nursing and Residential Care Facilities		*50%*
Arts, Entertainment, and Recreation	208	
Amusement, Gambling, & Recreation		*81%*
Retail Trade	190	
Food and Beverage Stores		*57%*
Construction	162	
Specialty Trade Contractors		*60%*
Total Jobs, All Industries	1,845	

SOTS Business Registrations
Secretary of the State, March 2025

New Business Registrations by Year

Year	2020	2021	2022	2023	2024
Total	56	76	66	86	99

Total Active Businesses 659

Key Employers
Data from Municipalities, 2025

1. New England Propeller
2. Chesterm Health & Rehab Center
3. Goodspeed Opera House Foundation
4. Shagbark Lumber And Farm Supplies
5. Franklin Academy

Demographics

ACS, 2019–2023

Age Distribution

		State
Under 10	861	10%
10 to 19	839	13%
20 to 29	906	13%
30 to 39	962	13%
40 to 49	979	12%
50 to 59	1,315	14%
60 to 69	1,572	13%
70 to 79	988	8%
80 and over	512	4%

Race and Ethnicity

	State
Asian	5%
Black	10%
Hispanic or Latino/a	18%
White	63%
Other	5%

Hispanic includes those of any race. Remaining racial groups include only non-hispanic. 'Other' includes American Indian, Alaska Native, Native Hawaiian, Pacific Islander, two or more races.

Language Spoken at Home

East Haddam | State

English

Spanish

Educational Attainment

East Haddam | State

High School Diploma Only

Associate Degree

Bachelor's Degree

Master's Degree or Higher

Housing

ACS, 2019–2023

	East Haddam	State
Median Home Value	$351,300	$343,200
Median Rent	$1,238	$1,431
Housing Units	4,294	1,536,049

East Haddam | State

Owner-Occupied

Detached or Semi-Detached

Vacant

Figure 2.3. Town of East Haddam Demographics

2.2. Climate

Average weather data in East Haddam was sourced from the Weather Spark website (weatherspark.com).

In East Haddam, the summers are warm and humid, the winters are freezing, and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from 21°F to 82°F and is rarely below 6°F or above 90°F. The warm season lasts for 3.5 months, from May 31 to September 15, with an average daily high temperature above 73°F. The hottest day of the year is July 20, with an average high of 82°F and low of 65°F.

The cold season lasts for 3.3 months, from December 1 to March 12, with an average daily high temperature below 45°F. The coldest day of the year is January 29, with an average low of 21°F and high of 36°F.

The wetter season lasts 4.5 months, from March 31 to August 16, with a greater than 28% chance of a given day being a wet day. The chance of a wet day peaks at 33% on May 30.

The drier season lasts 7.5 months, from August 16 to March 31. The smallest chance of a wet day is 22% on January 29. 36°F.

Rain falls throughout the year in East Haddam. The most rain falls during the 31 days centered around June 3, with an average total accumulation of 3.8 inches. The snowy period of the year lasts for 5.1 months, from November 7 to April 11, with a sliding 31-day liquid-equivalent snowfall of at least 0.1 inches. The most snow falls during the 31 days centered around January 27, with an average total liquid-equivalent accumulation of 1.0 inches.

The windier part of the year lasts for 5.9 months, from October 27 to April 22, with average wind speeds of more than 5.8 miles per hour. The windiest day of the year is February 26, with an average hourly wind speed of 7.4 miles per hour. The calmer time of year lasts for 6.1 months, from April 22 to October 27.

2.3. Government Style

East Haddam is a Board of Selectmen form of government with a First Selectman as the chief elected official. The Selectman's Office is the executive office of town government.

The office is responsible for general management of the Town's affairs. This includes budget preparation and administration, personnel management and hiring, bidding, RFP and RFQ requirements, grants and contract administration, building maintenance and usage. The First Selectman also functions as the Chief of Police, Legal Traffic Authority, Board of Director Representative to RiverCOG, Representative to the Chatham Health District, Representative to the East Haddam Ambulance Association, and ex-officio member of every board and commission.

The Town Meeting serves as the legislative body.

2.4. Development Trends

Since the last plan update, East Haddam has experienced some minimal changes in development, including:

- Ten one-off single-family houses are constructed on average per year
- Accessory units and renovations of existing buildings comprise the majority of development in town
- There has been no new development in the floodplains or other known hazard areas
- One mill building has been redeveloped

The new development noted has been constructed to current building code and zoning standards. Since much of it is redevelopment, overall vulnerability to hazards should be reduced. While new construction of residences and assessor structures could contribute to overall vulnerability to some hazards (e.g., earthquake, drought), none have been within flood prone areas. Flooding is the primary hazard in town.

2.5. Town-Specific Hazard Concerns

Municipal staff reported several specific hazard concern issues, which are listed below. The information below is intended to supplement the hazard-specific analysis completed in Section 2, of Volume I of this plan. Not all hazards that impact the town are addressed or supplemented in this annex. They can be found in Volume 1 of the plan.

A note: To preserve the reader's ability to align RiverCOG-Level and town-level hazard identification and risk analysis, the order of the following hazards aligns with the order of hazards in Volume I. Individual towns have ranked these hazards differently. This town-level ranking can be found in Section 3.3 Hazard Risk Ranking.

2.5.1. Severe Winter Weather

Winter storms are one of the three most significant hazards for the Town of East Haddam. Wind and snowstorms do occur regularly; but the results are not as catastrophic as flooding and hurricanes. Roof collapse is a major concern during snow events. A major ice storm can cause major road closures and power outages. The last Public Assistance reimbursements from FEMA (approximately $2.5M) was in 2018. The Town of East Haddam is not equipped to respond to an event of that magnitude without the aid of additional people operating snow removal equipment. With the exception of the 2025/2026 winter season, major winter events have been limited since the 2021 plan update.

2.5.2. Flooding

Flooding - Riverine and Inland Flooding

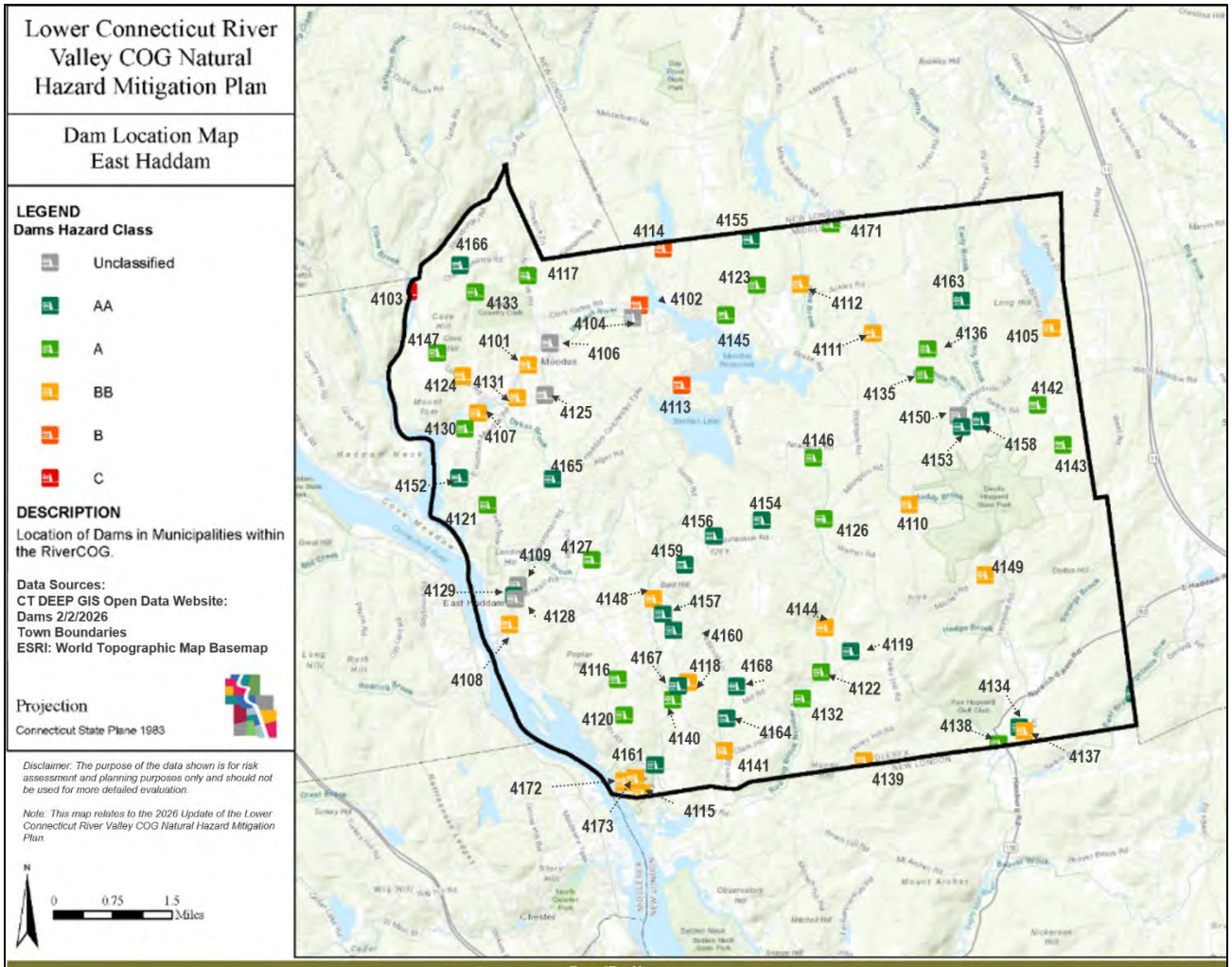
East Haddam has structures in or adjacent to flood hazard areas. The Goodspeed Airport on the Connecticut River in East Haddam (privately owned) is adjacent to the river and at risk of flooding. For East Haddam, flash floods are the most dangerous flooding conditions as is evidenced by our history of flooding. They are the most significant natural hazard with the potential to do harm to people, places, and things. One concern noted by the Local Planning Team was that Connecticut River flooding eliminates the ability to refill propane tanks needed to run the WWTP. Latest repetitive damage has occurred along Succor Brook in East Haddam village. This area has been recently studied and evaluated by CIRCA, as part of its Resilient Connecticut program. East Haddam has applied for a $650K grant from the CT DEEP Climate Resilience Program to implement some of the findings of the CIRCA report. The proposed project includes the replacement of the Creamery Road Bridge and demolition of the rehearsal studio at opera house which is repetitively flooded. A site

must be identified for the relocation of the rehearsal studio as it is integral to the operations of the opera house.

2.5.3. Dam Breach

Dams, due to both the risk of their failure and their inability to operate effectively during flood conditions due to poor maintenance, are of high concern to the Town. Dam breach and associated inundation of streams passing through East Haddam and low-lying roads are of great concern during significant rain events. CT DEEP's registry of dams also shows 69 registered dams. Four are listed as breached; 17 are listed as negligible hazard; 22 low hazard and 6 are unclassified. Of the remaining dams, 16 are moderate hazard, 3 significant and 1 high hazard.

Figure 2.4 shows the location of all dams within East Haddam. Moderate, Significant, and high hazard-class dams are presented in Table 2.1. No changes were noted since the 2021 plan update. A full list of dams is provided in Appendix B.



Dam ID - Name									
4101 – Brownell Pond Dam	4108 – Trouble Pond Dam	4115 – Gillette Castle Dam	4122 – Parker Pond Dam	4129 – Scott Pond Dam	4136 – Fish & Game Club Dam #1	4143 – Urbanik Pond Dam	4150 – Hotyckey Pond Dam	4158 – Private Pond Dam	4166 – Walden Pond
4102 – Moodus Reservoir	4109 – Boardman Pond Dam	4116 – River Road Dam	4123 – Cone Pond Dam	4130 – Klar Crest Pond Dam	4137 – Pizzini Pond Dam	4144 – Urban Pond Dam	4152 – Dogwood Pond	4159 – Shanaghan Dam	4167 – Farrow Pond
4103 – Leesville Dam	4110 – Cones Pond Dam	4117 – Montes Pond Dam	4124 – Taylor Dam	4131 – Sportsmen Pond Dam	4138 – Mazer Pond Dam	4145 – Moodus Sportsmen Pond Dam	4153 – Welge Pond Dam	4160 – Taylor Pond	4168 – Millpond Dam
4104 – Whorle Dam	4111 – Pecks Meadow Pond Dam	4118 – Berlin Fish & Game Dam	4125 – Shady Brook Pond Dam	4132 – Roaring Brook Fish & Game Club Dam	4139 – Hedlund Pond Dam	4146 – Kellems Pond Dam	4154 – Mazur Pond	4161 – Valley Brook Dam	4171 – Thousand Acre Pond
4105 – Lake Hayward Dam	4112 – Post Pond Dam	4119 – William Buckler Dam	4126 – Martin Pond Dam	4133 – Banner Lodge Dam	4140 – J Lieber Pond Dam	4147 – Brownell Pond Dam #3	4155 – Number 1 Pond	4163 – Waterfowl Marsh	4172 – Gillette Castle Goldfish Pond Dam
4106 – Brownell Pond Dam #1	4113 – Bashan Lake	4120 – Small Pond Dam	4127 – Succor Brook Dam	4134 – Pizzini Pond Upper Dam	4141 – Gates Pond Dam	4148 – Deraad Pond Dam	4156 – Palleria Pond	4164 – Brownell Pond	4173 – Gillette Castle Bridge Pond Dam
4107 – Johnson Millpond Dam	4114 – Pickerel Lake Dam	4121 – Stanley Lesick Dam	4128 – Lower Succor Brook Dam	4135 – Fish & Game Club Dam #2	4142 – Alexander Pond Dam	4149 – Mitchell Pond Dam	4157 – Bishop Pond	4165 – Rip Rap Pond	

Figure 2.4. Location of Dams, East Haddam, CT

Table 2.1. Moderate, Significant and High Hazard Dams, East Haddam, CT

CT Dam #	Dam Name	Hazard Class	Owner	Road Name
4101	Brownell Pond Dam	BB – Moderate	Brownell Properties	423 Moodus Road
4105	Lake Hayward Dam	BB – Moderate	Property Owners Association of Lake Hayward	Haywardville Road
4107	Johnson Millpond Dam	BB – Moderate	Rajon Realty Corporation and Iglesia Ni Cristo Church	Johnsonville Road
4108	Trouble Pond Dam	BB – Moderate	Goodspeed Opera House Foundation, Inc.	Norwich Road
4110	Cones Pond Dam	BB – Moderate	Private	369 Tater Hill Road
4111	Pecks Meadow Pond Dam	BB – Moderate	East Haddam Fish & Game Club	Geoffrey Road
4112	Post Pond Dam	BB – Moderate	East Haddam Fish & Game Club	Olmstead Road
4115	Gillete Castle Dam	BB – Moderate	Connecticut DEEP	River Road
4118	Berlin Fish & Game Dam	BB – Moderate	Connecticut Sportsman's Assoc., Inc.	Silas Holmes Road
4124	Taylor Dam	BB – Moderate	Private	24 Moodus Leesville Road
4131	Sportsmen Pond Dam	BB – Moderate	Green Village Mill Pond, LLC	Moodus Road
4137	Pizzini Pond Dam	BB – Moderate	Private	Baker Lane
4139	Hedlund Pond Dam	BB – Moderate	Private	Hedlund Road
4141	Gates Pond Dam	BB – Moderate	Private	Phelps Road
4144	Urban Pond Dam	BB – Moderate	Private	Sheepskin Hollow Court South
4148	Deraad Pond Dam	BB – Moderate	Private	Petticoat Lane
4149	Mitchell Pond Dam	BB – Moderate	Connecticut DEEP	Mitchell Road
4172	Gillete Castle Goldfish Pond Dam	BB – Moderate	Connecticut DEEP	River Road
4173	Gillete Castle Bridge Pond Dam	BB – Moderate	Connecticut DEEP	River Road
4102	Moodus Reservoir	B - Significant	Connecticut DEEP	Falls Bashan Road
4113	Bashan Lake	B - Significant	Connecticut DEEP	Bashan Road
4114	Pickerel Lake Dam	B - Significant	Connecticut DEEP	Nichols Road
4103	Leesville Dam	C - High	Connecticut DEEP	Power House Road

This plan update seeks approval under Element G of the FEMA Local Plan Review Tool, for potential HHPD eligibility. One high hazard dam is located in East Haddam: the Leesville Dam. This dam was introduced and described in the multi-jurisdiction document. The Emergency Action Plan (EAP) was obtained and reviewed to understand the people, critical facilities, and community assets in the dam failure inundation area. A summary is included below.

- Leesville Dam: The State of Connecticut owns this dam. An EAP was prepared and accepted by DEEP. The dam is a run of the river dam that impounds the Salmon River approximately four miles before it joins the Connecticut River.
    - According to the EAP, "Downstream areas at risk for flooding due to a dam failure consist mainly of residential properties. The greatest threat to flooding due to a breach is the immediate structures located just downstream. These include homes along Powerhouse Road and Leesville Road in East Haddam as well as Haines Trail in Haddam. Additional structures further downstream along Pettipaug Road and Sherwood Camp Road Extension in Haddam are also at risk."
    - A close review of the inundation mapping shows that most of the properties (parcels) at risk are oriented such that homes and buildings on them are not at risk.
    - Based on the mapping in the EAP, Route 151 will not overtop during a dam breach scenario. This helps ensure that north-south access through the inundation area will remain viable.

2.5.4. Hurricanes and Tropical Storms

Hurricanes pose the most catastrophic damage potential of any natural disaster phenomenon. Along with hurricanes comes strong winds which results in power outages and fallen trees and debris that causes blocked roads. Tree inventory and maintenance/removal is needed in town to mitigate debris and fallen trees in town. Hurricane damage is not as localized as flooding. Generally, the effects are town-wide and, in the event of an exceptionally wet hurricane, East Haddam experiences flooding issues throughout the town.

2.5.5. Tornado

Although tornadoes are relatively rare in CT, the threat of tornadoes could cause significant damages to life and property in the Town of East Haddam. Overall, residents throughout East Haddam are equally susceptible to the chance of a tornado occurrence. However, a strong tornado would likely cause more damage to the more densely populated areas in town.

2.5.6. Earthquakes

The entire town could be affected by an earthquake in this region; however, impacts could vary locally. In East Haddam and the surrounding region, recorded impacts have been limited to shaking to the extent that things were knocked off shelves and people were alarmed. Structural damage has been limited to building components such as chimneys and buildings in poor repair; but failing structures have caused property damage in nearby towns. Anything higher than a "minor"

earthquake is unlikely in East Haddam; however, the potential does exist. The most severe earthquake in Connecticut's history occurred at East Haddam on May 16, 1791. In 2008 there was reportedly a magnitude 2.3 earthquake in East Haddam around Beebe Road. As recently as March 23, 2011, the village of Moodus in East Haddam, just north of Old Lyme, experienced a tremor which measured 1.3 on the Richter scale. There have been two minor seismic events since the last plan update: a minor magnitude 1.9 event in 2024 and a 1.3 magnitude event in 2026.

2.5.7. Drought

East Haddam is small enough that a drought would most likely be town wide. Severe droughts are not frequently occurring natural events, but flashy droughts have been occurring with some regularity. When they do occur, the most at-risk populations are those residents with shallow wells. Dangerously low water company reservoirs put everyone on those systems at risk. Droughts can also exacerbate wildfire conditions. Municipalities and water companies often ask for the public's help in conserving water during dry periods to prevent the depletion of water supplies. The threat of wildfires for people living near wild land areas or using recreational facilities in wilderness areas is real. Dry conditions at various times of the year increase the potential for wildfires. See additional details on drought and wildfire in Volume 1, Section 2 of this plan. The last severe drought in East Haddam resulted in the failure of already unhealthy mature trees.

2.5.8. Extreme Temperature

Extreme cold spells do occur periodically, typically between the months of December and March. Although cold temperatures are normal during the winter months, occasionally temperatures can drop below freezing for extended periods, sometimes as low as 0ºF. Low-income housing residents and the elderly in homes without sufficient heat sources are particularly vulnerable. Town officials have planned and continue to update the accommodations of shelters in their municipalities. One classification of shelters is warming centers, to be used by those that either have insufficient heat sources or for times of power outages.

Extreme heat and heat waves are always a possibility during the summer months, particularly between June and August. A heat wave in Connecticut is defined as a period where the temperature reaches at least 90ºF for three consecutive days. In these events, the elderly in homes without air conditioning are particularly vulnerable. As a result, town officials have identified cooling centers throughout town.

2.5.9. Terrestrial, and Aquatic Invasive Species, Tree Disease and Pests

These hazards are covered in detail in Volume I of this plan. The Local Planning Team noted the Hydrilla in the Connecticut and Salmon Rivers is an issue. Milfoil is also an issue. The town and region primarily track them but don't remediate beyond harvesting and some limited herbicide applications.

Spotted Lantern Flies and Bittersweet were noted as the two biggest threats to trees in East Haddam. Diseased and falling trees and debris are a major problem in East Haddam. There is a need for routine

tree inspection due to the many mature oak trees dying. When debris falls during a storm event, it can cause secondary impacts to area culverts and storm drain systems by clogging them, making them less effective especially during heavy rain events.

3. Hazard Risk

3.1. Historical Events

Table 3.1 lists the Federal Disaster declarations for Middlesex County, for which East Haddam requested assistance. The last Federal Disaster Declarations were in late 2021.

Table 3.1. East Haddam Natural Hazard Events

Type of Event	Date	Preliminary Damage Assessment
Snow Event (DR-3176)	03/11/2003	$39,935.21
Severe Storm – Snow Event (DR-3200)	02/17/2005	$47,725.99
Severe Storm - Wind Event (DR-1904)	04/23/2010	$3,360.40
Wind - Hurricane Event (DR-4023)	02/09/2011	$240,317.85
Wind - Hurricane Event (DR-4087)	10/30/2012	$99,596.65
Severe Storm - Snow Event (DR-4106)	03/21/2013	$80,881.76
Severe Storm - Snow Event (DR-4213)	04/08/2015	$700,000*
Severe Storm – Wind Event (DR-4410)	12/5/2018	$2,364,371
Tropical Storm Isaias (DR-4580)	1/12/2021	$163,099.02
Tropical Storm Henri (DR-3564)	8/22/2021	$8,167.59
Hurricane Ida (DR-4629)	10/30/2021	$55,991.01

**Value reported as approximate by the Town of East Haddam, not listed in the PA data provided from FEMA*

3.2. Recent Events

There have been no major natural hazard events since 2021. No FEMA Public Assistance (PA) or FEMA involvement was reported. During intense rainfall events, Beebe Road washed out in 2024; Devil's Hopyard road was washed out and closed for 6 months; and Jones Hill Road was also washed out and temporarily closed. Many small brush fires occurred during last drought – all were small and contained. East Haddam issued a state of emergency burn ban.

Public assistance is often provided by FEMA after Presidentially declared disasters. Funding is typically for extraordinary expenses incurred by the community such as public safety and public works overtime, certain equipment and contracted resources and debris cleanup.

Total PA reimbursements to the community were as follows:

- Flood Events: $0 ($0 annually)
- Hurricane (Wind) Events: $2,934,904 ($108,700annually)
- Winter (Snow) Storm Events: $868,543 ($32,168 annually) - Note that these values include an approximate $700,000 in PA reimbursement after the Blizzard of 2015. This value is not listed in the PA data provided from FEMA however the Town of East Haddam officials reported it.

Table 3.2 and Table 3.3 list PA reimbursements in East Haddam.

Table 3.2. Hurricane Wind Event PA Reimbursements, East Haddam, CT

DISASTER #	1904	4023	4087	4410	4580	3564	4629
Incident Dates	Mar-May 2010	Aug-Sept 2011	Oct-Nov 2012	Dec 2018	Jan 2021	Aug 2021	Oct 2021
Declaration	04/23/2010	09/02/2011	10/30/2012	12/5/2018	1/12/2021	8/22/2021	10/30/2021
Entity	FEMA PA Reimbursement	FEMA PA Reimbursement	FEMA PA Reimbursement	FEMA PA Reimbursement	FEMA PA Reimbursement	FEMA PA Reimbursement	FEMA PA Reimbursement
State	$	$	$	$	$	$	$
Municipal	$	$	$	$	$	$	$
Nonprofit	$0	$0	$	$	$	$	$
Total	$3,360	$240,318	$99,597	$2,364,371	$163,099	$8,168	$55,991
Annualized	$124	$8,901	$3,689	$87,569	$6,041	$303	$2,074

Table 3.3. Winter Storm PA Reimbursements, East Haddam, CT

DISASTER #	3176	3200	4106	4213
Incident Dates	Feb 2003	Jan 2005	Feb 2013	Jan 2015
Declaration	3/11/03	2/17/05	03/21/2013	04/08/2015
Entity	FEMA PA Reimbursement	FEMA PA Reimbursement	FEMA PA Reimbursement	FEMA PA Reimbursement
State	$	$	$	$
Municipal	$	$	$	$
Nonprofit	$0	$0	$0	$0
Total	$39,935	$47,726	$80,882	$700,000**
Annualized	**$1,479**	**$1,768**	**$2,996**	**$25,926**

3.3. Hazard Risk Ranking

East Haddam participated in the regional hazard ranking conducted by the Hazard Mitigation Planning Team. Table 3.5. Hazard Ranking Parameters provides a summary of the categories used to rank the hazards and their weighted values for the Composite Hazard Risk Index.

The probability of each hazard is determined by assigning a level, from unlikely to highly likely, based on the likelihood of occurrence from historical data. The total impact value includes the affected area, primary impact, and secondary impact levels of each hazard. Level of Community Concern reflects the perceived risk of each hazard as indicated by respondents to question 6 of the community survey. This question asks, "How concerned are you about each of the following hazards impacting your home, business, community, or organization?" and received 204 responses.

Each of these five criteria are assigned weights, as well as point values for each of their responses. Each level's score is reflected in the matrix. The total score for each hazard is the probability score multiplied by its importance factor times the sum of the impact level scores multiplied by their importance factors. Based on this total score, the hazards are separated into three categories based on the hazard level they pose to the communities: Significant, Moderate, Limited.

Table 3.4. Hazard Ranking Parameters

Criteria	Weight	1 Point	2 Points	3 Points	4 Points
Hazard Probability	2.0	**Unlikely** Less than 1% probability in next 100 years or has a recurrence interval of greater than every 100 years.	**Somewhat Likely** Between 1 and 10% probability in next year or has a recurrence interval of 11 to 100 years.	**Likely** Between 10 and 100% probability in next year or has a recurrence interval of 10 years or less	**Highly Likely** Near 100% probability in next year or happens every year.
Impact – Affected Area	0.8	**Isolated** Less than 1% of area affected	**Small** Between 1 and 10% of area affected	**Medium** Between 10 and 50% of area affected	**Large** Between 50 and 100% of area affected
Impact – Primary Impact	0.7	**Negligible** 1 to 10% of people or property	**Limited** 10% to 25% of people or property	**Critical** 25 to 50% of people or property	**Catastrophic** >50% of people or property
Impact – Secondary Impact	0.5	**Negligible** No loss of function, downtime, and/or evacuations	**Limited** Minimal loss of function, downtime, and/or evacuations	**Moderate** Some loss of function, downtime, and/or evacuations	**High** Major loss of function, downtime, and/or evacuations

Criteria	Weight	1 Point	2 Points	3 Points	4 Points
Level of Community Concern	1.0	**Low Concern**	**Moderate Concern**	**High Concern**	-

The hazard risk ranking generated from this exercise, along with consideration of available data, was used to prioritize the level of effort assigned to further analysis of each hazard in the vulnerability analysis and lost estimation sections. All the participating communities agreed upon the results of the hazard ranking for the overall region. Based on the results of the exercise, the hazards were ranked as follows in Table 3.6. Summary of Potential Hazard Impacts. East Haddam endorsed the ranking as accurate for the Town. Regional hazards that do not impact the town (e.g. coastal flooding) were removed from the ranking.

Table 3.5. Summary of Potential Hazard Impacts

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
Aquatic Invasive Species	Semi-quantitative, supplemented by state and municipal figures, recommend survey	Highly Likely - 4	Large - 4	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant
Terrestrial Invasive Species	Semi-quantitative, supplemented by state and municipal figures, recommend survey	Highly Likely - 4	Large - 4	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant
Tree Infestation	Semi-quantitative, supplemented by state and municipal figures, recommend survey	Highly Likely - 4	Large - 4	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant
Hurricanes	Hazus for wind	Likely - 3	Large - 4	Critical - 3	Moderate - 3	High Concern - 3	15.8	Significant
Winter Storms (Snow, Ice, Wind, including Noreasters)	Historic analysis for probability and annualized damages	Highly Likely - 4	Large - 4	Negligible - 1	Moderate - 3	Moderate Concern - 2	15.4	Significant

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
Flood – Riverine and Inland Flooding (Riverine, Drainage, Coastal Surge, Sea Level Rise - includes flooding from Nor'easters)	Hazus, SLR Overlay, FS Model Overlay, Historic data and damages for additional probability	Likely - 3	Medium - 3	Limited - 2	Moderate - 3	High Concern - 3	14.3	Significant
Extreme Heat and Cold	Qualitative based on historic	Likely - 3	**Large - 4**	Negligible - 1	Limited - 2	High Concern - 3	13.9	Moderate
Severe Weather (thunderstorms, downbursts, hail, lightning)	Historic analysis for probability and annualized damages	**Highly Likely - 4**	Small - 2	Negligible - 1	Limited - 2	Moderate Concern - 2	13.3	Moderate
Wildfire	Historic analysis for probability and annualized damages	Likely - 3	Small - 2	Critical - 3	Moderate - 3	Moderate Concern - 2	13.2	Moderate
Drought	Historic analysis for probability and annualized damages - some qualitative	Likely - 3	Medium - 3	Negligible - 1	Limited - 2	High Concern - 3	13.1	Moderate

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
Tornadoes	Historic analysis for probability and annualized damages - pulling in surrounding counties	Likely - 3	Isolated - 1	**Catastrophic - 4**	Limited - 2	Moderate Concern - 2	12.6	Moderate
Earthquakes	Hazus, 3 scenarios	Somewhat Likely - 2	Small - 2	**Catastrophic - 4**	**High - 4**	Low Concern - 1	11.4	Limited
Flooding from Dam Failure	Dam Inundation areas, Historic analysis for probability and annualized damages	Unlikely - 1	Small - 2	Limited - 2	Moderate - 3	Moderate Concern - 2	8.5	Limited

3.3.1. National Flood Insurance Program (NFIP) Participation

East Haddam began participating in the NFIP in an emergency entry in 1975 and regular entry in 1979. There are 27 policies in force, providing approximately $12 million in coverages. Losses paid have been $577,034.

Substantial improvements and substantial damages occur infrequently in town. All new construction and substantial improvements located within the 100-year floodplain must conform to minimum elevation requirements and construction standards so as to minimize flood damage. Substantial improvements are defined as any combination of improvements, the cost of which equals or exceeds 50% of the market value before improvement started. The floodplain manager (land use administrator/building official) is responsible for administering the substantial improvement and substantial damage provisions codified in the floodplain management regulations. In the event of a major disaster, resulting in a number of substantially damaged buildings that would overwhelm town staff, the town would reach out to the state NFIP coordinator's office for assistance in training additional staff.

Repetitive Loss Property Detail

The Town of East Haddam has three (3) repetitive loss (RL) properties. One is commercial and sits along the Connecticut River. Two are residential and in an AE Zone along inland streams. There have been 6 claims for these three properties (2 each) totaling $97,541. There are no severe repetitive loss (SRL) properties in East Haddam. Town staff feel that one of the repetitive loss properties has been mitigated by the widening of a bridge on Rte. 151.

4. Capability Assessment

This section discusses capabilities and operational procedures that East Haddam undertakes that contribute to or have the potential to contribute to hazard mitigation. It also notes deficiencies in those capabilities that could be addressed to strengthen resilience.

4.1 Critical Facilities

Public and private utility facilities are vital to maintaining or restoring normal services to areas of town before, during, and after a natural disaster.

Since the last plan update in 2021, the following changes and needs are noted:

- The Town Hall facility is not also a heating and cooling center
- The Nathan Hale-Rae Middle School is not listed as a no longer being a shelter
- East Haddam Middle School had a generator added
- The Fire Department and Ambulance Station on 440 Town Street had a generator added
- A generator was added at the transfer station
- The Sewer Treatment Plant and Sewer Pump Station on Lumberyard Road were added as critical facilities

- The DPW Facility at 5 Hood Lane and the Radio Tower Site on Mt. Parnassus were added as critical facilities

Figure 4.1 shows the location of critical facilities in East Haddam which are identified at the regional level.

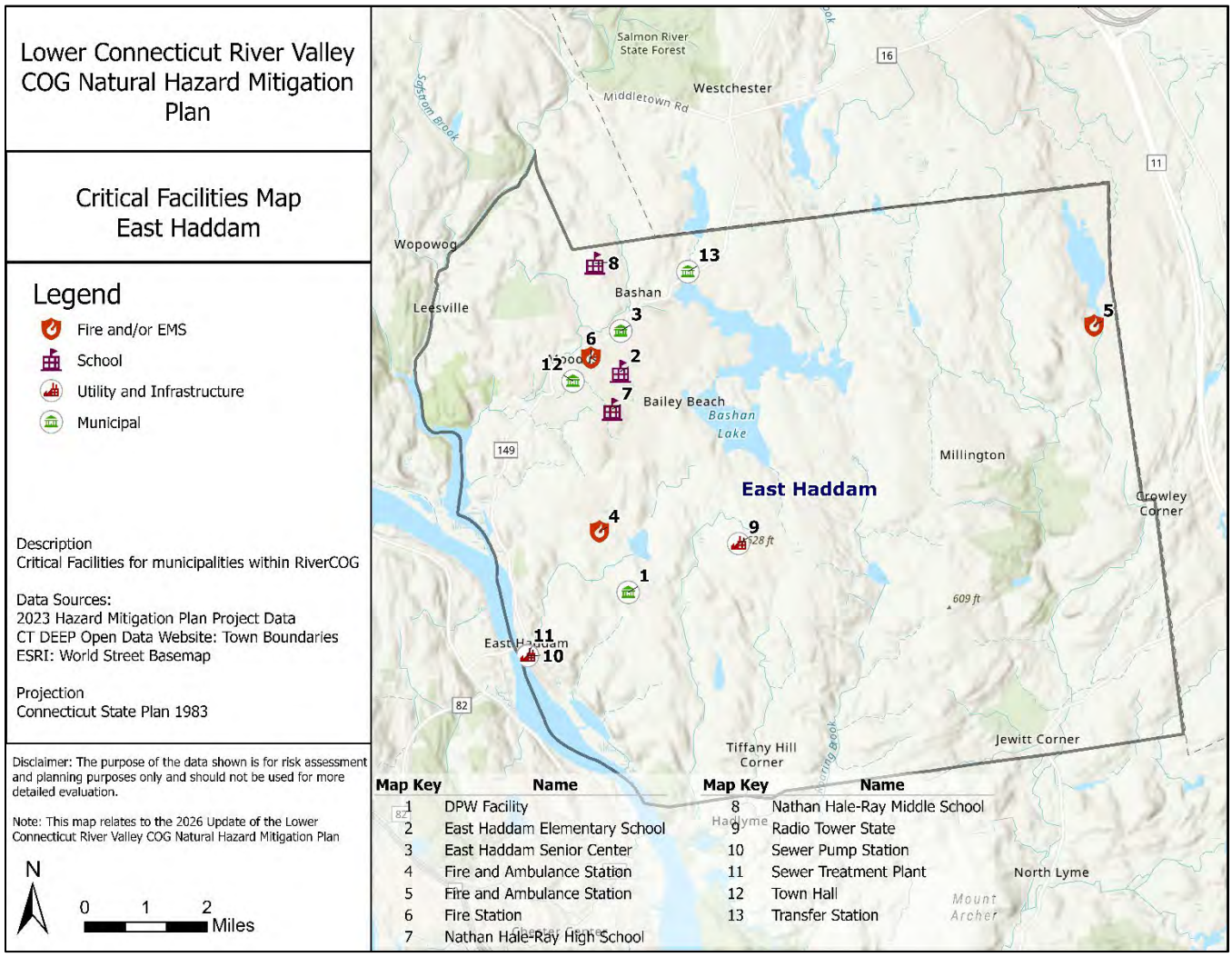


Figure 4.1. Location of Critical Facilities in East Haddam

Table 4.1 lists critical facilities identified by the Town.

Table 4.1. Critical Facilities

Facility	Type	Address	Flood Zone	Generator	Notes
Town Hall	Municipal	1 PLAINS ROAD	No	X	Now serves as cooling and warming shelter

Facility	Type	Address	Flood Zone	Generator	Notes
East Haddam Senior Center	Municipal	15 GREAT HILLWOOD ROAD	No	X	Shelter
Nathan Hale-Ray High School	Municipal	15 SCHOOL ROAD	No	X	Shelter
Nathan Hale-Ray Middle School	Municipal	73 CLARK GATES ROAD	No	X	Not a shelter
East Haddam Elementary School	Municipal	45 JOE WILLIAMS ROAD	No	X	Generator added
Fire Station	EMS	44 WILLIAM F PALMER ROAD	No	X	
Fire and Ambulance Station	EMS	440 TOWN STREET	No	X	Not a shelter
Fire and Ambulance Station	EMS	260 HAYWARDVILLE ROAD	No		
Transfer Station	Municipal	39 NICHOLS ROAD	No	X	
Sewer Treatment Plant	Municipal	Lumberyard Road	Yes	X	Generator is above BFE 14.2'. Added as CF since 2021
Sewer Pump Station	Municipal	Lumberyard Road	Yes	X	Added as CF since 2021
DPW Facility	Municipal	5 Hood Lane	No	X	Generator for building but not fuel operation. Added as CF since 2021
Radio Tower	State	194 Mount Parnassus Road	No	X	Added as CF since 2021

4.2. Municipal Capabilities

The Town of East Haddam has a variety of natural hazard mitigation capabilities, including local regulations and ordinances, operational protocols, and emergency response capabilities. Following is a list of some highlighted capabilities identified by municipal staff.

4.2.1. Regulations and Ordinances

The Town of East Haddam participates in the National Flood Insurance Program (NFIP). It uses the State Building Code for code compliance to ensure safe structures which withstand 110 mph wind speed and

appropriate snow loads. East Haddam follows their Plan of Conservation and Development for planning infrastructure, open space, and commercial and industrial development.

East Haddam is currently updating their Debris Management Plan and looking for locations for managing the massive amounts of debris that could result in the event of a hurricane or other large-scale windstorm hitting the area. Diseased and falling trees continue to be a major problem.

There have been no significant changes to regulatory policy for new development, due primarily to the lack of development.

4.2.2. Operations and Procedures

East Haddam follows their Emergency Operations Plan in case of any emergencies within the town. There have been no changes to sheltering and evacuation plans in town.

4.2.3. Capital Improvements

Capital Improvements address municipal improvements including rights-of-way, land, housing, infrastructure, or utilities for public purposes. Mitigation actions from this NHMP should be included in the Capital Improvement Program (CIP). Larger items such as bridge and culvert replacements and elevation of roads are included in the 5-year CIP. The CIP should be reviewed often so that it can include new mitigation action items each time the NHMP is updated. This is a good way for the town to prioritize mitigation items and use the CIP to set aside funds for infrastructure improvements to reduce loss of life and property during natural hazard events.

4.2.4. Plan Integration with Other Planning Mechanisms

The town of East Haddam uses the mitigation plan to inform its 5-year capital improvement plan and associated annual budgets. East Haddam staff reported that the plan has not been formally incorporated into other planning documents. There is new legislation (P.A. 25-33) that now requires cities and towns to incorporate climate vulnerability (specifically including flooding) and resilience strategies into Plans of Conservation and Development. East Haddam plans to comply with that new requirement during the next POCD Update. Further, communities are now required to develop and maintain affordable housing plans. The mitigation plan will help inform siting criteria within that plan.

4.2.5. Outreach, Education, Communication, and Warnings

Municipal responsibility to the public:

- The Town of East Haddam encourages residents in vulnerable areas to regularly monitor Flood Warnings.
- The Town of East Haddam encourages residents with structures in vulnerable areas; specifically, in floodplains to have a flood evacuation plan in place and to flood proof their buildings.
- The Town of East Haddam will post storm info on their websites including proper preparations and warnings.
- State DPH and DEMHS seasonally post info on their websites.

- East Haddam uses the Everbridge notification system for mass communication of information during events, but believes it is underutilized and the public needs to be educated re the value of "opting-in."

4.2.6. Other Capabilities

Table 4.2 (a & b), Table 4.3, and Table 4.4 list legal, regulatory, technical, administrative and financial capabilities that support hazard mitigation.

Table 4.2. Legal and Regulatory Capability

Table 4.2.a. Codes, Ordinances & Requirements

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Building Code	Yes	Yes	No	Yes	All municipalities enforce the State Building Code
Zoning Code	Yes	No	No	No	
Subdivisions	Yes	No	No	No	
Post Disaster Recovery	Yes - recovery annex in LEOP	No	No	No	
Real Estate Disclosure	Yes	No	No	Yes	State requirement
Growth Management	No	No	No	No	
Site Plan Review	Yes	No	No	No	
Special Purpose (flood management, critical areas)	Yes - FPM Regulations	Yes	No	Yes	State flood management Statutes and regulations

Table 4.2.b. Planning Documents

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
POCD - 2019 was latest update	Yes	No	No	Yes	Current
Floodplain or Basin Plan	No	No	No	No	
Stormwater Plan	Yes	No	No	Yes	
Capital Improvement Plan	Yes	No	No	No	
Habitat Conservation Plan -open space plan	Yes	No	No	No	Integrated into POCD, Open Space Ordinance and Eight Mile River Watershed Plan.
Economic Development Plan - POCD Element	Yes	No	No	No	Regional Comprehensive Economic Development Strategy
Emergency Response Plan	Yes	No	No	Yes	LEOP templates provided by DEMHS

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Shoreline Management Plan	No	No	No	No	
Post Disaster Recovery Plan - in the LEOP (2026)	Yes	No	No	Yes	LEOP templates provided by DEMHS

Table 4.3. Administrative and Technical Capability

Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Land Use Office / Land Use Administrator
Engineers or professionals trained in building or infrastructure construction practices	Yes	
Planners or engineers with an understanding of natural hazards	Yes	Land Use Administrator
Staff with training in benefit/cost analysis	No	
Floodplain manager	Yes	Land Use Administrator / Building Official
Surveyors	No	Contracted as needed.
Personnel skilled or trained in GIS applications	Yes	Supported by RiverCOG
Emergency manager	Yes	Emergency Management
Grant writers	Yes	Municipal Staff

Table 4.4. Financial Resources

Financial Resources	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	Yes
Withhold Public Expenditures in Hazard-Prone Areas	Yes (State)
State Sponsored Grant Programs	Yes

Financial Resources	Accessible or Eligible to Use?
Development Impact Fees for Homebuyers or Developers	No – but do request open space set asides

Gaps in Capabilities

Areas where gaps were noted in the Town of East Haddam capabilities were identified in the Town of East Haddam. These are noted below.

- In need of location for managing the massive amounts of debris in the event of a hurricane or other large-scale windstorm hitting the area. Diseased and falling trees are a major problem.
- In East Haddam, falling tree debris often results in street closures. In addition, tree debris creates blockages in the local streams and in culverts.
- The Town needs assistance in obtaining Federal Mitigation and Financial Assistance for resilience projects.
- The propane tank at the WWTP cannot be filled during large flooding events (e.g., Hurricane Irene).
- There is a need for additional people to operate snow removal equipment during big events
- Regarding fire, there are no hydrants in town. There are 4 dry hydrants that work. Fire ponds are generally filled in and not accessible to dredge.
- The Town of East Haddam has very little public water. There are systems that feed the Town Hall and the immediate area, Lake Hayward and the Banners Country Club and Planned Unit Development (CT Water).

4.2.7. New Capabilities and Completed Actions

Since the last plan update in 2021 there have been many updated capabilities:

- The town increased the use of Everbridge to share important information with community members.
- The town increased the budget needed to maintain and remove dead, dying, dangerous, and diseased trees on rights-of-ways and on other town-owned lands. The budget increased from $50,000 to $150,000, plus whatever is left over from snow removal funds after winter.
- Established a protocol to use the Public Works Garage to dispose of large volumes of debris, incompliance with DEMHS debris management plan standards.

5. Hazard Mitigation Action Plan

This section presents the progress made since the 2021 action plan and establishes new goals, objectives and actions identified for the 2026-2030 planning horizon.

5.1. Previous Mitigation Actions Disposition

During the process of developing the 2021 East Haddam Hazard Mitigation Plan, several hazard mitigation actions were identified to be pursued during the five-year planning horizon that followed. Table 5.1 presents the actions listed in that document, and the status of those actions.

Table 5.1. Status of Previous Mitigation Strategies and Actions.

Action	Description	Status	Notes
01	Coordinate with DOT to address culverts, pipes, bridges, etc. on state owned roadways to mitigate flooding and overtopping problems. Create list, request meeting with DOT, annual reminders (refer to the list in Table 13)	Carry Forward	
02	Conduct engineering studies to mitigate various Town-owned structures in need of repair, culverts, pipes, bridges, etc., on Town-owned roadways that are causing flooding and overtopping problems. Replace 1-2 annually. (refer to the list in Table 13)	Carry Forward	
03	Support mitigation projects that will result in protection of public or private property from natural hazards through stormwater management improvements for areas identified by the Town. Identify and implement one per year.	Carry Forward	
04	Identify funding to assist flood prone properties along the Connecticut River and inland streams for acquisition. Prioritize Repetitive Loss properties. Consider Elevation.	Deleted	Current property owners have no interest in assistance
05	Update the existing Debris Management Plan. Identify locations for large volumes of debris and comply with DEMHS debris management plan standards.	Carry Forward	

Action	Description	Status	Notes
06	Budget appropriate money necessary to maintain and remove dead, dying, dangerous, and diseased trees in rights-of-ways and on other town-owned land.	Carry Forward	A lot of clearing over the last decade. Budget is now closer to $300k, in addition to Eversource.
07	Culvert Construction. Oversee the completion of construction of the three culverts along East Shore Drive that started with 2018 FEMA Public Assistance funding.	Carry Forward	One of the three got repaired as emergency. One of the three was engineered. No construction on any of the 3
08	Culvert Construction. Oversee and complete construction of the Mitchell Road culvert improvements to reduce flooding	Completed	
09	Critical Facilities. Install generators at Elementary Schools and Transfer Stations.	Completed	
10	Promote use of Everbridge. Place postings on the community website and social media promoting registration to the Everbridge system to grow it use.	Carry Forward/Ongoing	

5.2. Updated Mitigation Goals, Objectives, and Strategies

As noted in Section 3 of Volume 1, all the RiverCOG participating communities, including East Haddam, participated in setting regional goals and objectives. East Haddam has confirmed these goals and objectives valid for the Town's annex. The three goals and objectives are as follows:

Goal 1: Promote implementation of sound flood management and other natural hazard mitigation principles on a regional and local level. Note: Covers future development through policy, planning, regulation, emergency services, and environmental strategies.

- **Objective for Goal 1:** To promote the development, improvement and implementation of programs, policies, regulations, and emergency services that result in the reduction of long-term risks to life and property.

Goal 2: Implementation of effective natural hazard mitigation projects at the regional and local level. Note: Covers infrastructure and building related projects – the existing built environment.

- **Objective for Goal 2:** To enhance the ability of RiverCOG, other regional entities, and local communities to reduce or eliminate risks to life and property from natural hazards through cost-effective hazard mitigation projects, including avoidance.

Goal 3: Increase research, planning and outreach activities for the mitigation of natural hazards on a regional and local level. Note: Covers the people component of mitigation via outreach and education, and integration with other planning and continuous improvement through increased research.

- **Objective for Goal 3:** To increase general awareness of the region's natural hazards and encourage State agencies, local communities, and the public to be proactive in taking actions to reduce long-term risk to life and property.

The Local Planning Team of East Haddam reviewed these goals and objectives during meetings in June of 2025 and acknowledged that they are still aligned with the priorities of the town.

5.2.1. Prioritization of Mitigation Strategies

In considering which projects, processes, and other measures to undertake in the upcoming plan period, municipal and regional officials evaluated the need to address problems and vulnerabilities in their communities against the communities' resources and capabilities. To prioritize mitigation strategies, a set of criteria commonly used by public administration officials and planners was applied to each proposed strategy. The method, called STAPLEE, is outlined in FEMA planning documents such as Developing the Mitigation Plan (FEMA 386-3) and Using Benefit-Cost Review in Mitigation Planning (FEMA 386-5). STAPLEE stands for the "Social, Technical, Administrative, Political, Legal, Economic, and Environmental" criteria for making planning decisions. Benefit-cost review was emphasized in the prioritization process. Criteria were divided into potential benefits (pros) and potential costs (cons) for each mitigation strategy. The following questions were asked about the proposed mitigation strategies:

Social:

- Benefits: Is the proposed strategy socially acceptable to the community?
- Costs: Are there any equity issues involved that would mean that one segment of the community could be treated unfairly? Will the action disrupt established neighborhoods, break up voting districts, or cause the relocation of lower-income people? Is the action compatible with present and future community values?

Technical:

- Benefits: Will the proposed strategy work? Will it reduce losses in the long term with minimal secondary impacts?
- Costs: Is the action technically feasible? Will it create more problems than it will solve? Does it solve the problem or only a symptom?

Administrative:

- Benefits: Does the project make it easier for the community to administrate future mitigation or emergency response actions?
- Costs: Does the community have the capability (staff, technical experts, and/or funding) to implement the action, or can it be readily obtained? Can the community perform the necessary maintenance? Can the project be accomplished in a timely manner?

Political:

- Benefits: Is the strategy politically beneficial? Is there public support both to implement and maintain the project? Is there a local champion willing to see the project to completion? Can the mitigation objectives be accomplished at the lowest cost to the community (grants, etc.)?
- Costs: Have political leaders participated in the planning process? Do project stakeholders support the project enough to ensure success? Have the stakeholders been offered the opportunity to participate in the planning process?

Legal:

- Benefits: Is there a technical, scientific, or legal basis for the mitigation action? Are the proper laws, ordinances, and resolutions in place to implement the action?
- Costs: Does the community have the authority to implement the proposed action? Are there any potential legal consequences? Will the community be liable for the actions or support of actions or for lack of action? Is the action likely to be challenged by stakeholders who may be negatively affected?

Economic:

- Benefits: Are there currently sources of funds that can be used to implement the action? What benefits will the action provide? Does the action contribute to community goals such as capital improvements or economic development?

Costs: Does the cost seem reasonable for the size of the problem and the likely benefits? What burden will be placed on the tax base or local economy to implement this action? What proposed actions should be considered but be tabled for implementation until outside sources of funding are available?

Each proposed mitigation strategy presented in this plan was evaluated and quantitatively assigned a "benefit" score and a "cost" score for each of the seven STAPLEE criteria as outlined below:

- For potential benefits, a score of "1" was assigned if the project will have a beneficial effect for that criterion or a "0" if the project would have a negligible effect or if the questions were not applicable to the strategy.
- For potential costs, a score of "-1" was assigned if the project would have an unfavorable impact for that criterion or a "0" if the project would have a negligible impact or if the questions were not applicable to the strategy.
- Technical and Economic criteria were double weighted (multiplied by two) in the final sum of scores.
- The total benefit score and cost score for each mitigation strategy was summed to determine each strategy's final STAPLEE score.

Although a community may implement recommendations as prioritized by the STAPLEE method, an additional consideration is important for those recommendations that may be funded under the FEMA mitigation grant programs. To receive federal funding, the mitigation action must have a benefit-cost ratio (BCR) that exceeds a value of 1.0. Calculation of the BCR is conducted using FEMA's Benefit Cost Analysis

(BCA) toolkit. The calculation method may be complex and vary with the mitigation action of interest. Calculations are dependent on detailed information such as property value appraisals, design and construction costs for structural projects, and tabulations of previous damages or NFIP claims. The BCR scoring system used is outlined in Table 5.2.

Table 5.2. BCR Scoring System

Scoring	Benefits	Costs
Low: 0-1 points	Few would benefit; the impacts being addressed are not severe; benefits may be short term	Likely to be done by existing personnel with little impact on budget; not complicated to accomplish. Costs to implement is likely to be under $10,000.
Medium: 2-3 points	Benefits may be felt by many in the community; the action may solve a problem or otherwise benefit the community for several years	May need additional funding or studies; may require change in practices; costs to implement may be between $10,000 and $100,000
High: 4-5 points	Benefits would accrue to many in the community; benefits may accrue to the most vulnerable or those not able to recover on their own; benefits would be long term and may permanently protect from damages	Likely to cost over $100,000 and require obtaining funding outside of operating budget; complicated, lengthy process to implement

The STAPLEE method accounts for cost-benefit considerations both directly (through the "Economic" category) and indirectly (through general consideration of costs and benefits of actions). Additionally, the range of estimated costs of each strategy are included in the STAPLEE table. The assumed costs of projects and generalized presentation of the benefits accruing from them are not based on specific detailed cost estimates as that level of analysis is not appropriate for this type of planning effort. For some projects, such as routine or recurring operations that are established practices and conducted with municipal general operating funds and existing staff, the STAPLEE results can be the only explicit comparison of costs and benefits. For projects for which bonding and/or grant funding will be sought, more in-depth evaluations of costs and benefits will be required. As project scopes are detailed, benefits and costs can be identified with more precision, and the benefit-cost ratio which results from a full benefit-cost analysis may differ from the planning-level STAPLEE results presented here.

It should be noted that higher BCRs do not necessarily correspond to high priorities, nor do low BCRs or BCRs under 1.0 correspond to low-priority projects. An important project with a high priority to the community may have a lower BCR because of its complexity, assumed high expense, and other costs. Communities should not be discouraged or deterred from further consideration of projects that have low BCRs or BCRs less than 1.0 until additional, more specific evaluations of the costs and benefits have been undertaken.

5.2.2. 2021-2026 Prioritized Hazard Mitigation Actions

In addition to the regional mitigation actions endorsed by East Haddam and outlined in Section 3 of Volume 1 of the regional plan, the Town identified or carried over from the last update, ranked and evaluated the actions in Table 5.3. For each identified action, the goal and objective it addresses is noted. Additionally, a description, lead agency, indication of costs and potential funding sources and an estimated timeline for completion is included. Also included are the hazards addressed by a specific action.

Figure 5.1 shows the locations of the projects listed in Table 5.3 with spatial elements that have been carried forward or are new additions. Additionally, completed projects identified in Table 5.1 with spatial elements are also shown on the map. Projects carried forward and new projects are identified by their activity number (from Table 5.3) while completed projects are identified by the description of the project completed.

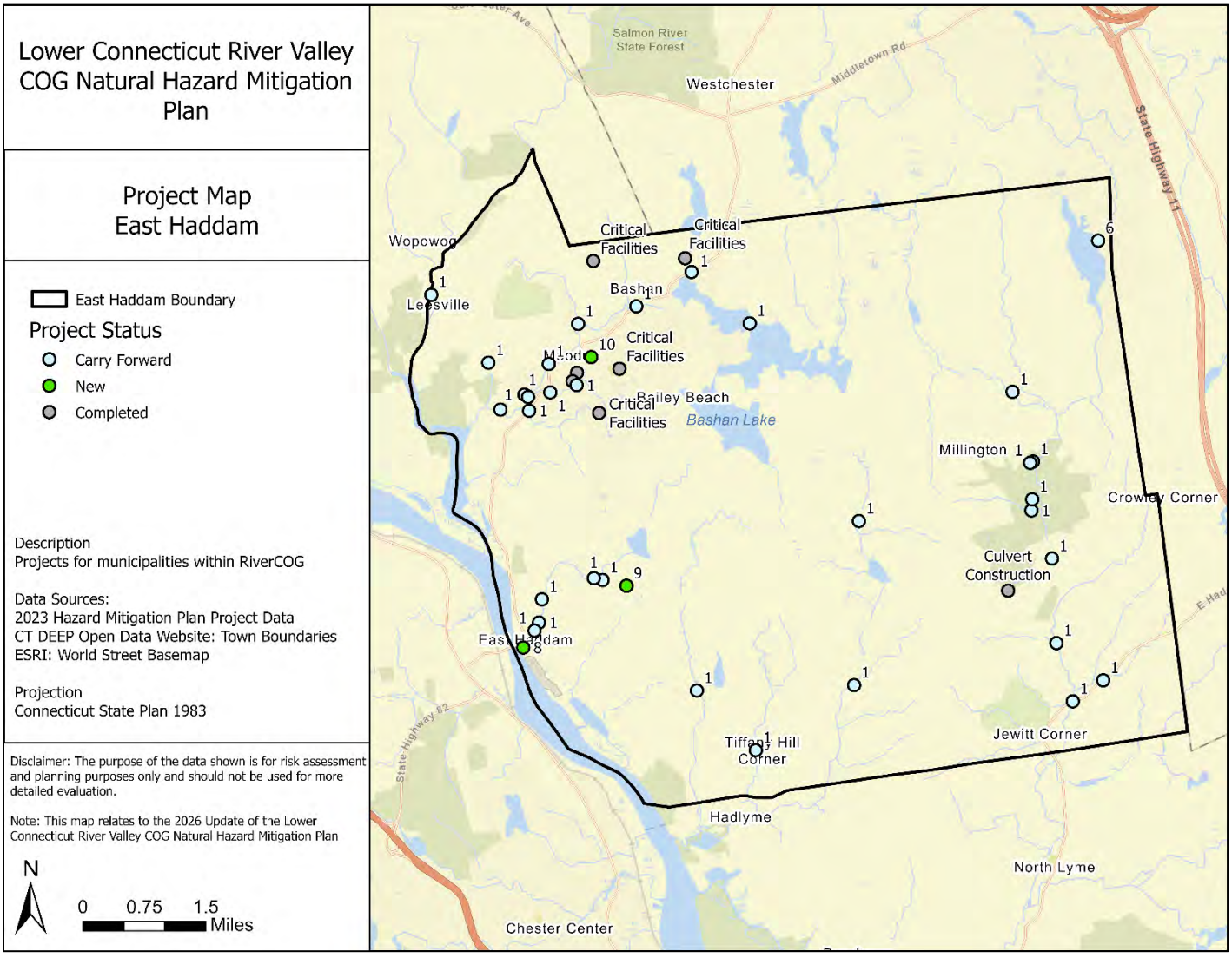


Figure 5.1. Carried Forward, New, and Completed Projects in East Haddam

Table 5.3. East Haddam Hazard Mitigation Strategies and Prioritization

KEY: SW= Severe Weather, TW = Tornado/Wind, ET = Extreme Temperatures, WS=Winter Storm, F = Flood, IS = Invasive Species, WF = Wildfire, D = Drought, E = Earthquake, CC = Climate Change

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
1	2-1	Coordinate with DOT to address culverts, pipes, bridges, etc. on state owned roadways to mitigate flooding and overtopping problems. Create list, request meeting with DOT, annual reminders (refer to the list in Table 13)	PW, BOS, BOF	$10,000 - $15,000	State DOT	2026 for Coordination, Implementation Annually	F	1	1	1	0	0	1	0	0	0	1	1	0	1	0	7/H
2	2-1	Conduct engineering studies to mitigate various Town-owned structures in need of repair, culverts, pipes, bridges, etc., on Town-owned roadways that are causing flooding and overtopping problems. Replace 1-	PW, BOS, BOF	$25,000 - $50,000	HMPG, FMA, CIP, STIP, TIP, RTP	2027-2028	F	1	0	1	1	0	0	1	1	0	0	1	1	0	0	11/H

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
		2 annually. (refer to the list in Table 13)																				
3	2-1	Support mitigation projects that will result in protection of public or private property from natural hazards through stormwater management improvements for areas identified by the Town. Identify and implement one per year.	PW, BOS, BOF	$10,000 - $15,000	HMGP, FMA, PDM, CIP, Op	2026	F	1	0	1	1	0	0	1	1	0	0	1	1	0	0	11/H
4	1-1	Update the existing Debris Management Plan. Identify locations for large volumes of debris and comply with DEMHS debris management plan standards.	PW, FM, EMD, BO, LUO, BOS, BOF	$0- $1,000	CIP, OP	2028	SW, TW, WS, IS, WF	1	0	0	0	1	1	0	0	0	0	0	0	1	0	4/H
5	1-1	Budget appropriate money necessary to maintain and remove dead, dying, dangerous, and	Public Works	$150K+ annually	CIP	Annually through 2030	IS	0	0	0	0	1	1	0	0	0	0	0	0	1	1	4/H

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
		diseased trees in rights-of-ways and on other town-owned land.																				
6	2-1	Culvert Construction. Oversee the completion of construction of the three culverts along East Shore Drive that started with 2018 FEMA Public Assistance funding.	PW, BOS, BOF	$25,000 - $50,000	FEMA PA CIP, OP	2027	F	1	0	1	1	0	0	1	1	0	0	1	1	0	0	11/H
7	3-1	Promote use of Everbridge. Place postings on the community website and social media promoting registration to the Everbridge system to grow it use.	EM	Staff Time	OP	Ongoing	All	1	0	0	0	1	0	1	0	0	0	0	0	0	0	3/M
8 new	2-1	Implement the CIRCA project to remove the rehearsal studio from the opera house, and replace creamery road bridge over	PW, BOS, BOF, PPP in coordination with Goodspeed Opera House	Engineering - $650K, Construction $6M+	DEEP – CRF for engineering	2026 Engineering2030 Construction	F	1	0	0	0	1	0	1	0	0	0	0	0	0	0	3/M

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
		Succor Brook to alleviate repetitive flooding																				
9 new	2-1	Acquire new Generator for fuel pumps at DPW Facility	PW, BOS, BOF	$250k	HMPGP	2028	All	0	0	0	0	1	1	0	0	0	0	0	0	1	1	4/H
10 new	2-1	Replacement of Moodus Fire Department, currently structurally unsound.	Building Committee	$17M	Bonding (+grants)	2027	All	0	0	0	0	1	1	0	0	0	0	0	0	1	1	4/H
11 new	2-1	If rehearsal studio is moved, realign channel to remove 90-degree turn - Evaluate engineering feasibility	PW, BOS, BOF	TDC	Bonding (+grants)	TBD	F	1	0	0	0	1	0	1	0	0	0	0	0	0	0	3/M
12 new	2-1	Add additional dry hydrants for water supply to tankers for fire suppression	Fire Marshall	$50k	HMGP	2030	WF	1	0	0	0	1	0	1	0	0	0	0	0	0	0	3/M

LOWER CONNECTICUT RIVER VALLEY COUNCIL OF GOVERNMENTS
HAZARD MITIGATION PLAN 2026 UPDATE

TOWN OF EAST HAMPTON MUNICIPAL ANNEX

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1. Contact Information

1.1. Point of Contact

Table 1.1. Town of East Hampton Contact Information

Information	Town of East Hampton
Contact Name	Matthew Walsh, Public Works Director
Address	One Public Works Drive East Hampton, CT 06424
Telephone	860-267-4747
Email	mwalsh@easthamptonct.gov

1.2. Local Planning Team

The following representatives listed in Table 1.2 participated in meetings and provided input, data, and council toward the development of Volume 1 and this East Hampton, Connecticut Annex.

Table 1.2. Town of East Hampton Planning Team

Name	Title
Matt Walsh*	Director of Public Works
Russel Melmed	Director of Health
Juliet Hodge	Planning and Zoning Official, Floodplain Manager
James Prue	Building Official
Dennis Woessner	Chief of Police
Allan Cahill	First Selectman
Anthony DeSimone	WPCA Administrator

**Local Coordinator*

1.3. Lower Connecticut River Valley Council of Governments

Table 1.3. RiverCOG Contact Information

Information	RiverCOG Information
Contact Name	Margot Burns – Senior Environmental Planner
Address	RiverCOG 145 Dennison Rd. Essex, CT 06426

Information	RiverCOG Information
Telephone	(860) 581-8554 x 702
Email	mburns@rivercog.org

2. Jurisdiction Profile

2.1. Town Profile

Originally incorporated as Chatham in 1767, the town included a portion of what is now Portland, which split off in 1841. An act of the Connecticut General Assembly changed the name to East Hampton in 1915.

The Town of East Hampton is located on the eastern bank of the Connecticut River in central Connecticut, approximately 20 miles southeast of Hartford and 12 miles east of downtown Middletown. East Hampton is in Middlesex County and is one of seventeen-member municipalities served by the Lower Connecticut River Valley Council of Governments (RiverCOG).

Figure 2.1 shows the location and corporate boundaries of East Hampton.

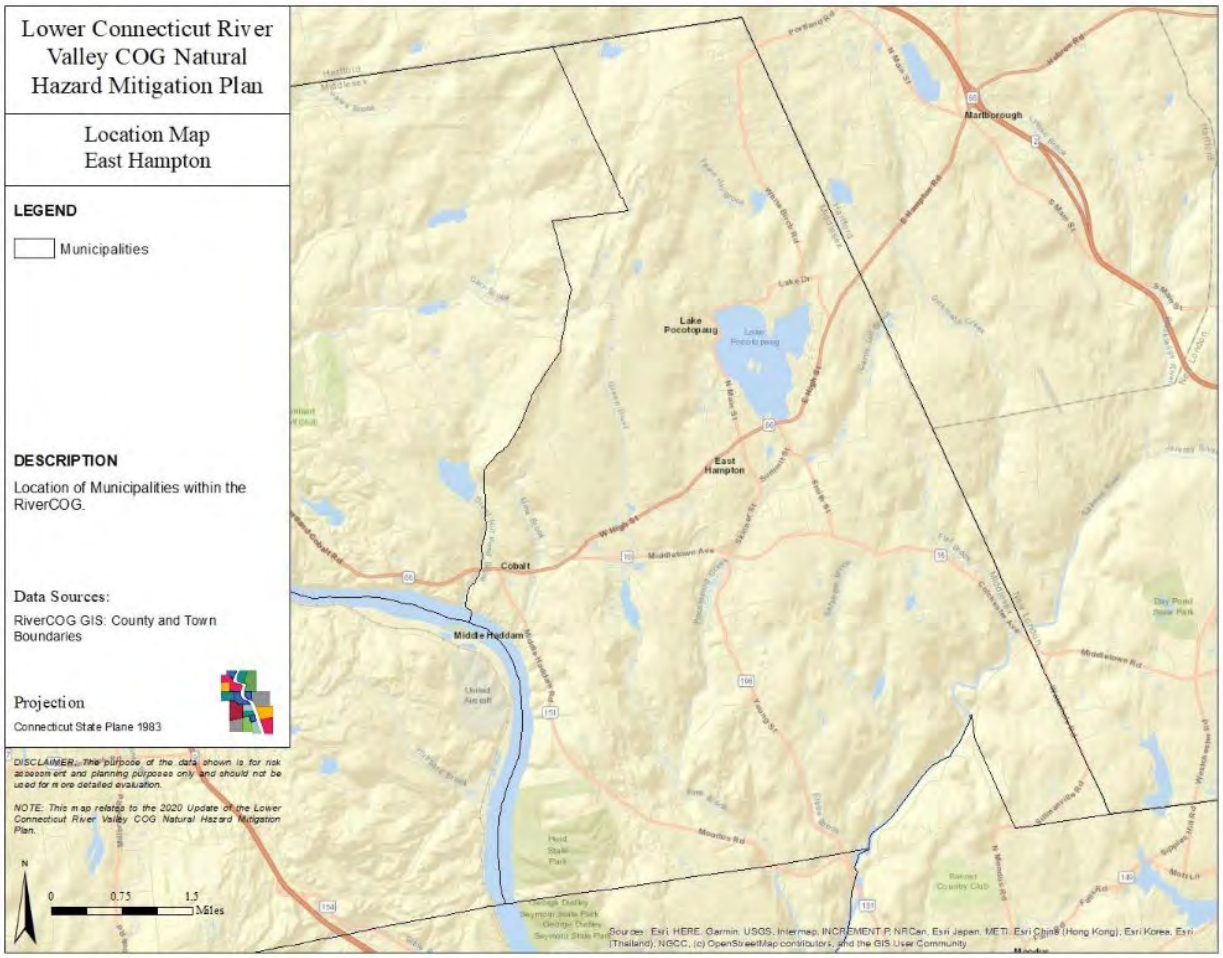


Figure 2.1. East Hampton Location

The center of East Hampton is commonly identified as the area along Route 66, whereas the "village center" is offset slightly to the south. Together, these areas comprise the most densely developed part of East Hampton.

East Hampton's topography is dominated by numerous hills interspersed with streams, valleys, and wetland areas. Elevations range from a height of 916 feet above sea level on Meshomasic Mountain (part of the Bald Hill Range in the northwest corner of Town) to as low as 10 feet along the Connecticut River and the southern end of the Salmon River in the southeast corner of Town. Steep slopes (>15%) are scattered throughout the Town, with concentrations in the Middle Haddam/Cobalt area as well as along the eastern Town boundary near Route 66. Notwithstanding the variation in topography, Lake Pocotopaug dominates the Town's character. The lake is located north of Route 66 near the town center. Numerous residential developments surround the lake. The lake is a significant recreational resource in Connecticut.

Water quality protection is one of the highest priorities in the July 1, 2016 Plan of Conservation and Development (POCD). The POCD also declares that the Town is dedicated to "Preserve More Meaningful Open Space" through acquisitions of land. Figure 2.2 shows land cover in East Hampton.

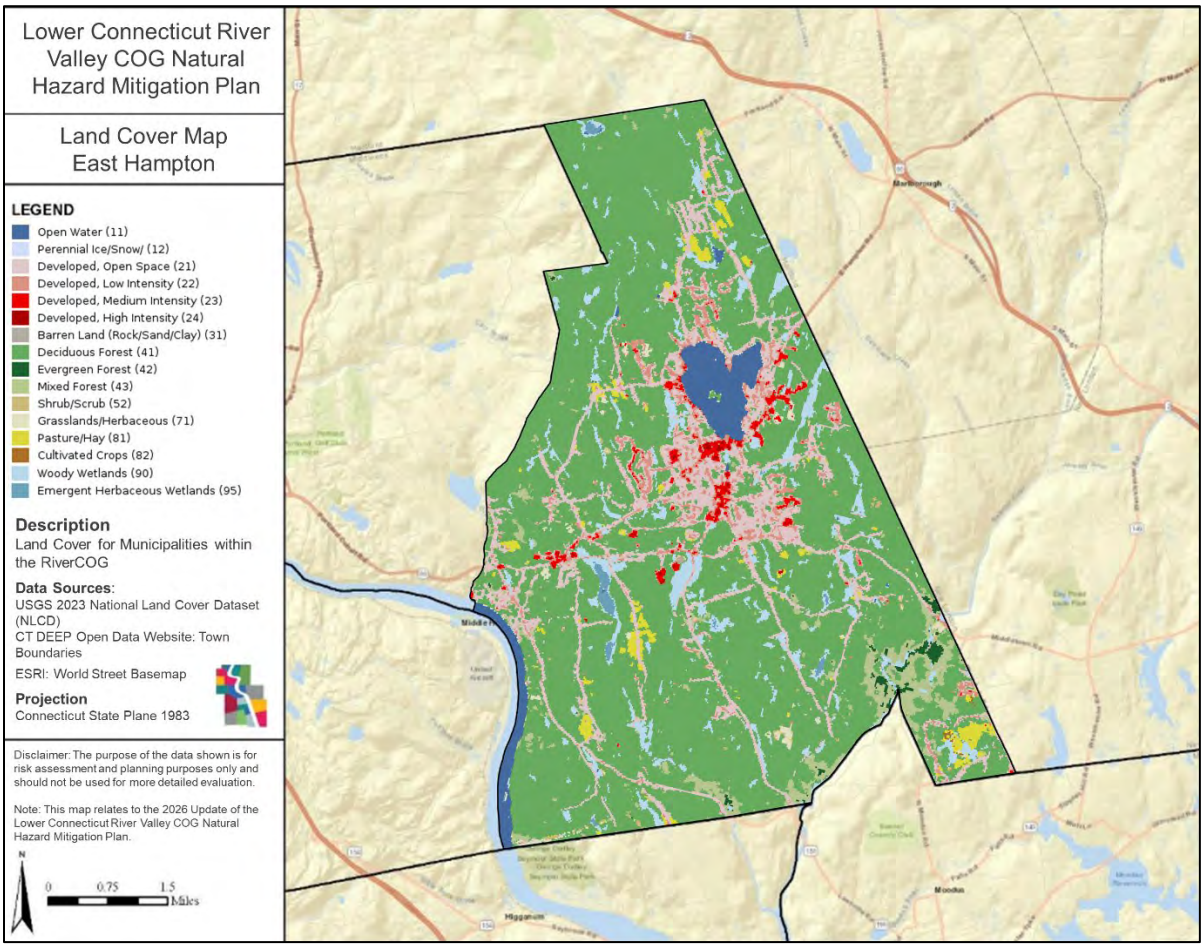
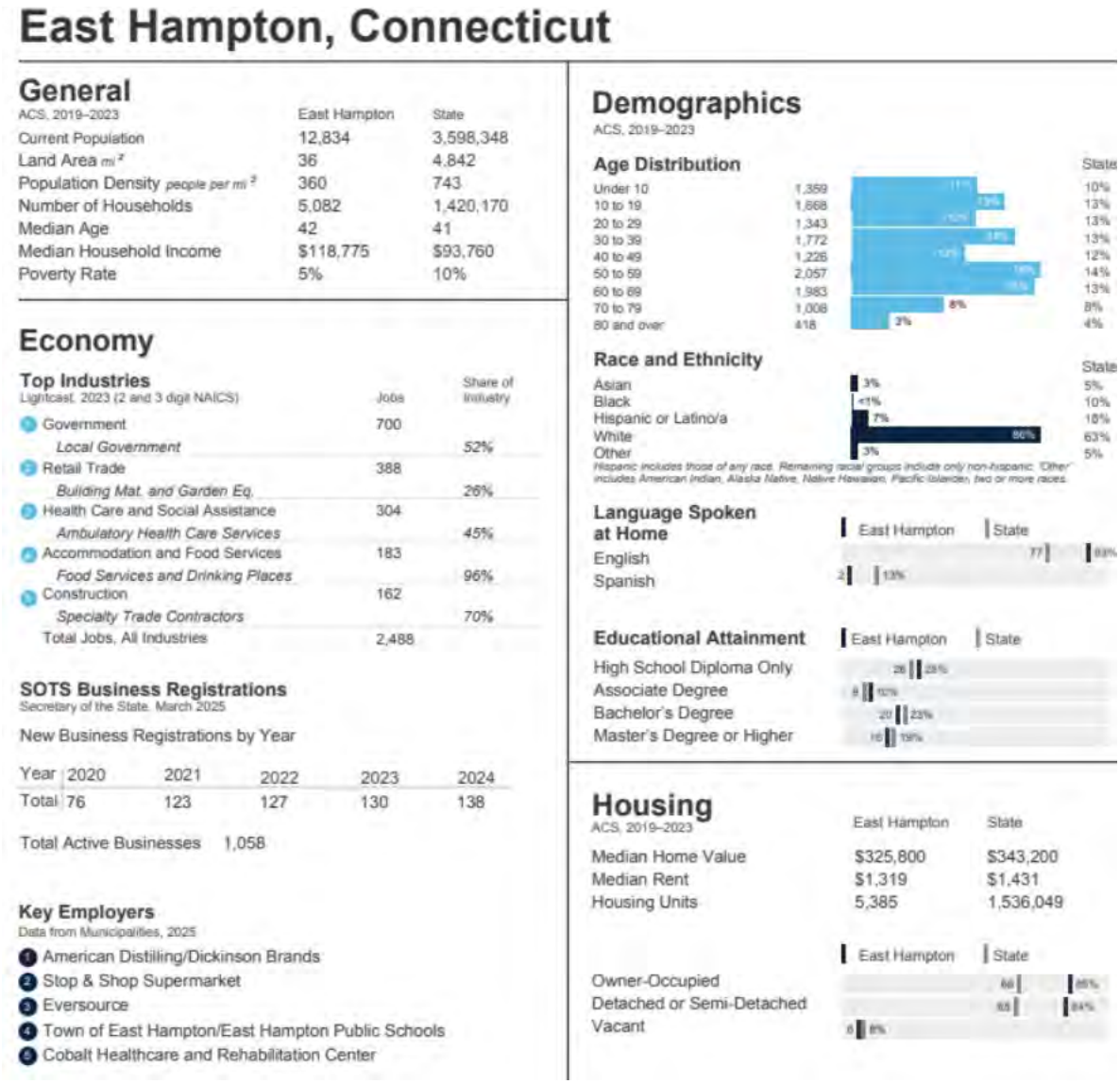


Figure 2.2. East Hampton Land Cover

The 2023 American Community Survey (ACS) reported a town population of 12,834 people which represents a 0.1% increase from 2019.[1] Figure 2.3 provides a demographic profile for East Hampton.[2]

[1] https://s3-us-west-2.amazonaws.com/cerc-pdfs/2025/East Hampton.pdf
[2] - Published on Town of East Hampton, CT *(Source: Connecticut Data Collaborative)*



East Hampton, Connecticut

General

ACS, 2019–2023

	East Hampton	State
Current Population	12,834	3,598,348
Land Area mi^2	36	4,842
Population Density *people per* mi^2	360	743
Number of Households	5,082	1,420,170
Median Age	42	41
Median Household Income	$118,775	$93,760
Poverty Rate	5%	10%

Economy

Top Industries
Lightcast, 2023 (2 and 3 digit NAICS)

	Jobs	Share of Industry
Government	700	
Local Government		*52%*
Retail Trade	388	
Building Mat. and Garden Eq.		*26%*
Health Care and Social Assistance	304	
Ambulatory Health Care Services		*45%*
Accommodation and Food Services	183	
Food Services and Drinking Places		*96%*
Construction	162	
Specialty Trade Contractors		*70%*
Total Jobs, All Industries	2,488	

SOTS Business Registrations
Secretary of the State, March 2025

New Business Registrations by Year

Year	2020	2021	2022	2023	2024
Total	76	123	127	130	138

Total Active Businesses 1,058

Key Employers
Data from Municipalities, 2025

1. American Distilling/Dickinson Brands
2. Stop & Shop Supermarket
3. Eversource
4. Town of East Hampton/East Hampton Public Schools
5. Cobalt Healthcare and Rehabilitation Center

Demographics

ACS, 2019–2023

Age Distribution

		State
Under 10	1,359	10%
10 to 19	1,668	13%
20 to 29	1,343	13%
30 to 39	1,772	13%
40 to 49	1,226	12%
50 to 59	2,057	14%
60 to 69	1,983	13%
70 to 79	1,008	8%
80 and over	418	4%

Race and Ethnicity

		State
Asian	3%	5%
Black	<1%	10%
Hispanic or Latino/a	7%	16%
White	86%	63%
Other	3%	5%

Hispanic includes those of any race. Remaining racial groups include only non-hispanic. 'Other' includes American Indian, Alaska Native, Native Hawaiian, Pacific Islander, two or more races.

Language Spoken at Home

East Hampton | State

English 77 | 69%
Spanish 23 | 13%

Educational Attainment

East Hampton | State

High School Diploma Only 28 | 28%
Associate Degree 8 | 10%
Bachelor's Degree 20 | 23%
Master's Degree or Higher 16 | 19%

Housing

ACS, 2019–2023

	East Hampton	State
Median Home Value	$325,800	$343,200
Median Rent	$1,319	$1,431
Housing Units	5,385	1,536,049

East Hampton | State

Owner-Occupied 68 | 65%
Detached or Semi-Detached 63 | 64%
Vacant 6 | 8%

Figure 2.3. Town of East Hampton Demographics

2.2. Climate

Average weather data in East Hampton was sourced from the Weather Spark website (weatherspark.com). In East Hampton, the summers are warm and humid, the winters are freezing and snowy, and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from 20°F to 82°F and is rarely below 5°F or above 89°F. The warm season lasts for 3.5 months, from June 1 to September 16, with an average daily high temperature above 72°F. The hottest month of the year in East Hampton is July, with an average high of 81°F and low of 64°F. The cold season lasts for 3.3 months, from December 2 to March 13, with an average daily high temperature below 45°F. The coldest month of the year in East Hampton is January, with an average low of 21°F and high of 36°F.

A wet day is one with at least 0.04 inches of liquid or liquid-equivalent precipitation. The chance of wet days in East Hampton varies throughout the year. The wetter season lasts 4.4 months, from April 1 to August 13, with a greater than 28% chance of a given day being a wet day. The month with the most wet days in East Hampton is June, with an average of 9.4 days with at least 0.04 inches of precipitation. The drier season lasts 7.6 months, from August 13 to April 1. The month with the fewest wet days in East Hampton is February, with an average of 6.8 days with at least 0.04 inches of precipitation. Rain falls throughout the year in East Hampton. The month with the most rain in East Hampton is October, with an average rainfall of 3.7 inches.

The average hourly wind speed in East Hampton experiences significant seasonal variation over the course of the year. The windier part of the year lasts for 5.9 months, from October 28 to April 24, with average wind speeds of more than 5.6 miles per hour. The windiest month of the year in East Hampton is February, with an average hourly wind speed of 7.1 miles per hour. The calmer time of year lasts for 6.1 months, from April 24 to October 28. The calmest month of the year in East Hampton is July, with an average hourly wind speed of 4.2 miles per hour.

2.3. Government Style

The East Hampton form of government is Town Council with a Town Manager.

2.4. Development Trends

Development in East Hampton is occurring at a steady, moderate rate. Most development in East Hampton occurs on ridges and hills, rather than in valleys where flood risks exist. Hampton Woods (partially built), Lake Overlook Estates (under development), and Edgewater Hills are ongoing residential development projects that fit this pattern. The Edgewater Hills development is undergoing a slow buildout. Town staff report that a handful of other minor subdivision projects are underway. Redevelopment of non-residential properties in the village center is also underway as properties become vacant or available.

Along the Route 66 corridor, there is spotty redevelopment, such as the 201 West Hight Street project, which includes a brewery, professional services offices, and flex space. There is an emphasis in town on clean up and redevelopment of contaminated underutilized properties. Currently under development, the 2026 Plan of Conservation and Development will focus on pedestrian connectivity and the downtown village area.

While new development noted would add people and property to the town, none are located in floodplain areas. Generally, any new development introduces potentially new vulnerabilities. All new developments will be constructed to modern building code standards and in accordance with stormwater, zoning, and other regulations, thereby mitigating potential future vulnerabilities. The redevelopment along the Route 66 corridor and in the village center will result in older properties being retrofitted to new codes and standards, thus mitigating any new vulnerabilities. These

redevelopment sites are in areas that are already densely developed, thereby reducing vulnerability sprawl.

2.5. Town-Specific Hazard Concerns

Municipal staff reported several specific hazard concern issues, which are listed below. The information below is intended to supplement the hazard-specific analysis completed in Section 2, of Volume I of this plan. All hazards that potentially impact East Hampton are addressed in Volume I of this plan. This section is designed to add additional town specific data and does not address all hazard risks.

A note: To preserve the reader's ability to align RiverCOG-Level and town-level hazard identification and risk analysis, the order of the following hazards aligns with the order of hazards in Volume I. Individual towns have ranked these hazards differently. This town-level ranking can be found in Section 3.3 Hazard Risk Ranking.

2.5.1. Severe Winter Weather

Heavy snowfall, ice storms, and extreme cold can immobilize an entire region. Areas that normally experience mild winters can experience a major snowstorm or extreme cold. Winter storms can result in flooding, storm surge, closed highways, blocked roads, downed power lines, and hypothermia in people. Blizzards can also come without much warning and leave the area with significant snowfall totals making clean-up difficult.

By far the greatest risk of damage (especially to utility lines) is from ice storms. Where heavy snow may be an inconvenience, a severe ice storm can cause major damage to trees, power lines and create hazardous driving conditions. A major ice storm could bring down trees impeding emergency services access to requests for assistance. Special needs people such as those who rely on oxygen machines are vulnerable to loss of power. People with other special needs also may need to go to the nearest open shelter. Snowstorms do occur regularly; but the losses are not as catastrophic as the losses associated with flooding and hurricanes. Falling trees and limbs during storm events is a problem in East Hampton, as it is in many of Connecticut's towns. There are many ash trees killed by the Emerald Ash Borer, and many oak trees damaged by Gypsy Moth caterpillars, located along roads. This is a concern relevant to hurricanes and tropical storms, summer storms, and winter storms. With the exception of two larger snow events in the winter of 2025/2026, damaging winter weather events have been minimal since the last plan update.

2.5.2. Flooding

Flooding - Riverine and Inland Flooding

While flooding occurs in East Hampton, it is typically limited to floodplains and other known flood areas and does limited damage to private property. NFIP losses for East Hampton have historically been very low. Flash flooding is a greater concern than riverine flooding.

An emerging challenge identified by East Hampton is the deterioration of metal culverts throughout the town, making the town's roads vulnerable to flood events. State owned roads running through town are also a concern; these roads have historically flooded frequently, causing local traffic problems.

Spring flooding events threaten the Connecticut River. Fortunately, most of the structures along the river are on high ground. Of concern for the town is the series of three dams in sequence along the Pocotopaug Creek, corridor from Pocotopaug Lake downstream. The Town does not have control over operation of two of the three dams and is concerned about risks associated with the dams. Pocotopaug Lake Dam is typically opened and closed. The town currently has to coordinate with the owner to change the height of the water. This can potentially lead to conflicts in water management, with the rising and lowering of the lake. Impacts can be pipe exposure interfering with dry hydrant functioning. This dam is easily obstructable and can lead to flooding.

The Town is concerned about leakage through Bevin Pond dam in the Village Center. This dam is one of the three located along the creek.

Although East Hampton is not a coastal community, there is some concern about flooding of the CT River, which is tidally influenced. There is a town owned well field at Oakham Doc that is in the floodplain of the CT River. Ice Jams causing water surface elevations to rise make this area particularly vulnerable.

The Connecticut River is tidally influenced in East Hampton. Sea level rise will have long-term consequences to tidal water surface elevations of the Connecticut River and associated wetlands. In the long term, changes to flood water surface elevations could be noticed. Researchers[3] in Connecticut believe that Connecticut River communities should plan for about half of the vertical sea level rise projected for Long Island Sound. In other words, the State-mandated planning threshold of 20 inches by 2050 could translate to ten inches of vertical flooding added to tidal flooding along the Connecticut River by 2050. Nevertheless, over the five-year timeframe for this plan, changes in horizontal flood extents associated with this vertical increment are not likely to be noticeable.

Flash Flooding

Spring snowfall and a large rain event in 2024, caused damage to a culvert that was identified in the previous plan. The Local Planning Team reports that flooding is typically drainage related, and that the town rarely sees overbank flooding. There are drainage capacity flooding issues throughout town.

2.5.3. Dam Breach

The Connecticut Department of Environmental Protection (CT/DEEP) dam inventory shows 26 dams in East Hampton. Of those 26 dams, four have unclassified hazards, 11 are low hazard, nine are

[3] Robert Thorson, UConn, via presentation at the UConn Law School in April 2026

moderate hazard and two are rated as Significant Hazard Dams. There are no high hazard rated dams in East Hampton. There are no municipally owned dams in East Hampton Figure 2.4 shows the location of all dams within East Hampton. Moderate, Significant, and high hazard-class dams are presented in Table 2.1. A full list of dams is provided in Appendix B.

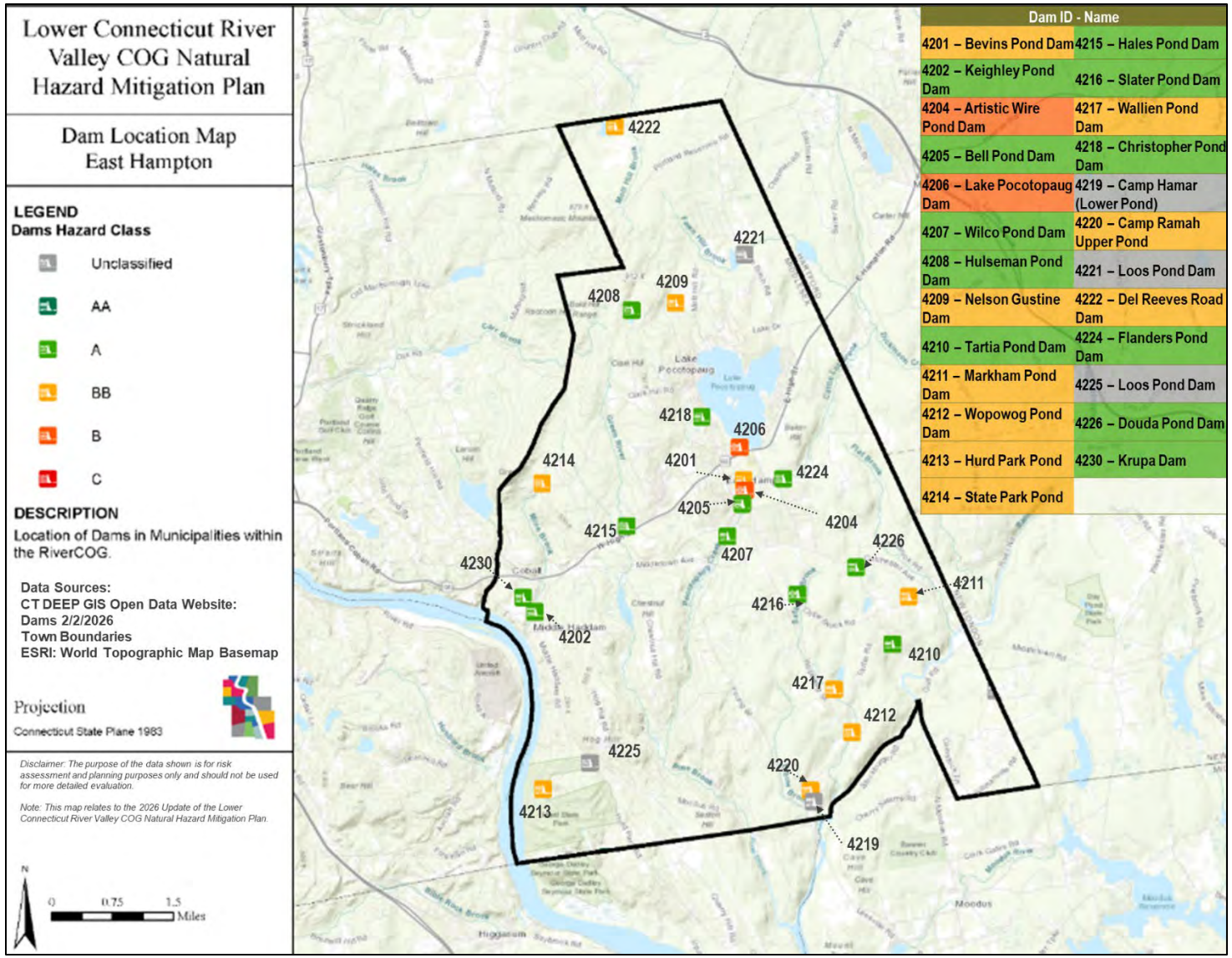


Figure 2.4. Location of Dams, East Hampton, CT

Of concern for the town is the series of three dams in sequence along the Pocotopaug Creek, corridor from Pocotopaug Lake downstream. The Town does not have control over operation of the dams and is concerned about risks associated with them. Pocotopaug Lake Dam is typically opened and closed without input from the Town. This can potentially lead to conflicts in water management. For example, Town staff report that a canoe was stuck in the dam several years ago.

The Town is concerned about leakage through Bevin Pond dam in the Village Center. This dam is one of the three located along the creek. There are four municipal owned dams: Artistic Wire, Christopher Pond, Walnut Pond, and Loos Pond.

Table 2.1. Moderate, Significant and High Hazard Dams, East Hampton, CT

CT Dam #	Dam Name	Hazard Class	Owner
4204	ARTISTIC WIRE DAM	B-Significant	Town of East Hampton
4206	LAKE POCOTOPAUG DAM	B-Significant	Pocotopaug Water Power Company
4201	BEVINS POND	BB-Moderate	Bevin Brothers Manufacturing Company
4209	NELSON GUSTINE DAM	BB-Moderate	NELSON GUSTINE
4211	MARKHAM POND	BB-Moderate	Belltown Sportsman Club Inc.
4212	WOPOWOG POND	BB-Moderate	Private
4213	HURD PARK POND	BB-Moderate	Connecticut DEEP
4214	STATE PARK POND	BB-Moderate	Connecticut DEEP
4217	WALLIEN POND	BB-Moderate	Private
4220	CAMP RAMAH UPPER POND	BB-Moderate	Connecticut DEEP
4222	DEL REEVES ROAD DAM	BB-Moderate	Connecticut DEEP

2.5.4. Hurricanes and Tropical Storms

Hurricanes are one of the most threatening natural hazards facing East Hampton. Although hurricanes affecting Connecticut typically have a more severe impact along the shoreline, the inland areas can experience significant damage as well. Hurricanes with heavy rain and strong winds are possible as well. A consequence of Hurricanes and Tropical Storms is long-term power outages. After both Tropical Storm Irene and Hurricane Sandy, fallen trees tore down wires and poles, causing weeklong power outages in some cases. Tropical Storm Irene caused over 800,000 power outages statewide while Hurricane Sandy caused over 600,000 outages. Falling trees and limbs during storm events is a problem in East Hampton, as it is in many of Connecticut's towns. There are many ash trees killed by the Emerald Ash Borer, and many oak trees damaged by Gypsy Moth caterpillars, located along roads. This is a concern relevant to hurricanes and tropical storms, summer storms, and winter storms

Related specifically to wind, the LPT indicated that Eversource has increased its efforts since 2021 with tree trimming. Intense storms result in fallen trees and branches. Hight intensity rainfall events and storms are also contributing. Town tree trimming has also increased – about $40k/year.

2.5.5. Tornado

Areas of East Hampton are forested and therefore susceptible to a heavy limb clearing during a Tornado or microburst. East Hampton experienced an EF3 Tornado event on August 21, 1951 which resulted in a total of 8 injuries to residents. This was the worst recorded Tornado in the history of the RiveCOG region. Tornados, though rare, do occur and cause a considerable amount of damage to the area touched by them. Microbursts are nearly impossible to predict and are dangerous. Research has determined that microbursts are much more common and occur much more frequently than had previously been thought. Falling trees and limbs during storm events is a problem in East Hampton, as it is in many of Connecticut's towns. Located along roads are many ash trees killed by the Emerald Ash Borer, and many oak trees damaged by Gypsy Moth caterpillars (see comments on tree trimming in 2.5.4, above).

2.5.6. Earthquakes

The entire town could be affected by an earthquake in this region; however, impacts could vary locally.

In East Hampton and the surrounding region, recorded impacts have been limited to shaking to the extent that things were knocked off shelves and people were alarmed. Structural damage has been limited to building components such as chimneys and buildings in poor repair; but failing structures have caused property damage in nearby towns. A small earthquake occurred 5km east-northeast of East Hampton, in March of 2024, registering magnitude 1.2.

2.5.7. Drought

Unlike floods, hurricanes and earthquakes, droughts rarely pose an immediate threat to life and property. Instead, drought causes economic hardship through failed crops, loss of livestock and increased expenses and/or lost revenue for water dependent businesses. In addition, drought can have health consequences, especially when ground water quality degrades or becomes unavailable to residences using wells. Municipalities and water companies often ask for the public's help in conserving water during dry periods to prevent the depletion of water supplies.

Droughts also increase the risk of wildfires. Large forest in the region include the: Salmon River State Forest, a forest encompassing nearly 6,000 acres located in the neighboring towns of Hebron, Marlborough Colchester and, East Haddam as well as East Hampton; the Meshomasic State Forest, encompassing 9,118 acres in Portland and East Hampton; and Hurd State Park, nearly 1,000 acres in East Hampton and East Haddam The threat of wildfires for people living near wild land areas or using recreational facilities in wilderness areas is real. Dry conditions at various times of the year increase the potential for wildfires. 2025 was a very dry summer. Several wells went dry, emphasizing the importance of community water systems.

2.5.8. Wildland Fires

East Hampton occasionally experiences small brush fires, which are quickly contained. The area of the Village Center relies on the pond located in the Village Center (Bevin Pond) for fire suppression; this pond is experiencing sedimentation and the town is concerned about leakage through its dam. The dam must be managed, and the pond dredged to ensure the pond continues to be usable for fire protection. A few small forest fires have occurred since the 2021 plan, but nothing major. There are dry hydrants throughout town. The Connecticut and Salmon Rivers, and the lake serve as water sources for fire suppression.

2.5.9. Extreme Temperature

Extreme heat and heat waves are a possibility during the summer months, particularly between June and August. The elderly in homes without air conditioning are vulnerable. Town officials have identified cooling centers for those desiring a place to go to cool off. Extreme cold, particularly when heating prices are high, impact socially vulnerable populations. For example, long-term care facilities have experienced frozen pipes in the region resulting in vulnerabilities.

2.5.10. Invasive Species

The LPT described invasive species as being one of the greatest hazards for the town, yet the cost of treating invasive species is prohibitive. This is causing an increase in expenditures for tree removal. Hydrilla is an issue in the lake, primarily interfering with recreation and aesthetics although it will contribute to the already impaired health of the waterbody, in what way remains to be seen, as mitigation efforts unfold.

2.5.11. Other Hazards

Emergency Access

There are several single access roadways in town that hamper emergency response, from fallen power lines and tree failures. East Hampton Middle School has one means of egress and ingress.

Energy Reliability

Houses on private sewers with grinder pumps go out during power outages are particularly vulnerable to sewage backups.

Climate Change

Blue/green algae has required closure of Pocotopaug Lake in the past and is still a recurring threat. Health impacts are possible, and economic losses indirectly occur as a result of closures. It is expected that this impact will increase with rising temperatures due to climate change. The spread of mosquito-borne illnesses is another concern for the Town; in recent years, cancellation of outdoor events to mitigate the spread of Eastern Equine Encephalitis (EEE) has caused economic losses.

3. Hazard Risk

3.1. Historical Events

Table 3.1 lists presidentially declared disaster events that have impacted East Hampton since 2010. Preliminary Damage Assessment figures are based on Public Assistance applications, and include losses reported by the Water Pollution Authority and East Hampton Housing Authority. No events resulting in Public Assistance have happened since the last plan update in 2021.

Table 3.1. East Hampton Natural Hazard Events

Type of Event	Date	Preliminary Damage Assessment
Flood Event (DR-1904)	4/23/2010	$37,514.95
Severe Storm - Snow (DR-4046)	11/17/2011	$60,564.28
Hurricane Event (DR-4023)	09/02/2011	$179,912.21
Hurricane Event (DR-4087)	10/30/2012	$63,788.09
Winter Weather Event (DR-4106)	03/21/2013	$172,584.44

3.2. Recent Events

The following is a summary of recent events experienced in East Hampton since the 2021 plan update. The Local Planning Team noted the following recent events:

- No major natural hazard events requiring assistance have occurred since the 2021 plan update.

Public assistance is often provided by FEMA after Presidentially declared disasters. Funding is typically for extraordinary expenses incurred by the community such as public safety and public works overtime, certain equipment and contracted resources and debris cleanup. Table 3.2 through Table 3.4 list PA reimbursements in East Hampton.

Table 3.2. Flood Event PA Reimbursements, East Hampton, CT

Disaster #	1904
Incident Dates	Mar-May 2010
Declaration	4/23/2010
Entity	FEMA PA Reimbursement
State	$
Municipal	$
Nonprofit	$
Total	$37,515
Annualized	**$1,389**

Table 3.3. Hurricane Wind Event PA Reimbursements, East Hampton, CT

Disaster #	4023	4087
Incident Dates	Aug-Sep 2011 (T.S. Irene)	Oct-Nov 2012 (Super Storm Sandy)
Declaration	9/2/2011	10/30/2012
Entity	FEMA PA Reimbursement	FEMA PA Reimbursement
State	$	$
Municipal	$	$
Nonprofit	$	$
Total	$179,912	$63,788
Annualized	**$6,663**	**$2,363**

Table 3.4. Winter Storm PA Reimbursements, East Hampton, CT

Disaster #	4046	4106
Incident Dates	Oct 2011	Feb 2013
Declaration	11/17/2011	3/21/13
Entity	FEMA PA Reimbursement	FEMA PA Reimbursement
State	$	$
Municipal	$	$
Nonprofit	$	$
Total	$60,564	$172,584
Annualized	**$2,243**	**$6,392**

3.3. Hazard Risk Ranking

East Hampton participated in the regional hazard ranking conducted by the Hazard Mitigation Planning Team. Table 3.5 shows the scoring for the various ranking parameters that were used. The probability of each hazard is determined by assigning a level, from unlikely to highly likely, based on the likelihood of occurrence from historical data. The total impact value includes the affected area, primary impact, and secondary impact levels of each hazard. Level of Community Concern reflects the perceived risk of each hazard as indicated by respondents to question 6 of the community survey. This question asks, "How concerned are you about each of the following hazards impacting your home, business, community, or organization?" and received 204 responses.

Each of these five criteria are assigned weights, as well as point values for each of their responses. Each level's score is reflected in the matrix. The total score for each hazard is the probability score multiplied by its importance factor times the sum of the impact level scores multiplied by their importance factors. Based on this total score, the hazards are separated into three categories based on the hazard level they pose to the communities: Significant, Moderate, Limited. Table 3.5. Hazard Ranking Parameters provides a summary of the categories used to rank the hazards and their weighted values for the Composite Hazard Risk Index.

Table 3.5. Hazard Ranking Parameters

Criteria	Weight	1 Point	2 Points	3 Points	4 Points
Hazard Probability	2.0	**Unlikely** Less than 1% probability in next 100 years or has a recurrence interval of greater than every 100 years.	**Somewhat Likely** Between 1 and 10% probability in next year or has a recurrence interval of 11 to 100 years.	**Likely** Between 10 and 100% probability in next year or has a recurrence interval of 10 years or less	**Highly Likely** Near 100% probability in next year or happens every year.
Impact – Affected Area	0.8	**Isolated** Less than 1% of area affected	**Small** Between 1 and 10% of area affected	**Medium** Between 10 and 50% of area affected	**Large** Between 50 and 100% of area affected
Impact – Primary Impact	0.7	**Negligible** 1 to 10% of people or property	**Limited** 10% to 25% of people or property	**Critical** 25 to 50% of people or property	**Catastrophic** >50% of people or property
Impact – Secondary Impact	0.5	**Negligible** No loss of function, downtime, and/or evacuations	**Limited** Minimal loss of function, downtime, and/or evacuations	**Moderate** Some loss of function, downtime, and/or evacuations	**High** Major loss of function, downtime, and/or evacuations

Criteria	Weight	1 Point	2 Points	3 Points	4 Points
Level of Community Concern	1.0	**Low Concern**	**Moderate Concern**	**High Concern**	-

The hazard risk ranking generated from this exercise, along with consideration of available data, was used to prioritize the level of effort assigned to further analysis of each hazard in the vulnerability analysis and lost estimation sections. All the participating communities agreed upon the results of the hazard ranking for the overall region. Based on the results of the exercise, the hazards were ranked as follows in Table 3.5. Hazard Ranking Parameters. East Hampton endorsed the ranking as accurate for the Town. Hazards ranked at the regional level that don't have major impacts in East Hampton (e.g. coastal fooding) were removed from the table.

Table 3.5. Summary of Potential Hazard Impacts.

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
Aquatic Invasive Species	Semi-quantitative, supplemented by state and municipal figures, recommend survey	Highly Likely - 4	Large - 4	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant
Terrestrial Invasive Species	Semi-quantitative, supplemented by state and municipal figures, recommend survey	Highly Likely - 4	Large - 4	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant
Tree Infestation	Semi-quantitative, supplemented by state and municipal figures, recommend survey	Highly Likely - 4	Large - 4	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant
Hurricanes	Hazus for wind	Likely - 3	Large - 4	Critical - 3	Moderate - 3	High Concern - 3	15.8	Significant
Winter Storms (Snow, Ice, Wind, including Noreasters)	Historic analysis for probability and annualized damages	Highly Likely - 4	Large - 4	Negligible - 1	Moderate - 3	Moderate Concern - 2	15.4	Significant

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
Flood – Riverine and Inland Flooding (Riverine, Drainage, Coastal Surge, Sea Level Rise - includes flooding from Nor'easters)	Hazus, SLR Overlay, FS Model Overlay, Historic data and damages for additional probability	Likely - 3	Medium - 3	Limited - 2	Moderate - 3	High Concern - 3	14.3	Significant
Extreme Heat and Cold	Qualitative based on historic	Likely - 3	**Large - 4**	Negligible - 1	Limited - 2	High Concern - 3	13.9	Moderate
Severe Weather (thunderstorms, downbursts, hail, lightning)	Historic analysis for probability and annualized damages	**Highly Likely - 4**	Small - 2	Negligible - 1	Limited - 2	Moderate Concern - 2	13.3	Moderate
Wildfire	Historic analysis for probability and annualized damages	Likely - 3	Small - 2	Critical - 3	Moderate - 3	Moderate Concern - 2	13.2	Moderate
Drought	Historic analysis for probability and annualized damages - some qualitative	Likely - 3	Medium - 3	Negligible - 1	Limited - 2	High Concern - 3	13.1	Moderate

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
Tornadoes	Historic analysis for probability and annualized damages - pulling in surrounding counties	Likely - 3	Isolated - 1	**Catastrophic - 4**	Limited - 2	Moderate Concern - 2	12.6	Moderate
Earthquakes	Hazus, 3 scenarios	Somewhat Likely - 2	Small - 2	**Catastrophic - 4**	**High - 4**	Low Concern - 1	11.4	Limited
Flooding from Dam Failure	Dam Inundation areas, Historic analysis for probability and annualized damages	Unlikely - 1	Small - 2	Limited - 2	Moderate - 3	Moderate Concern - 2	8.5	Limited

3.3.1. National Flood Insurance Program (NFIP) Participation

East Hampton participates in the NFIP and commits to adhere by the rules and regulations in order to continue being NFIP compliant. East Hampton's initial Flood Hazard Boundary Map (FHBM) was adopted 11/29/1974, and its initial Flood Insurance Rate Map (FIRM) and entry into the NFIP was April 1, 1982. The current active FIRM is dated 2/6/2013. Overall, the NFIP has 13 policies in force in East Hampton, with paid losses to date totaling $82,207.

Repetitive Loss Property Detail

Since entering the NFIP in 1979, one residential property has been listed as a Repetitive Loss Property (RLP) along an inland stream. That property has had six claims totaling approximately $43,000.

4. Capability Assessment

This section discusses capabilities and operational procedures that East Hampton undertakes that contribute to or have the potential to contribute to hazard mitigation. It also notes deficiencies in those capabilities that could be addressed to strengthen resilience.

4.1. Critical Facilities

Public and private utility facilities are vital to maintaining or restoring normal services to areas of town before, during, and after a natural disaster. The Town Hall was relocated to its current location in 2020; the previous building has been sold and is no longer a critical facility. The Town has also moved its Police Department Headquarters and Emergency Operations Center (EOC) into the new Town Hall facility. The EOC had previously been housed within a fire house. The East Hampton Middle School has a portable generator stationed on-site. Most of the sewer pumping stations in East Hampton have been fitted with generators since the 2021 plan update. The remainder are still identified as a need. Portable generators are available for the remaining stations that are not fitted. Permanent fitted generators are preferred.

Figure 4.1 shows the location of critical facilities in East Hampton which are identified at the regional level.

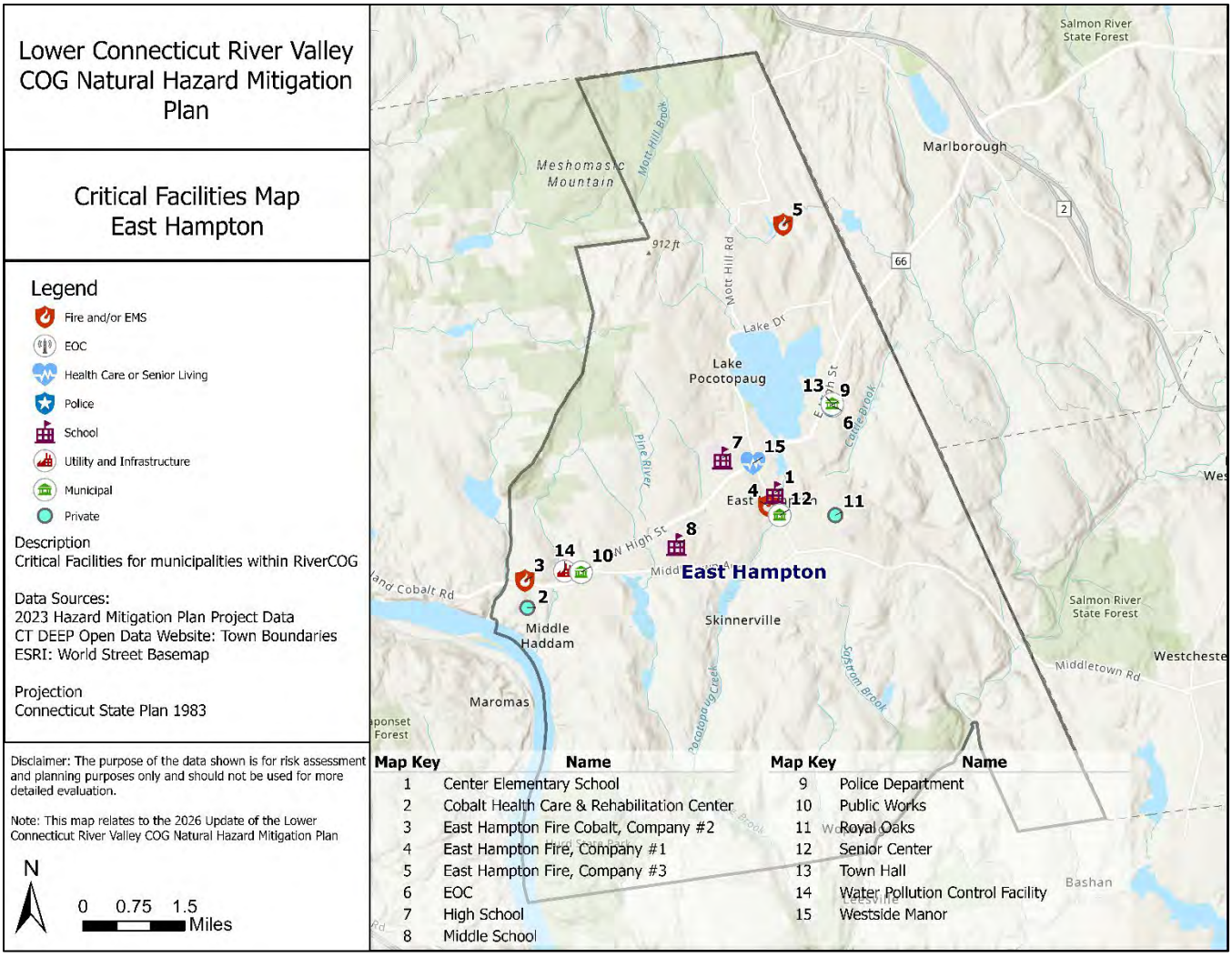


Figure 4.1. Location of Critical Facilities in East Hampton

Table 4.1 lists critical facilities identified by the Town.

Table 4.1. Critical Facilities

Facility	Type	Address	Flood Zone	Generator	Notes
Town Hall Facility - Town Hall - Police Department	EOC, Municipal, Emergency Response	1 Community Drive	No	Yes	New building completed in 2020
East Hampton Fire, Company #1	Emergency Response	3 Barton Hill Road	No	Yes	
East Hampton Fire Cobalt Company #2	Emergency Response	366 West High Street	No	Yes	

Facility	Type	Address	Flood Zone	Generator	Notes
East Hampton Fire, Company #3	Emergency Response	99 White Birch Street	No	Yes	
High School	Shelter	15 N Maple Street	No	Yes	
Middle School	Backup Shelter	19 Childs Road	No	Portable	
Public Works	Municipal	1 Public Works Dr	No	Yes	
Water Pollution Control Facility	Infrastructure	20 Gildersleeve Drive	100-year Zone A touches back of property but not the facilities	Yes	
Sewer Pumping Stations	Infrastructure	Multiple	N/A	Partial	In process: installing generators for all
Senior Center	Community	105 Main Street	100-year Zone A. Parcel and Building	Yes	
Library	Comfort Station	105 Main Street			
Center Elementary School	School	7 Summit Street	No	Yes	Town-owned water system
Royal Oaks	Residential	Royal Oaks Ave	No	Yes	Town-owned water system
Cobalt Health Care & Rehabilitation Center	Care Facility	29 Middle Haddam Rd	No	Yes	
Westside Manor	Care Facility	9 W High Street	No	Yes	

4.2. Municipal Capabilities

The Town of East Hampton has a variety of natural hazard mitigation capabilities, including local regulations and ordinances, operational protocols, and emergency response capabilities. Following is a list of some highlighted capabilities identified by municipal staff.

4.2.1. Regulations and Ordinances

The Town of East Hampton participates in the National Flood Insurance Program (NFIP). Section 10 of the town's Zoning Regulations defines flood plain management regulations. Section 10.8 contains provisions for flood hazard reduction.

The Zoning Regulations restrict all new construction and substantial improvements in the 1-percent annual-chance floodplain as depicted on the 2013 FEMA Flood Insurance Rate Map (FIRM). These regulations conform to both Federal and State requirements. Substantial Improvements is defined as any combination of repairs, reconstruction, alteration, or improvements to a structure taking place over a ten-year period, the cumulative cost of which equals or exceeds 50% of the market value either before the improvement or repair is started or, if the structure has been damaged, before the damage occurred. Elevated buildings must have at least one access route above the base flood elevation. The regulations prohibit all encroachments in regulated floodways.

The Subdivision Regulations require a storm drainage plan that minimizes runoff and maximizes infiltration before discharging storm water into wetlands and watercourses. If storm water discharge will overload existing downstream drainage facilities, the storm drainage plan must provide adequate retention or detention of the runoff. The regulations require the protection of natural features including those that contribute to the natural functioning of the natural drainage system. The regulations also address damaging winds as a result of severe storms; utility lines are required to be buried for new subdivisions and are encouraged for certain projects such as major road projects.

The Building Department ensures conformance with the Connecticut State Building Code including flood resistant construction and elevation certification (Section 3107).

The Inland Wetlands Agency, through its Inland Wetlands and Watercourses regulations, works toward the conservation of wetland resources through avoiding impacts from development on functional wetlands and watercourses. The Commission also seeks to restore and enhance wetlands that have been degraded.

4.2.2. Operations and Procedures

The Town has a budget of $50,000 per year for grounds and tree maintenance; this has not always been sufficient to proactively maintain dangerous trees. The town's utility provider, Eversource, reportedly focuses attention on the town and trims areas along utilities. Utilities are mostly installed underground for new developments.

East Hampton has significant debris management capabilities and will prefer to chip branches prior to bringing them to the debris storage site at the Town transfer station. Whenever possible, Public Works examines and clears public storm drains and grates of debris during periods of rainfall, snowfall, and storms.

The DPW addresses ice problems on roads on a case-by-case basis. Occasionally, and as needed, improved drainage systems will be installed to help reduce groundwater seepage that causes ice. The Town is able to handle most winter plowing needs in-house, hiring outside contractors only in extreme cases. The Town uses salt for deicing.

When possible, the DPW uses low impact development (LID) tools and green infrastructure such as swales and infiltration instead of traditional drainage systems; the Town has found that the costs of these tools tend to be lower than traditional systems. The Town is exploring development of an internal manual for LID techniques.

4.2.3. Emergency Response Capabilities

The Town has installed about 40 dry hydrants around Town for fire protection. The network of dry hydrants has been mapped to guide maintenance and emergency response. All dry hydrants are flow-tested annually, and those with problems are scheduled for inspection and repair. Underground cisterns (20,000 gallons in size) are required for some new developments. The Fire Department also owns three tanker trucks that can carry a combined 8,000 gallons of firefighting water.

4.2.4. Capital Improvements

Capital Improvement Plan addresses municipal improvements including rights-of-way, infrastructure, land, housing, or utilities for public purposes. Mitigation actions from this NHMP should be included in the CIP. Larger items such as bridge and culvert replacements and elevation of roads are included in the 5-year CIP. The CIP should be reviewed often so that it can include new mitigation action items each time the NHMP is updated. This is a good way for the town to prioritize mitigation items and use the Capital Improvement Program (CIP) to set aside funds for infrastructure improvements to reduce loss of life and property during natural hazard (NH) events.

4.2.5. Plan Integration with Other Planning Mechanisms

The town of East Hampton references parts of the NHMP in their Plan of Conservation and Development (POCD). There is new legislation (P.A. 25-33) that now requires cities and towns to incorporate climate vulnerability (specifically including flooding) and resilience strategies into POCDs. East Hampton plans to comply with that new requirement during the next POCD Update and will likely increase reference to this plan as a result. Further, communities are now required to develop and maintain affordable housing plans. The mitigation plan will help inform siting criteria within that plan.

Additionally, the town of East Hampton uses the mitigation plan to inform its 5-year capital improvement plan and associated annual budgets. East Hampton staff reported that the plan has not been formally incorporated into any other planning documents.

4.2.6. Outreach, Education, Communication, and Warnings

The Town has locally implemented the Everbridge system and can contact residents through that system. Town staff note that the Town Council or Town Manager must authorize use of Everbridge on a case-by-case basis, presenting a potential barrier to use during an emergency event. East Hampton's Emergency Management Department also maintains a page on the Town website that provides information and updates.

4.2.7. Other Capabilities

Table 4.2 (inc.4.2a and 4.2b), Table 4.3, and

Table 4.4

Table 4.4 list legal, regulatory, technical, administrative and financial capabilities that support hazard mitigation.

Table 4.2. Legal and Regulatory Capability

Table 4.2.a. Codes, Ordinances & Requirements

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Building Code	Yes	Yes	No	Yes	All municipalities enforce the State Building Code
Zoning Code	Yes	No	No	No	
Subdivisions	Yes	No	No	No	
Post Disaster Recovery	No - have a system for data post disaster	No	No	No	
Real Estate Disclosure	Yes	No	No	Yes	Statewide requirement
Growth Management	No	No	No	No	
Site Plan Review	Yes	No	No	No	
Special Purpose (flood management, critical areas)	Yes	Yes	No	Yes	Lake P, Pine River, etc. Total of 4

Table 4.2.b. Planning Documents

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
POCD	Yes	No	No	Yes	Plan of Conservation and Development (Current); Re-write underway, regs and POCD
Floodplain or Basin Plan	No	No	No	No	
Stormwater Plan	No	No	No	No	Use the State Plan
Capital Improvement Plan	Yes	No	No	No	
Habitat Conservation Plan	No	No	No	No	
Economic Development Plan -POCD	Yes	No	No	No	Regional Comprehensive Economic Development Strategy
Emergency Response Plan	Yes	No	No	Yes	LEOP templates provided by DEMHS

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Shoreline Management Plan	No	No	No	No	
Post Disaster Recovery Plan	No	No	No	Yes	LEOP templates provided by DEMHS

In addition to the plans noted above, there is an open Space Management Plan (Parks &Rec. Greenway Plan) underway currently. There is a Natural Resources Protection Plan, and the Wetland regulations are currently undergoing an update and will add hazard mitigation language.

Table 4.3. Administrative and Technical Capability

Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Planning and Zoning/Engineering
Engineers or professionals trained in building or infrastructure construction practices	Yes	Engineering Dept and Public Works
Planners or engineers with an understanding of natural hazards	Yes	RiverCOG
Staff with training in benefit/cost analysis	No	Not Currently
Floodplain manager	Yes	Planner
Surveyors	No	Contract as needed
Personnel skilled or trained in GIS applications	No	
Emergency manager	Yes - currently vacant	Dept of Emergency Management
Grant writers	No	Not Dedicated Staff

Table 4.4. Financial Resources

Financial Resources	Accessible or Eligible to Use?	Notes
Community Development Block Grants	Yes	Have in past, STEAP grant
Capital Improvements Project Funding	Yes	
Authority to Levy Taxes for Specific Purposes	Yes	WPCA
User Fees for Water, Sewer, Gas or Electric Service	Yes	WPCA – water and sewer
Incur Debt through General Obligation Bonds	Yes	
Incur Debt through Special Tax Bonds	Yes	
Incur Debt through Private Activity Bonds	Yes	
Withhold Public Expenditures in Hazard-Prone Areas	Yes (State)	
State Sponsored Grant Programs	Yes	
Development Impact Fees for Homebuyers or Developers	No	

Gaps in Capabilities

As of January 2026, East Hampton no longer has an Emergency Management Director. This is noted as a temporary gap in capabilities.

4.2.8. New Capabilities and Completed Actions

Since the last plan update in 2021 the following new capabilities have been added:

- The town acquired additional equipment to clear roads of downed trees, disabled vehicles, or unforeseen obstacles i.e., chain saws, lifting gear (chains & winches), bulldozer, chipper, wheeled excavator with grapple.
- The town replaces and upgrades the capacity of the Whippoorwill Hollow Road culvert.

5. Hazard Mitigation Action Plan

This section presents the progress made since the 2021 action plan and establishes new goals, objectives and actions identified for the 2026-2030 planning horizon.

5.1. Previous Mitigation Actions Disposition

During the process of developing the 2021 East Hampton Hazard Mitigation Plan, several hazard mitigation actions were identified to be pursued during the five-year planning horizon that followed. Table 5.1 presents the actions listed in that document, and the status of those actions.

Table 5.1. Status of Previous Mitigation Strategies and Actions.

Action	Description	Status	Notes
01	Acquire additional equipment to clear roads of downed trees, disabled vehicles, or unforeseen obstacles i.e. chain saws, lifting gear (chains & winches), bulldozer, chipper, wheeled excavator with grapple.	Completed	
02	Bridge on White Birch Road is vulnerable to damage from flood events from Fawn Mill Brook and Loos Pond. Replace with new larger bridge.	Deleted	
03	Replace culvert on Collie Brook Road with a larger culvert	Carry Forward	
04	Undersized culvert on Hale Brook at Lake Drive results in roadway flooding. Replace with larger culvert.	Carry Forward	Tentatively Received FEMA grant.
05	Demolish factory building at 13 Summit Street and daylight Pocotopaug Creek, and possibly remove the existing dam.	Carry Forward	
06	Undersized 24" culvert on Elbow Brook at Wopowog Road results in roadway flooding and erosion of gravel surfaced road. Replace with 3' culvert.	Deleted	
07	Develop an inventory of deteriorating metal culverts throughout town to begin replacing those most in need.	Carry Forward	

Action	Description	Status	Notes
08	Work with private dam owners on a communication plan regarding the opening and closing of the dams along the Pocotopaug Creek corridor.	Carry Forward	
09	Ensure all Emergency Action Plans (EAPs) for any dam in town is maintained on file.	Carry Forward	
10	Replace and upgrade the capacity of the Whippoorwill Hollow Road culvert. If this culvert fails, houses will be cut off from egress.	Completed	
11	Pursue funding to develop a low impact development (LID) manual for techniques to be implemented throughout the town.	Carry Forward	
12	Develop a management plan that tracks areas in need of tree trimming and removal.	Carry Forward	
13	Locate alternative fire protection water sources or identify alternative storage methods for fire suppression capabilities.	Carry Forward	

5.2. Updated Mitigation Goals, Objectives, and Strategies

As noted in Section 3 of Volume 1, all the RiverCOG participating communities, including East Hampton, participated in setting regional goals and objectives. East Hampton has confirmed these goals and objectives valid for the Town's annex. The three goals and objectives are as follows:

Goal 1: Promote implementation of sound flood management and other natural hazard mitigation principles on a regional and local level. Note: Covers future development through policy, planning, regulation, emergency services, and environmental strategies.

- **Objective for Goal 1:** To promote the development, improvement and implementation of programs, policies, regulations, and emergency services that result in the reduction of long-term risks to life and property.

Goal 2: Implementation of effective natural hazard mitigation projects at the regional and local level. Note: Covers infrastructure and building related projects – the existing built environment.

- **Objective for Goal 2:** To enhance the ability of RiverCOG, other regional entities, and local communities to reduce or eliminate risks to life and property from natural hazards through cost-effective hazard mitigation projects, including avoidance.

Goal 3: Increase research, planning and outreach activities for the mitigation of natural hazards on a regional and local level. Note: Covers the people component of mitigation via outreach and education, and integration with other planning and continuous improvement through increased research.

- **Objective for Goal 3:** To increase general awareness of the region's natural hazards and encourage State agencies, local communities, and the public to be proactive in taking actions to reduce long-term risk to life and property.

The local planning team of East Hampton reviewed these goals and objectives during meetings in June of 2025 and acknowledged that they are still aligned with the priorities of the town.

5.2.1. Prioritization of Mitigation Strategies

In considering which projects, processes, and other measures to undertake in the upcoming plan period, municipal and regional officials evaluated the need to address problems and vulnerabilities in their communities against the communities' resources and capabilities. To prioritize mitigation strategies, a set of criteria commonly used by public administration officials and planners was applied to each proposed strategy. The method, called STAPLEE, is outlined in FEMA planning documents such as Developing the Mitigation Plan (FEMA 386-3) and Using Benefit-Cost Review in Mitigation Planning (FEMA 386-5). STAPLEE stands for the "Social, Technical, Administrative, Political, Legal, Economic, and Environmental" criteria for making planning decisions. Benefit-cost review was emphasized in the prioritization process. Criteria were divided into potential benefits (pros) and potential costs (cons) for each mitigation strategy. The following questions were asked about the proposed mitigation strategies:

Social:

- Benefits: Is the proposed strategy socially acceptable to the community?
- Costs: Are there any equity issues involved that would mean that one segment of the community could be treated unfairly? Will the action disrupt established neighborhoods, break up voting districts, or cause the relocation of lower-income people? Is the action compatible with present and future community values?

Technical:

- Benefits: Will the proposed strategy work? Will it reduce losses in the long term with minimal secondary impacts?
- Costs: Is the action technically feasible? Will it create more problems than it will solve? Does it solve the problem or only a symptom?

Administrative:

- Benefits: Does the project make it easier for the community to administrate future mitigation or emergency response actions?
- Costs: Does the community have the capability (staff, technical experts, and/or funding) to implement the action, or can it be readily obtained? Can the community perform the necessary maintenance? Can the project be accomplished in a timely manner?

Political:

- Benefits: Is the strategy politically beneficial? Is there public support both to implement and maintain the project? Is there a local champion willing to see the project to completion? Can the mitigation objectives be accomplished at the lowest cost to the community (grants, etc.)?
- Costs: Have political leaders participated in the planning process? Do project stakeholders support the project enough to ensure success? Have the stakeholders been offered the opportunity to participate in the planning process?

Legal:

- Benefits: Is there a technical, scientific, or legal basis for the mitigation action? Are the proper laws, ordinances, and resolutions in place to implement the action?
- Costs: Does the community have the authority to implement the proposed action? Are there any potential legal consequences? Will the community be liable for the actions or support of actions or for lack of action? Is the action likely to be challenged by stakeholders who may be negatively affected?

Economic:

- Benefits: Are there currently sources of funds that can be used to implement the action? What benefits will the action provide? Does the action contribute to community goals such as capital improvements or economic development?

Costs: Does the cost seem reasonable for the size of the problem and the likely benefits? What burden will be placed on the tax base or local economy to implement this action? What proposed actions should be considered but be tabled for implementation until outside sources of funding are available?

Each proposed mitigation strategy presented in this plan was evaluated and quantitatively assigned a "benefit" score and a "cost" score for each of the seven STAPLEE criteria as outlined below:

- For potential benefits, a score of "1" was assigned if the project will have a beneficial effect for that criterion or a "0" if the project would have a negligible effect or if the questions were not applicable to the strategy.
- For potential costs, a score of "-1" was assigned if the project would have an unfavorable impact for that criterion or a "0" if the project would have a negligible impact or if the questions were not applicable to the strategy.
- Technical and Economic criteria were double weighted (multiplied by two) in the final sum of scores.

- The total benefit score and cost score for each mitigation strategy was summed to determine each strategy's final STAPLEE score.

Although a community may implement recommendations as prioritized by the STAPLEE method, an additional consideration is important for those recommendations that may be funded under the FEMA mitigation grant programs. To receive federal funding, the mitigation action must have a benefit-cost ratio (BCR) that exceeds a value of 1.0. Calculation of the BCR is conducted using FEMA's Benefit Cost Analysis (BCA) toolkit. The calculation method may be complex and vary with the mitigation action of interest. Calculations are dependent on detailed information such as property value appraisals, design and construction costs for structural projects, and tabulations of previous damages or NFIP claims. The BCR scoring system used is outlined in Table 5.2.

Table 5.2. BCR Scoring System

Scoring	Benefits	Costs
Low: 0-1 points	Few would benefit; the impacts being addressed are not severe; benefits may be short term	Likely to be done by existing personnel with little impact on budget; not complicated to accomplish. Costs to implement is likely to be under $10,000.
Medium: 2-3 points	Benefits may be felt by many in the community; the action may solve a problem or otherwise benefit the community for several years	May need additional funding or studies; may require change in practices; costs to implement may be between $10,000 and $100,000
High: 4-5 points	Benefits would accrue to many in the community; benefits may accrue to the most vulnerable or those not able to recover on their own; benefits would be long term and may permanently protect from damages	Likely to cost over $100,000 and require obtaining funding outside of operating budget; complicated, lengthy process to implement

The STAPLEE method accounts for cost-benefit considerations both directly (through the "Economic" category) and indirectly (through general consideration of costs and benefits of actions). Additionally, the range of estimated costs of each strategy are included in the STAPLEE table. The assumed costs of projects and generalized presentation of the benefits accruing from them are not based on specific detailed cost estimates as that level of analysis is not appropriate for this type of planning effort. For some projects, such as routine or recurring operations that are established practices and conducted with municipal general operating funds and existing staff, the STAPLEE results can be the only explicit comparison of costs and benefits. For projects for which bonding and/or grant funding will be sought, more in-depth evaluations of costs and benefits will be required. As project scopes are detailed, benefits and costs can be identified with more precision, and the benefit-cost ratio which results from a full benefit-cost analysis may differ from the planning-level STAPLEE results presented here.

It should be noted that higher BCRs do not necessarily correspond to high priorities, nor do low BCRs or BCRs under 1.0 correspond to low-priority projects. An important project with a high priority to the community may have a lower BCR because of its complexity, assumed high expense, and other costs.

Communities should not be discouraged or deterred from further consideration of projects that have low BCRs or BCRs less than 1.0 until additional, more specific evaluations of the costs and benefits have been undertaken.

5.2.2. 2021-2026 Prioritized Hazard Mitigation Actions

In addition to the regional mitigation actions endorsed by East Hampton and outlined in Section 3 of Volume 1 of the regional plan, the Town identified or carried over from the last update, ranked and evaluated the actions in Table 5.3. For each identified action, the goal and objective it addresses is noted. Additionally, a description, lead agency, indication of costs and potential funding sources and an estimated timeline for completion is included. Also included are the hazards addressed by a specific action.

Figure 5.1shows the locations of the projects listed in Table 5.3 with spatial elements that have been carried forward or are new additions. Additionally, completed projects identified in Table 5.1 with spatial elements are also shown on the map. Projects carried forward and new projects are identified by their activity number (from Table 5.3) while completed projects are identified by the description of the project completed.

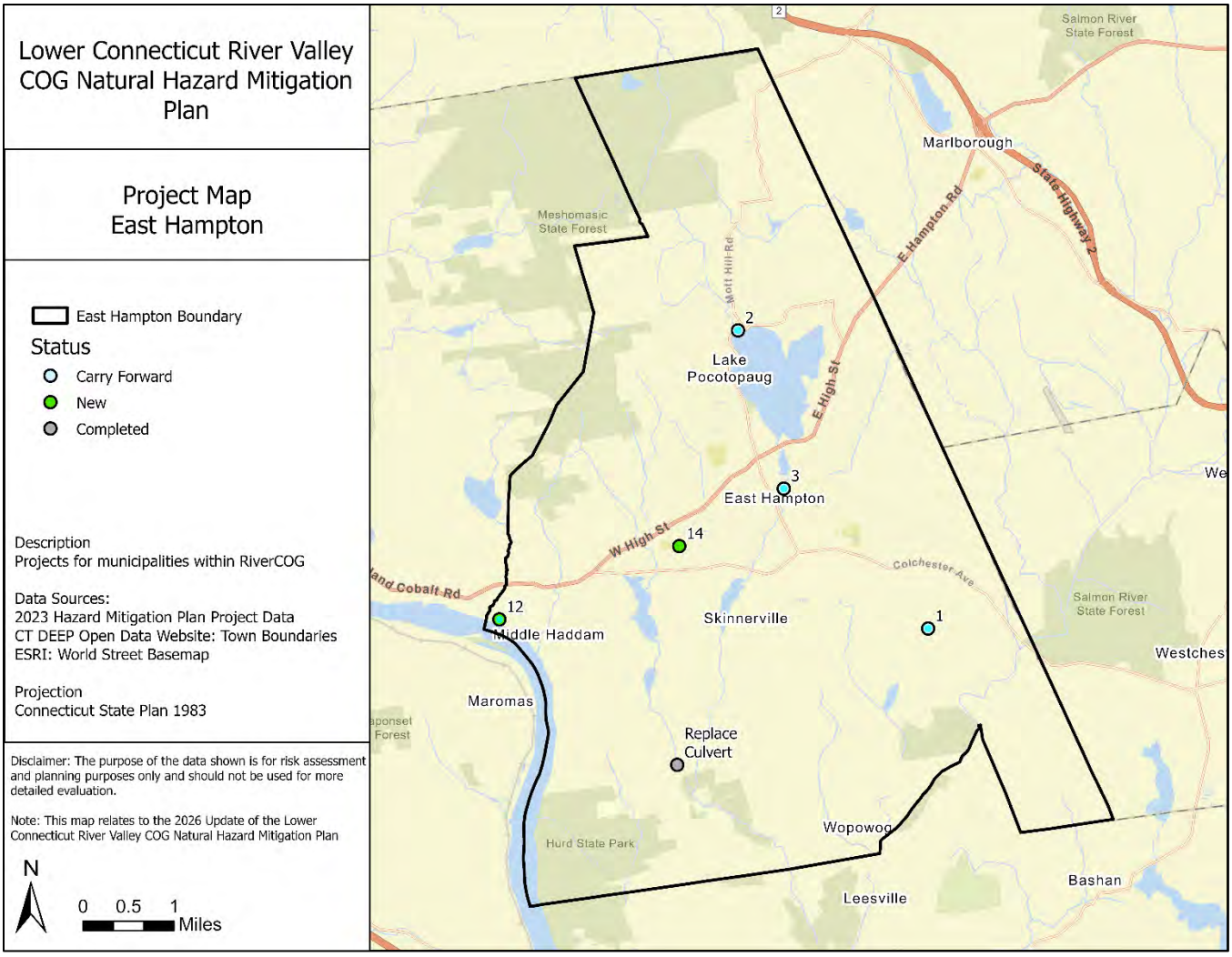


Figure 5.1. Carried Forward, New, and Completed Projects in East Hampton

Table 5.3. East Hampton Hazard Mitigation Strategies and Prioritization

KEY: SW= Severe Weather, TW = Tornado/Wind, ET = Extreme Temperatures, WS=Winter Storm, F = Flood, IS = Invasive Species, WF = Wildfire, D = Drought, E = Earthquake, CC = Climate Change

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
1	2-1	Replace culvert on Collie Brook Road with a larger culvert	PW, BOS, BOF	$25,000-$50,000	Grant HMA	7/2022 – 6/2024	F	1	0	1	1	0	0	1	1	0	0	0	0	0	0	7/H
2	2-1	Undersized culvert on Hale Brook at Lake Drive results in roadway flooding. Replace with larger culvert.	PW, BOS, BOF	$25,000-$50,000	Grant HMA	7/2022 – 6/2024	F	1	0	1	1	0	0	1	1	0	0	0	0	0	0	7/H
3 mod	2-1	Demolish factory building at 13 Summit Street, removed the town owned Artistic Wire Dam and daylight Pocotopaug Creek	PW, BOS, BOF	$1M+	Grant HMA	7/2023 – 6/2025	F	1	0	1	1	0	0	1	1	0	0	1	1	0	0	9/H

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
4	2-1	Develop an inventory of deteriorating metal culverts throughout town to begin replacing those most in need.	PW	$10,000-$20,000	OB Grant	2026 – 2027	F	1	0	1	1	0	0	1	1	0	0	0	0	0	0	7/H
5	1-1	Work with private dam owners on a communication plan regarding the opening and closing of the dams along the Pocotopaug Creek corridor.	PW, BOS, BOF	$1,000-$5,000	OB Staff Time	2026	F	1	0	0	0	1	1	0	0	0	0	0	0	0	0	3/L
6	1-1	Ensure all Emergency Action Plans (EAPs) for any dam in town is maintained on file.	PW, BOS, BOF	$1,000-$5,000	OB Staff Time	2027	F	1	0	0	0	1	1	0	0	0	0	0	0	0	0	3/L
7	1-1	Pursue funding to develop a low impact development (LID) manual for techniques to be implemented throughout the town.	PW, BOS, BOF, Planning	$5,000 - $10,000	OB Grant	2027-2028	F	1	0	0	0	1	1	0	0	0	0	0	0	0	0	3/L

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
8 new	1-1	Investigate joining Sustainable CT	P&Z	$5,000-$15,000	OB	2027	F, SW	1	0	0	0	1	1	0	0	0	0	0	0	0	0	3/L
9	1-1	Develop a management plan that tracks areas in need of tree trimming and removal.	Tree Warden, PW	$5,000-$15,000	OB	2027-2028	SW, TW, WS, F, WF	1	0	0	0	1	1	0	0	0	0	0	0	1	0	4/H
10 new	1-1	Regulatory Overhaul – During an ongoing re-work of development regulations, add Hazard Mitigation components and consider wetlands disturbance zones, and requirements for green infrastructure, tree plantings, and other techniques to mitigate extreme heat.	P&Z	$25,000-$50,000	OB	2026	F, ET, WF, D	1	0	0	0	1	1	0	0	0	0	0	0	1	0	4/H

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
11	2-1	Locate alternative fire protection water sources or identify alternative storage methods for fire suppression capabilities.	Fire Dept., PW, BOS, BOF	$5,000-$15,000	OB	2026-2027	WF, D	0	0	1	0	1	0	1	0	1	0	1	0	1	0	8/H
12 new	2-1	Conduct a study of hardening of well fields at Oakum Dock. This is an active well site. There is a desire to tie in with municipal water.	DPW, PH, ConCom	$100k study $400M construction	Bonding and Grants	2027 for study	F, D, CC	1	0	1	1	0	0	1	1	0	0	0	0	0	0	7/H
13 new	2-1	Investigate community water systems to replace individual wells for properties that experience water shortages	DPW, PH, ConCom, P&Z	$250k study	OB	2027	D, CC	0	0	1	0	1	0	1	0	1	0	1	0	1	0	8/H
14 new	2-1, 3-1	The East Hampton Middle School has only one egress/ingress point. Study alternative routes	P&Z, DPW	$100k study	OB	2027	F, WF	1	0	0	0	1	1	0	0	0	0	0	0	1	0	4/H

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
15 new	2-1, 3-1	Conduct a survey of elementary schools to evaluate if bookshelves and other heavy stationary objects that could fall and cause injury during an earthquake are secured to walls or other structures. Where deficiencies are identified, develop a plan of recommended repairs and share it with school administrators.	EMD	$2,000	OB	2027	E	1	0	0	1	1	1	0	0	1	0	0	0	1	0	3/L

EDC	Economic Development Commission	P&Z	Planning & Zoning
SS	Social Services	BOE	Board of Education
PH	Public Health	ConCom	Conservation Commission
DPW	Department of Public Works	OB	Operating Budget
EMD	Emergency Management Director	HMA	FEMA Hazard Mitigation Assistance

LOWER CONNECTICUT RIVER VALLEY COUNCIL OF GOVERNMENTS
HAZARD MITIGATION PLAN 2026 UPDATE

TOWN OF ESSEX MUNICIPAL ANNEX

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1. Contact Information

1.1. Point of Contact

Table 1.1. Town of Essex Contact Information

Information	Town of Essex
Contact Name	Carey Duques, Land Use Official
Address	29 West Avenue Essex, CT 06426
Telephone	(860) 767-4340 ext 115
Email	cduques@essexct.gov

1.2. Local Planning Team

The following representatives listed in Table 1.2 participated in meetings and provided input, data, and council toward the development of Volume 1 and this Essex, Connecticut Annex.

Table 1.2. Town of Essex Planning Team

Name	Title
John Guszkowski	Town Planner (Contracted)
John Planas	Fire Marshal
Lisa Fasulo	Deputy Emergency Management Director/Health Director
Ryan Welch	Public Works Director
Carey Duques	Land Use Official
Stacy Abbott	Sustainable Essex

1.3. Lower Connecticut River Valley Council of Governments

Table 1.3. RiverCOG Contact Information

Information	RiverCOG Information
Contact Name	Margot Burns – Senior Environmental Planner
Address	RiverCOG 145 Dennison Rd. Essex, CT 06426
Telephone	(860) 581-8554 x 702
Email	mburns@rivercog.org

2. Jurisdiction Profile

2.1. Town Profile

The Nehantic Indians were the first people to live in the area now known as Essex, CT. In 1648 an area of the Saybrook Colony called the Potapoug Quarter was laid out, encompassing the modern town of Essex, Deep River, and parts of Winthrop and Chester. A village began to emerge around 1664, but it was not until 1722 that a real town was formed. It was in what was then referred to as Center Saye Brook but is now known as Centerbrook. The area that we refer to as Essex remained the Potapoug Quarter of Saybrook until 1854 when the state legislature split off Essex Village to become the Town of Essex. Centerbrook (including the present day Ivoryton) was added five years later.

As the community grew, a Town Hall, a town pound, and a poorhouse were added. The formation of an iron works, along with a saw mill and gristmill on the Falls River, contributed to the commercial economy of the Village. By the middle of the 18th century, the Town Center began a shift from Centerbrook to Potapoug Point, or modern Essex Village, where shipbuilding was beginning to offer an alternate occupation to farming. By the middle of the 19th century, Essex Village fell into a long period of financial decline as the business shifted to the village of Ivoryton.

Geographically, Essex is the smallest town within the RiverCOG region. It is bordered to the north by Deep River and to the south by Westbrook and Old Saybrook. The total area in Essex is 12.2 square miles of which 10.70 square miles is land area. Approximately 1.5 square miles within the town's boundaries are occupied by the Connecticut River and its coves. Essex has about three and a half miles of linear shoreline, not including shoreline along the North, Middle and South Coves. The Falls River, Mud River and other smaller streams that drain to the Connecticut River also run through Essex posing a risk for inland flooding during major events.

Figure 2.1 shows the location and corporate boundaries of Essex.

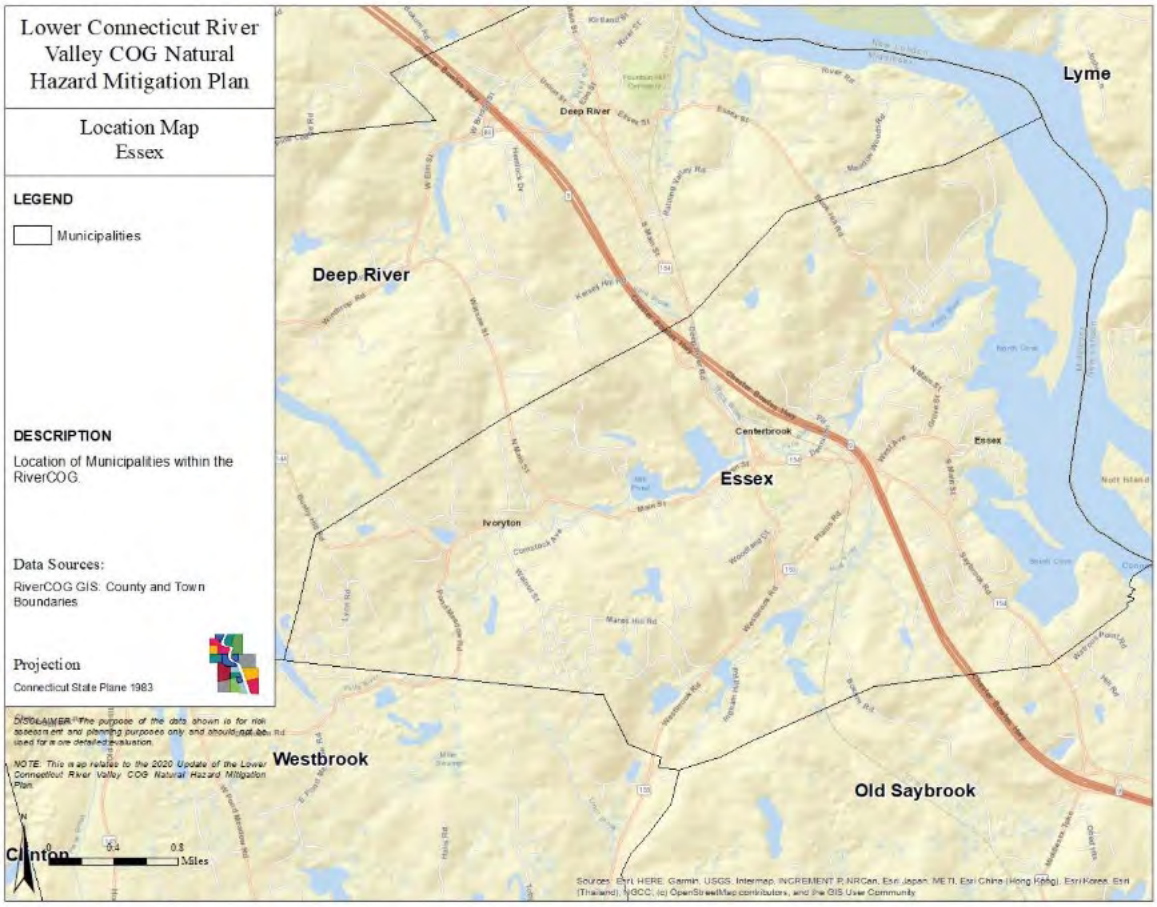


Figure 2.1. Essex Location

Essex is home to many of the major tourist destinations within the RiverCOG Region. These destinations include the Essex Steam Train, the Ivoryton Playhouse, and the Connecticut River Museum. There are also several historic homes and structures throughout the community, including the Griswold Inn, one of the oldest operating inns in the country. The Connecticut River Museum location makes this site susceptible to large storms, including hurricanes, and has been damaged in the recent past as a result of storms.

Given Essex's topography, location on the Connecticut River and land use patterns, specific areas of the town are most vulnerable to flooding, hurricane, flooding, and high winds.

The town geology is typified by lowland tidal areas along the Connecticut River and rolling hills with ledge outcrops. Elevations range from near sea level at the Connecticut River to approximately 310 feet along the northern boundary of the town. Small areas of artificial fill consisting of sand and gravel are present in the vicinity of Ivoryton, the Valley Railroad, and State Route 9. Areas of glacial till are situated on the north-central shore of Mill Pond and at the eastern end of the town. Also present from the east end of Mill Pond to the eastern extremity of State Route 9 is an area of alluvium.

Essex consists of approximately 8% committed open space, 28% residential land, 1.6% commercial uses, 2.2% industrial use, 2.2% institutional uses, and 6.4% transportation uses. The rest of the Town is uncommitted vacant land. Commercial development is located along Plains Road and Westbrook Road. Industrial uses are located mostly in the Centerbrook area west of Exit 3 off Route 9. Transportation uses include Route 9, and the Valley Railroad property, a State Park leased by the railroad. Essex includes inland wetlands, ponds, lakes, and large tracts of uninterrupted forest. Land designated as open space are owned by Essex Land Trust and other entities. Figure 2.2 shows land cover in Essex.

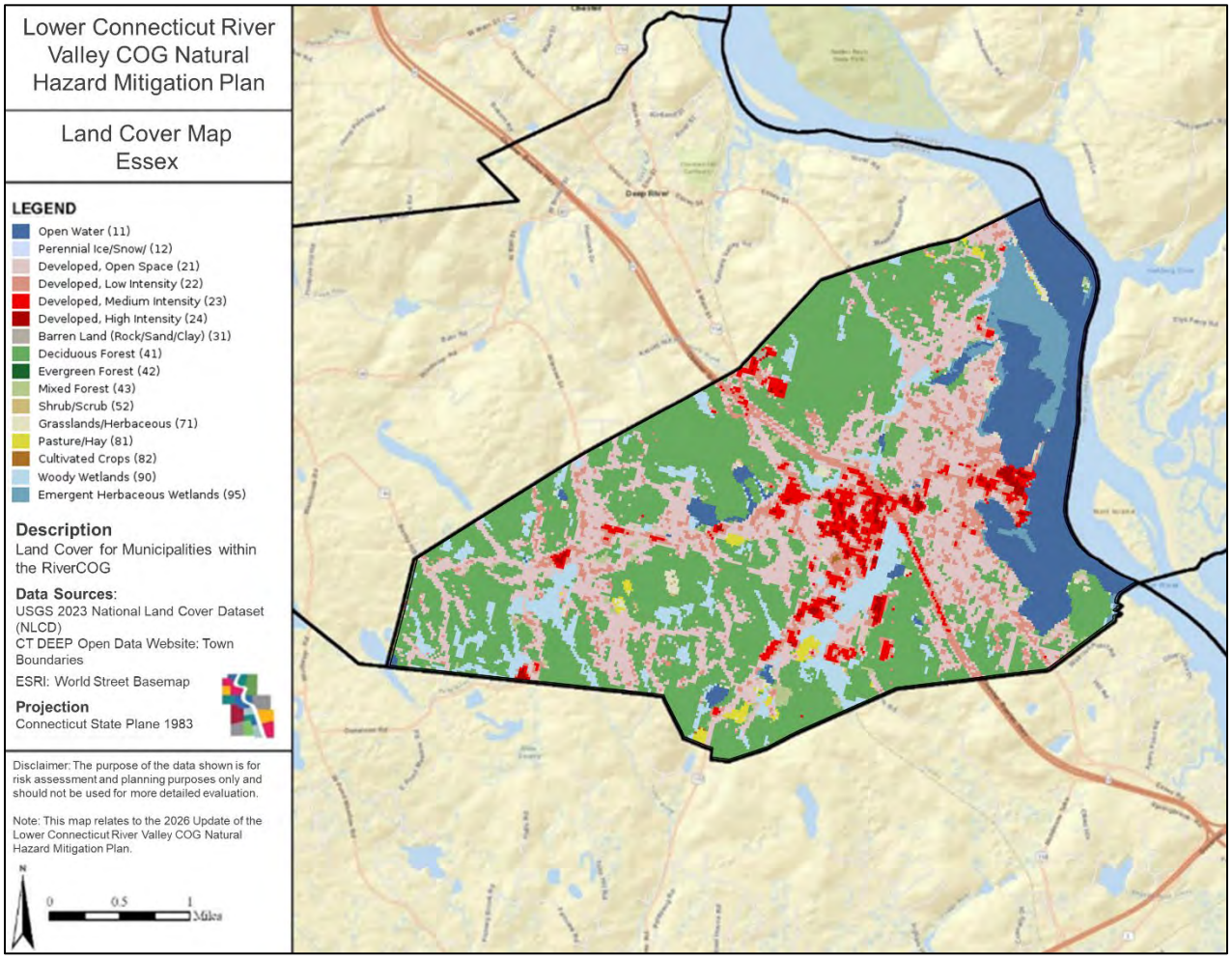


Figure 2.2. Essex Land Cover

Essex is located at the junction of Route 153, Route 154, and Route 9, which are major highways within the region, and the town receives high traffic over local roads as well as these state roads. For this reason, there is pressure for development along these routes, some of which are intersected by major streams and wetland areas.

The 2023 American Community Survey (ACS) reported a town population of 6,766 people which represents a 2.5% increase from 2019.[1] Figure 2.3 provides a demographic profile for Essex.[2]

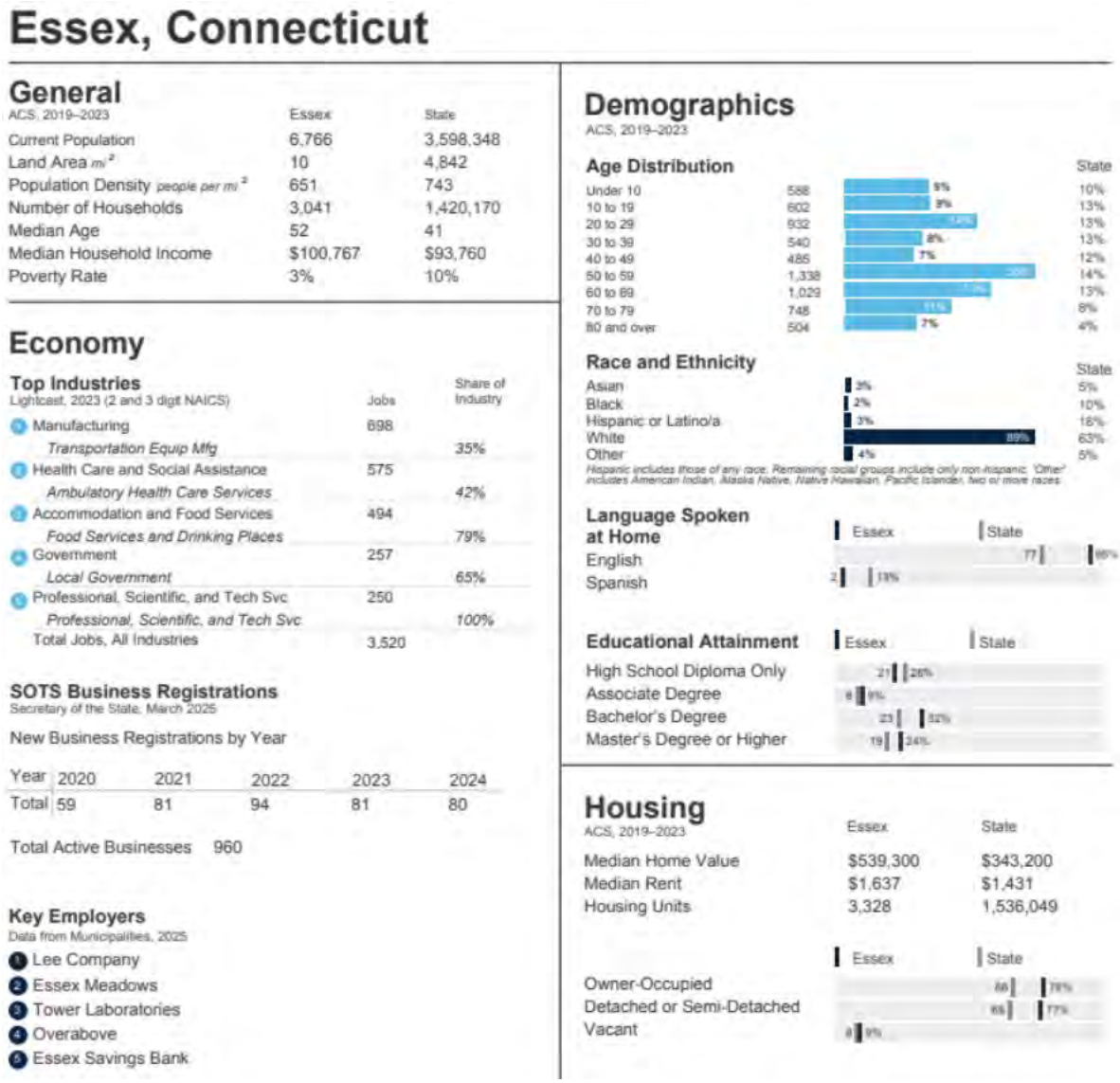


Figure 2.3. Town of Essex Demographics

2.2. Climate

Average weather data in Essex was sourced from the Weather Spark website (weatherspark.com).

Over the course of the year, the temperature typically varies from 23°F to 81°F and is rarely below 9°F or above 88°F. The warm season lasts for 3.4 months, from June 3 to September 15, with an

[1] https://s3-us-west-2.amazonaws.com/cerc-pdfs/2025/Essex.pdf
[2] - Published on Town of Essex, CT *(Source: Connecticut Data Collaborative)*

average daily high temperature above 72°F. The hottest month of the year is typically July, with an average high of 81°F and low of 66°F. The cold season lasts for 3.4 months, from December 2 to March 14, with an average daily high temperature below 46°F. The coldest month of the year is January, with an average low of 23°F and high of 38°F.

Essex does not experience significant seasonal variation in the frequency of wet days (i.e., those with greater than 0.04 inches of liquid or liquid-equivalent precipitation). The frequency ranges from 23% to 33%, with an average value of 27%. The most rain falls during the 31 days centered around April 2, with an average total accumulation of 3.9 inches. The snowy period of the year lasts for 4.6 months, from November 18 to April 6, with a sliding 31-day liquid-equivalent snowfall of at least 0.1 inches. The most snow falls during the 31 days centered around January 27, with an average total liquid-equivalent accumulation of 0.7 inches.

The windier part of the year lasts for 6.2 months, from October 13 to April 20, with average wind speeds of more than 7.3 miles per hour. The windiest day of the year is January 30, with an average hourly wind speed of 9.2 miles per hour.

With its dense forest coverage and abundant water features, Essex is slightly more protected from extreme heat than some of its neighbors, but heat waves do occur. Winter storms typically will impact the entire town; however, effects can vary locally depending on weather conditions (e.g. snowfall in higher elevations versus less snow close to the river or in southern parts of town).

2.3. Government Style

Essex has a Selectman-Town Meeting form of government. The First Selectman is the chief elected official and chairman of a three-member Board of Selectmen, who collectively serve as the executive branch. The Town Meeting serves as the Legislative Branch.

2.4. Development Trends

Historically, development has focused on three village centers: Essex Village, Centerbrook, and Ivoryton. The most intensively developed area is east of Route 9, surrounding Essex Village, with residential subdivisions developed over the last 10 years. Commercial uses are located along Plains Road and Westbrook Road, and industrial uses are located mostly in the Centerbrook area west of Exit 3 off Route 9.

Looking forward, the following development is being explored in the Town of Essex:

- The Town is looking to construct a new Regional Animal Control and Town police garage for storage at 72 Plains Road.
- The fire training facility may be expanded in the future.
- The Ivoryton Playhouse is completing the construction of a new rehearsal building at 122 Main Street Ivoryton.

- A housing development is possible off of Pond Meadow closer to the Westbrook town line, while 160 Saybrook could become subdivided to 6-8 parcels.
- Meadowbrook Manor, and Essex Meadows are existing housing developments, which might expand.
- Sale and development of a large parcel at the Essex- Westbrook town line on Rt 153 is also possible.

There is pressure for development along Route 153, Route 154, and Route 9, some of which are intersected by major streams and wetland areas. Additional commercial/industrial development in the Mud River corridor is possible.

Careful monitoring of septic systems and existing soil conditions have been a factor in controlling development in these areas. Most of these development areas are not threatened by floodplain.

2.5. Town-Specific Hazard Concerns

Municipal staff reported several specific hazard concern issues, which are listed below. The information below is intended to supplement the hazard specific analysis completed in Section 2, of Volume I of this plan.

The economic core of Essex is vulnerable to loss of electricity and communication services due to downed utility lines. In general, flooding issues are of highest concern to the Town. There have been notable challenges in the past associated with storm surge, roads overtopping, and tidally influenced flooding, especially along Pratt and Ferry streets. The town is also concerned with wildfires as many historic buildings are closely spaced, in addition to concerns regarding fires being sparked from the Essex Steam Train. The information in the subsections below is intended to supplement the risk assessment in Volume 1, Section 2 of this plan update.

A note: To preserve the reader's ability to align RiverCOG-Level and town-level hazard identification and risk analysis, the order of the following hazards aligns with the order of hazards in Volume I. Individual towns have ranked these hazards differently. This town-level ranking can be found in Section 3.3 Hazard Risk Ranking.

2.5.1. Severe Winter Weather

Winter storms typically will impact the entire town; however, effects can vary locally depending on weather conditions (e.g. snowfall in higher elevations versus less snow close to the river or in southern parts of town). Many water complaints are received from residents with regards to locations where water seepage leads to icy conditions throughout the winter season. Two to three inches of ice buildup are known to occur in some areas. A few roads need drainage improvements to reduce these ice conditions. Winter storms are likely to occur in Essex. They have caused significant damage and are second only to hurricanes in terms of the potential damage they can cause in Essex. The Town is well versed in winter storm response and cleanup. The bigger concern is typically the cold temperatures and power outages. It is assumed that most municipal facilities

are prepared to withstand heavy snow loads, however, this has not been tested in recent years and therefore issues could always arise.

2.5.2. Flooding

Flooding - Riverine and Inland Flooding

Much of the flooding experienced along the Connecticut River is tidally influenced and therefore may be considered coastal. For the purpose of this annex, flooding along the Connecticut River will be considered coastal and flooding along Falls River, Mud River, and other streams will be considered riverine.

Bridges of interest with regard to flood risk include Pond Meadow Bridge, Old Deep River Bridge, Dennison Road Bridge, and River Road Bridge. Old Deep River Road and River Road are local pinch points during storm events and have bridges over the Falls River that may have some risk from flooding or washout. Within the next two years, the Town is hoping to execute a bridge restoration on the River Road Bridge which would have a higher deck allowing for more space and hopefully reducing some of the flooding.

The Falls River Drive culvert (at Falls River) is undersized and often overtops, restricting access. Evacuation from this area, in the event that the road is inaccessible, is a single lane, unimproved roadway which makes it challenging for school buses and other large vehicles to access. The Town has considered solutions however it is challenging due to the elevation. The issues could potentially be solved with a spillway that circumnavigates the bridge.

During the execution of the Sustainable and Resilient Communities (SRC) planning support award to Essex in 2025-2026, the Falls River Drive culvert was individually evaluated. The crossing structure condition (conducted by Fuss & O'Neill under contract to Sea Grant) was found to be adequate overall with "poor" ratings for the headwalls and wingwalls due to deterioration. Hydraulically, the evaluation found that the culvert does not have capacity to pass the 10-year condition peak flow. This finding verifies the suspected limitations expressed previously by emergency management and public works departments in Essex.



Figure 2.4. Culvert Inlet and Upstream Channel (Respectively) at Falls River Drive

The Town has reported repetitive flooding from the Falls River at Comstock Field. Damages have occurred multiple times in recent years and are estimated to be upwards of $30,000 each event as playing fields need to be redeveloped each time.

Extensive commercial and residential development exists in close proximity to the Falls River and the Connecticut River. The densest development lies in and around the three village centers, all located near ponds and streams.

Beaver dams also present a problem in some areas.

Flooding - Coastal Flood

Much of the flooding experienced along the Connecticut River is tidally influenced. As such, tidally influenced flooding occurs in Essex in low-lying areas along the Connecticut River. Pratt Street and Ferry Street are flooded monthly during astronomical high tides. Main Street can temporarily be made bi-directional as needed to detour people from Pratt Street. Other roads subject to nuisance flooding, as well as to more significant river flooding, include portions of River Road during high tides with storm surge, and Ivory Street during heavy rains.

The Town is targeting a project initiation in the Fall of 2026 to elevate Ferry Street two feet and improve pedestrian routes along the roadway. The Town secured a STEAP grant to pursue this project, which will also include replacing the wall and guiderail along the roadway. This should alleviate egress challenges that occur during coastal high tide and flood events.

In some cases, flooding events are exacerbated by inadequate storm water management infrastructure. During times of high tides and annual spring flooding resulting from snow melt, storm water drainage can back up and cause flooding associated with restriction points.

Shoreline Change

Shoreline change associated with erosion along the tidal Connecticut River has been a concern at the ends of Rackett Lane and Benson Lane at South Cove; and at Thatchbed Island. The Town is pursuing funding for a living shoreline application at Thatchbed Island which would include the use of dredge materials to reclaim soil that has washed away over the years, significantly reducing the square area of Thatchbed.

Sea Level Rise

Sea level rise will have long-term consequences to tidal water surface elevations of the Connecticut River and associated wetland systems. In the long term, changes to flood water surface elevations could be noticed. Researchers[3] in Connecticut believe that Connecticut River communities should plan for about half of the vertical sea level rise projected for Long Island

[3] Robert Thorson, UConn, via presentation at the UConn Law School in April 2026

Sound. In other words, the State-mandated planning threshold of 20 inches by 2050 could translate to ten inches of vertical flooding added to tidal flooding along the Connecticut River by 2050. Nevertheless, over the five-year timeframe for this plan, changes in horizontal flood extents associated with this vertical increment are not likely to be noticeable.

Flash Flooding

Every intersection along the Falls River has potential for flash flood impacts including Walnut St, Pond Meadow Rd, Ivory St, Comstock Ave, Falls River Drive, and Dennison Rd. Most of these have overtopped at some point in recent years.

2.5.3. Dam Breach

In the Town of Essex, the Connecticut Department of Energy and Environmental Protection (DEEP) has fifteen dams in its inventory. Five are classified as Hazard Type A (low hazard), six as AA (negligible hazard), three as Type BB (moderate hazard), and one as Type C (high hazard). All the dams are privately owned. Figure 2.5 shows the location of all dams within Essex. Moderate, Significant and high hazard-class dams are presented in the table after the map (Table 2.1). A full list of dams is provided in Appendix B.

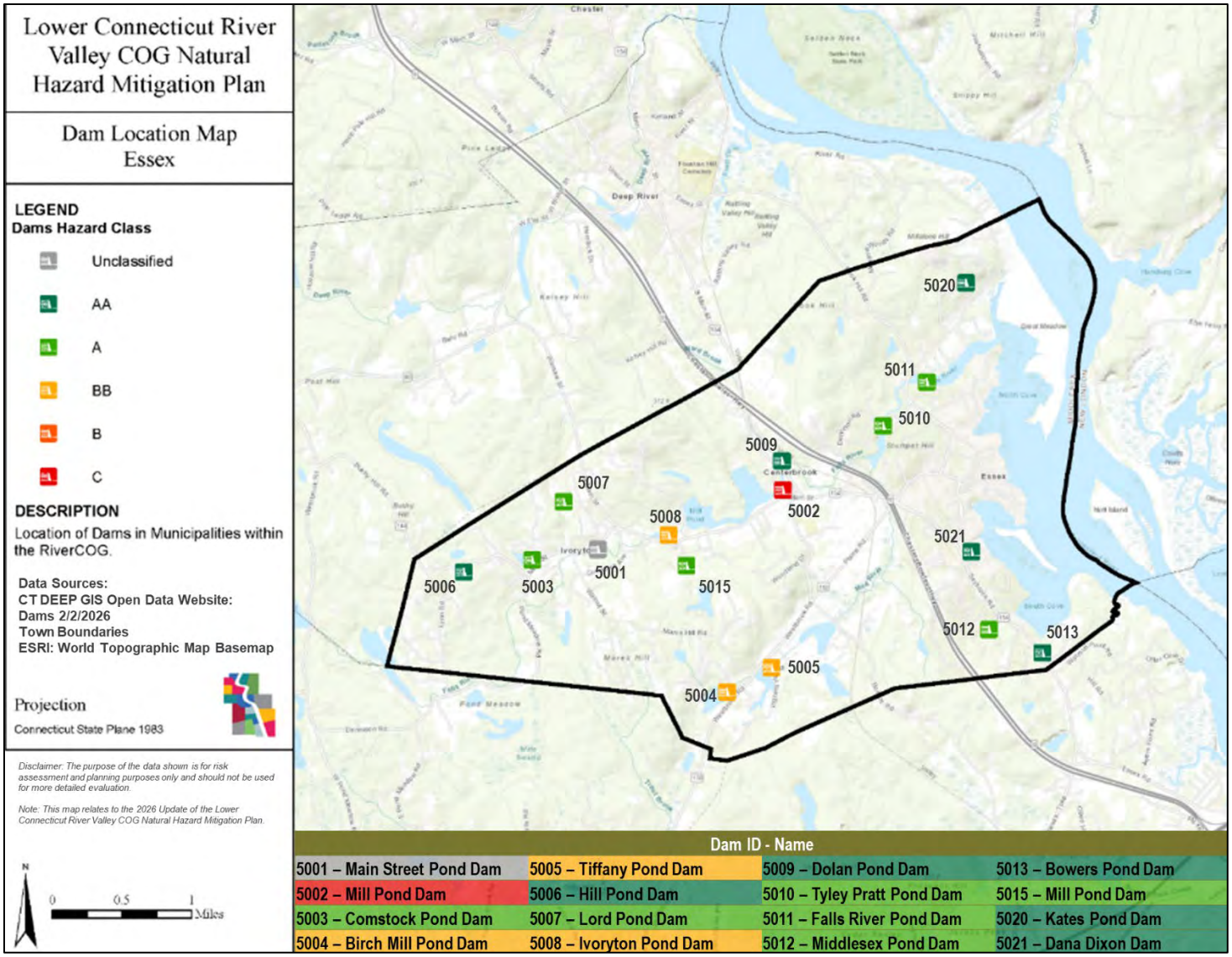


Figure 2.5. Location of Dams, Essex, CT

Table 2.1. Moderate, Significant and High Hazard Dams, Essex, CT

CT Dam #	Dam Name	Hazard Class	Owner
5002	MILL POND DAM	C - High	MAINSTREAM, INC.
5004	BIRCH MILL POND	BB - Moderate	SOUTHWINDS ASSOC INC.
5005	TIFFANY POND	BB - Moderate	SOUTHWINDS ASSOC INC.
5008	IVORYTON POND DAM	BB - Moderate	RECENTLY CHANGED OWNERSHIP – NOT IN RECORD

In 1982, Essex was severely affected by flooding. The town suffered dramatic flooding with the failure of the Bushy Hill Dam in Deep River which collapsed and sent a wall of water crashing down the Falls River. This caused or contributed to the failure of several other dams downstream and devastated areas of Ivoryton and Centerbrook. Although some of these have been removed while others have been repaired, the threat of Dam Failure is still present. Old dams, some dating to the 1700's can become overburdened during flooding events and heavy rainstorms. The dams, if not maintained properly could collapse under the stress of more water than normal.

The subject plan update seeks approval under Element G of the Local Plan Review Tool, for potential HHPD eligibility. One high hazard dam is located in Essex: the Mill Pond Dam. An additional high hazard dam is located upstream in Deep River: the Bushy Hill Pond Dam. These dams were introduced and described in the multi-jurisdiction document. Emergency Action Plans (EAPs) were obtained and reviewed to understand the people, critical facilities, and community assets in the dam failure inundation areas. One EAP (Bushy Hill Pond Dam) has reportedly not been prepared and is therefore not available. Details are provided below for both high hazard dams that can impact Essex.

Mill Pond Dam

This dam is owned by a private entity. An EAP was prepared and accepted by DEEP. The dam impounds Falls River in the Centerbrook section of the Town of Essex.

- According to the EAP, "Roads expected to be impacted should the dam be breached include Deep River Road (Route 154), Valley Railroad (not anticipated to overtop), Route 9 (not anticipated to overtop), Dennison Road upstream crossing (not anticipated to overtop), Dennison Road downstream crossing, a private drive, a private walk way, and River Road."
- Also, according to the EAP, "A major flood caused by a breach of the dam during the 100-year storm is estimated to fully or partially inundate 91 residential properties, 15 business properties, and 4 roadways (including a private drive), and a private pedestrian bridge."
- Critical facilities are not mapped in the inundation area. Furthermore, a breach would not overtop Route 9.

Bushy Hill Pond Dam

This dam is owned by a private entity. As noted above, an EAP has not been prepared and is therefore not available. The dam impounds an unnamed tributary of Falls River upstream of the Ivoryton and

Centerbrook sections of Essex. In lieu of dam failure inundation mapping, FEMA mapping was reviewed to understand downstream risks during a potential dam breach of failure. FEMA mapping was available for the Falls River corridor; however, FEMA mapping was not available for the tributary that flows out of the Bushy Hill Pond Dam.

- Residential properties are located along the tributary stream. Some of these properties may be at risk of flooding during a dam breach. The sole crossing of this stream is Main Street. During a breach, Main Street would likely be impassable. The tributary flows under Cheney Street and joins Falls River a short distance downstream, merging with the Falls River flood zones.
- Numerous residential, commercial, and former industrial properties are located in the flood zones mapped along Falls River. Many of these properties are likely at risk of flooding during a dam breach, including key commercial properties that served the Essex community residing in Ivoryton and Centerbrook.
- Main Street from Ivoryton to Centerbrook runs along Falls River and would likely be inundated if a breach occurred. This is an important west-east arterial in Essex, and a closure would significantly impact the community.
- Falls River forms the Mill Pond impoundment described above. Therefore, the above description for Mill Pond may be applicable to a breach of Bushy Hill Pond dam, depending on whether a breach-related flood from Bushy Hill Pond would reach downstream of Mill Pond or otherwise affect the Mill Pond Dam.

2.5.4. Thunderstorms and Severe Weather

There are no specific areas of concerns as they relate to thunderstorms and severe weather, however, new challenge areas are always arising. The Town is typically quick to respond and can restore and upgrade in the wake of an event. The town has also made many drainage improvements over the years which help with these, heavy rain, and other flood events.

2.5.5. Hurricanes and Tropical Storms

Because of the frequency of hurricanes and their potential severity, they are the natural disaster likely to cause the greatest damage. The greatest damage from hurricanes has been caused by trees and wires being downed due to high winds. The Town does a good job at removing trees that may pose a risk, however one of the biggest challenges is the number of trees that are located off the ROW and pose a risk to power lines.

The Town is concerned about the risk of loss of access during storms to neighborhoods including the Cedar Grove Terrace, Cedar Grove Extension, Nutmeg Lane, and Hunters Trail neighborhood, and the Woodland Drive neighborhood. In the past, fallen trees have blocked access in and out of those areas.

2.5.6. Tornado

Historically there have been tornados and microburst wind events in other parts of the state. Thus, these events should not be dismissed entirely. Severe thunderstorms have been known to occur and spawn small tornados. Damage from sheer downburst winds has been suspected as another source of damage in the state.

Overall, residents throughout Essex are equally susceptible to the chance of a tornado occurrence. However, a strong tornado would likely cause more damage in the more densely developed Essex Center area. High wind can lead to extended power outages when downed trees and telephone poles caused power outages of more than a week in Essex.

2.5.7. Earthquakes

The entire town could be affected by an earthquake in this region; however, impacts could vary locally. The most severe earthquake in Connecticut's history occurred at East Haddam on May 16, 1791. A Magnitude 4.0 earthquake in southern Connecticut occurred on November 3, 1968. It cracked plaster in Madison, furniture shifted in Deep River, and small items fell and broke. As recently as March 23, 2011 the village of Moodus in East Haddam, just north of Deep River experienced a 1.3 on the Richter scale tremor.

In Essex and the surrounding region, recorded impacts have been limited to shaking to the extent that things were knocked off shelves and people were alarmed. Structural damage has been limited to building components such as chimneys and buildings in poor repair; but failing structures have caused property damage in nearby towns. There is a concern however surrounding the many old and historic buildings, both Town owned and private, located throughout Essex. Many of these have been constructed prior to earthquake and extreme wind codes, therefore there is potential for increased damage to these structures in the wake of a significant event.

2.5.8. Drought and Wildfire

The western part of Essex does not have a public water distribution system. Many of the wells in this area are reportedly sub-standard and more than 1,000 feet deep in bedrock. The Town is concerned about the impacts that a drought would have in this area. Severe droughts are not frequently occurring natural events, but flashy droughts have been occurring with some regularity.

Essex is very concerned about the risk of wildfires spreading to structures, as the Town includes some closely spaced older buildings with significant vegetation on the properties. The Essex Steam Train occasionally causes small fires along the tracks. When the train sparks a fire, the train must be stopped; however, if the train is stopped for an excessive amount of time, the risk of explosion of the steam engine increases.

Architect Hill is an area of 10-15 houses where the public water system does not provide adequate pressure for firefighting, and the grade on the road is too steep for fire trucks. The Town and residents have discussed possible solutions but have not yet arrived at a consensus.

Other areas of concern for wildfire include the deciduous forest located in the northern areas of town or areas of Phragmites along the river. Drought also can exacerbate potential for small wildfires and hinder the ability of the town to control outbreaks.

Wildfires occurred along North Main Street in the spring of 2025.[4] Invasive species are sometimes linked to brush fires; in the spring, bamboo was reportedly "exploding".

2.5.9. Extreme Temperature

Extreme cold spells do occur periodically, typically between the months of December and March. Although cold temperatures are normal during the winter months, occasionally temperatures can drop below freezing for extended periods, sometimes as low as 0ºF. Low-income housing residents and the elderly in homes without sufficient heat sources are particularly vulnerable. Extreme heat and heat waves are a possibility during the summer months, particularly between June and August. A heat wave in Connecticut is defined as a period where the high temperature reaches at least 90ºF for three consecutive days. The elderly in homes without air conditioning are vulnerable.

While extreme temperature events have not had serious impacts, the Town is aware of the potential need. The Town would use the Town Hall as a warming or cooling center if needed during an event.

2.5.10. Terrestrial Invasive Species

Invasive species are an emerging challenge for the Town of Essex. Terrestrial invasive species include those typically found in Connecticut. Bamboo is a quickly growing invasive species in Essex. This species was cited above in Section 2.5.8 Drought and Wildfire as a contributing factor to the development of recent brush fires.

2.5.11. Aquatic Invasive Species

Aquatic invasive species include those typically found in the Connecticut River and its tributaries. Hydrilla and water chestnut are growing rapidly in the surrounding Towns of Chester and Deep River. Water Chestnut has reportedly been found in the Falls River and South Cove in the Connecticut River in Essex.

2.5.12. Tree Diseases and Pests

Since the 2021 plan update, the Town has removed trees that have been damaged or killed as a result of other hazards and have also removed trees damaged by disease and pestilence such as the emerald ash borer. Lantern flies have been a critical concern since the adoption of the 2021 edition of this plan. Unmanaged dead trees in Essex can make the impacts of other hazards more severe – they can fall during storms and contribute to burnable mass for wildfires. The Town addresses the challenge by removing dead trees and disposing of them in their debris management area. While this debris area is currently sufficient, the Town would like increased capacity to be able to remove more dead and dying vegetation. The Town noted that DEMHS statements regarding potential impacts

[4] https://www.essexct.gov/fire-marshal/news/raging-brush-fires-threaten-homes).

from the next hurricane are alarming, as tree damage and debris could be overwhelming. Property owner education is also necessary to aid in efforts.

2.5.13. Other Hazards

Energy Reliability

The Town is aware of energy reliability challenges, both from a resilience perspective and affordability, and questioning what options are available to improve reliability. Though there have been no specific explorations, the Town may be interested in pursuing solar or microgrids if the situation were appropriate.

3. Hazard Risk

3.1. Historical Events

Table 3.1 lists the Federal Disaster declarations for Middlesex County, for which Essex requested assistance. There have been no Presidentially declared disasters since the adoption of the 2021 plan update.

Table 3.1. Essex Natural Hazard Events

Type of Event	Date	Preliminary Damage Assessment
Flood Event (DR-4087)	10/30/2012	$28,025
Hurricane Event (DR-4023)	09/02/2011	$111,195
Hurricane Event (DR-4087)	10/30/2012	$79,695
Winter Weather Event (DR-4106)	03/21/2013	$49,075
Wind Event (DR-4410)	12/05/2018	$5,000
Tropical Storm Isaias (DR-4580)	1/12/2021	$147,202
Hurricane Ida (DR-4629)	10/30/2021	$103,990

3.2. Recent Events

The following is a summary of recent events experienced in Essex since the 2021 plan update:

- Wildfires occurred along North Main Street in spring 2025 (refer to https://www.essexct.gov/fire-marshal/news/raging-brush-fires-threaten-homes). Invasive species are sometimes linked to brush fires. For example, in the fires this spring, bamboo was reportedly “exploding.”

The most recent flood event of note occurred in September 2018 during a flood event that affected most of Connecticut from the Fairfield area east-northeastward to the Lebanon area. During this event, flooding was mostly confined to floodplains and wetlands. Washouts and infrastructure failures were not experienced, although water was observed over roads. The Town did not have to submit public assistance PA reimbursement requests in either 2015 or 2018.

Total PA reimbursements to the community (1998-2025) were as follows:

- Flood Events: $28,025 ($1,038 annually)
- Hurricane (Wind) Events: $442,082 ($16,373 annually)
- Winter (Snow) Storm Events: $49,075 ($1,818 annually)

Public Assistance for events between 2011 and the present are presented in Table 3.2 through Table 3.4.

Table 3.2. Flood Event PA Reimbursements, Essex, CT

Disaster #	4087
Incident Dates	Oct-Nov 2012
Declaration	10/30/2012
Entity	FEMA PA Reimbursement
State	$
Municipal	$
Nonprofit	$
Total	$28,025
Annualized	$1,038

Table 3.3. Hurricane Wind Event PA Reimbursements, Essex, CT

Disaster #	4023	4087	4580	4629
Incident Dates	**Aug-Sep 2011** (Tropical Storm Irene)	**Oct-Nov 2012** (Super Storm Sandy)	**Jan 2021** (Tropical Storm Isaias)	**Oct 2021** (Hurricane Ida)
Declaration	9/2/2011	10/30/2012	1/12/2021	10/30/2021
Entity	FEMA PA Reimbursement		FEMA PA Reimbursement	FEMA PA Reimbursement
State	$	$	$	$
Municipal	$	$	$	$
Nonprofit	$	$	$	$
Total	$111,195	$79,695	$147,202	$103,990

Disaster #	4023	4087	4580	4629
Annualized	**$4,118**	**$2,952**	**$5,452**	**$3,851**

Table 3.4. Winter Storm PA Reimbursements, Essex, CT

Disaster #	4106
Incident Dates	Feb 2013
Declaration	3/21/13
Entity	FEMA PA Reimbursement
State	$
Municipal	$
Nonprofit	$
Total	$49,075
Annualized	**$1,818**

3.3. Hazard Risk Ranking

Essex participated in the regional hazard ranking conducted by the Hazard Mitigation Planning Team. shows the scoring for the various ranking parameters that were used. The probability of each hazard is determined by assigning a level, from unlikely to highly likely, based on the likelihood of occurrence from historical data. The total impact value includes the affected area, primary impact, and secondary impact levels of each hazard. Level of Community Concern reflects the perceived risk of each hazard as indicated by respondents to question 6 of the community survey. This question asks, "How concerned are you about each of the following hazards impacting your home, business, community, or organization?" and received 157 responses.

Each of these five criteria are assigned weights, as well as point values for each of their responses. Each level's score is reflected in the matrix. The total score for each hazard is the probability score multiplied by its importance factor times the sum of the impact level scores multiplied by their importance factors. Based on this total score, the hazards are separated into three categories based on the hazard level they pose to the communities: Significant, Moderate, Limited. Table 3.5. Hazard Ranking Parameters provides a summary of the categories used to rank the hazards and their weighted values for the Composite Hazard Risk Index.

Table 3.5. Hazard Ranking Parameters

Criteria	Weight	1 Point	2 Points	3 Points	4 Points
Hazard Probability	2.0	**Unlikely** Less than 1% probability in next 100 years	**Somewhat Likely** Between 1 and 10%	**Likely** Between 10 and 100% probability in	**Highly Likely** Near 100% probability in next year or

Criteria	Weight	1 Point	2 Points	3 Points	4 Points
		or has a recurrence interval of greater than every 100 years.	probability in next year or has a recurrence interval of 11 to 100 years.	next year or has a recurrence interval of 10 years or less	happens every year.
Impact – Affected Area	0.8	**Isolated** Less than 1% of area affected	**Small** Between 1 and 10% of area affected	**Medium** Between 10 and 50% of area affected	**Large** Between 50 and 100% of area affected
Impact – Primary Impact	0.7	**Negligible** 1 to 10% of people or property	**Limited** 10% to 25% of people or property	**Critical** 25 to 50% of people or property	**Catastrophic** >50% of people or property
Impact – Secondary Impact	0.5	**Negligible** No loss of function, downtime, and/or evacuations	**Limited** Minimal loss of function, downtime, and/or evacuations	**Moderate** Some loss of function, downtime, and/or evacuations	**High** Major loss of function, downtime, and/or evacuations
Level of Community Concern	1.0	**Low Concern**	**Moderate Concern**	**High Concern**	-

The hazard risk ranking generated from this exercise, along with consideration of available data, was used to prioritize the level of effort assigned to further analysis of each hazard in the vulnerability analysis and lost estimation sections. All the participating communities agreed upon the results of the hazard ranking for the overall region. Based on the results of the exercise, the hazards were ranked as follows in Table 3.5. Essex endorsed the ranking as accurate for the Town.

Table 3.6. Summary of Potential Hazard Impacts.

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
Aquatic Invasive Species	Semi-quantitative, supplemented by state and municipal figures, recommend survey	**Highly Likely - 4**	**Large - 4**	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant
Terrestrial Invasive Species	Semi-quantitative, supplemented by state and municipal figures, recommend survey	**Highly Likely - 4**	**Large - 4**	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant
Tree Infestation	Semi-quantitative, supplemented by state and municipal figures, recommend survey	**Highly Likely - 4**	**Large - 4**	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant
Hurricanes	Hazus for wind	Likely - 3	**Large - 4**	Critical - 3	Moderate - 3	High Concern - 3	15.8	Significant
Winter Storms (Snow, Ice, Wind, including Noreasters)	Historic analysis for probability and annualized damages	**Highly Likely - 4**	**Large - 4**	Negligible - 1	Moderate - 3	Moderate Concern - 2	15.4	Significant

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
Flood – Riverine and Inland Flooding (Riverine, Drainage, Coastal Surge, Sea Level Rise - includes flooding from Nor'easters)	Hazus, SLR Overlay, FS Model Overlay, Historic data and damages for additional probability	Likely - 3	Medium - 3	Limited - 2	Moderate - 3	High Concern - 3	14.3	Significant
Flood – Coastal Flood (Riverine, Drainage, Coastal Surge, Sea Level Rise - includes flooding from Nor' easters)	Hazus, SLR Overlay, FS Model Overlay, Historic data and damages for additional probability	Likely - 3	Medium - 3	Limited - 2	Moderate - 3	High Concern - 3	14.3	Significant
Extreme Heat and Cold	Qualitative based on historic	Likely - 3	**Large - 4**	Negligible - 1	Limited - 2	High Concern - 3	13.9	Moderate
Severe Weather (thunderstorms, downbursts, hail, lightning)	Historic analysis for probability and annualized damages	**Highly Likely - 4**	Small - 2	Negligible - 1	Limited - 2	Moderate Concern - 2	13.3	Moderate
Wildfire	Historic analysis for probability and annualized damages	Likely - 3	Small - 2	Critical - 3	Moderate - 3	Moderate Concern - 2	13.2	Moderate

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
Drought	Historic analysis for probability and annualized damages - some qualitative	Likely - 3	Medium - 3	Negligible - 1	Limited - 2	High Concern - 3	13.1	Moderate
Tornadoes	Historic analysis for probability and annualized damages - pulling in surrounding counties	Likely - 3	Isolated - 1	**Catastrophic - 4**	Limited - 2	Moderate Concern - 2	12.6	Moderate
Earthquakes	Hazus, 3 scenarios	Somewhat Likely - 2	Small - 2	**Catastrophic - 4**	**High - 4**	Low Concern - 1	11.4	Limited
Flooding from Dam Failure	Dam Inundation areas, Historic analysis for probability and annualized damages	Unlikely - 1	Small - 2	Limited - 2	Moderate - 3	Moderate Concern - 2	8.5	Limited

3.3.1. National Flood Insurance Program (NFIP) Participation

Essex began participating in the NFIP in 1973 and entered the regular phase of the program in 1980. There are a total of 51 policies in effect covering approximately $24 million in property. Total claims paid were approximately $1.4 million.

Repetitive Loss Property Detail

There are five (5) repetitive loss (RL) properties, two commercial and three residential. Two are in flood zones along inland streams and three are in the flood zone along the Connecticut River. A propane tank placed on blocks has been observed at one of the non-residential RLPs. For these five properties, there have been a total of 18 claims filed for payments totaling $167,414. There are currently no severe repetitive loss (SRL) properties in Essex.

4. Capability Assessment

This section discusses capabilities and operational procedures that Essex undertakes that contribute to or have the potential to contribute to hazard mitigation. It also notes deficiencies in those capabilities that could be addressed to strengthen resilience.

4.1. Critical Facilities

Public and private utility facilities are vital to maintaining or restoring normal services to areas of town before, during, and after a natural disaster.

The Town's police station and Emergency Operations Center (EOC) are both located at the Essex Town Hall, at 29 West Avenue, outside of mapped flood hazard zones. Since the previous update of this HMP, the EOC has been relocated from lower levels to the second floor, making it more resilient to potential flooding. There are two Fire Stations in Essex: one is located just south of the Route 154/153/9 intersection, the other is located at 12 Summit Street in the Ivoryton Village. The Essex Ambulance Association provides ambulance services to Essex and is located at the intersection of Route 154 and Dennison Road, in the Centerbrook section of town. The Essex Public Works facility and equipment storage are located on Dump Road, near Route 154 and Exit 4 off from Route 9. All these facilities are outside of flood hazard areas.

The emergency shelter for Essex is the John Winthrop Middle School in Deep River. It serves Chester and Deep River as well. The shelter does not accommodate pets but can provide food, a place to sleep and shower as well as charging of personal electronic devices. The shelter is accessed by a road with high tree coverage and that crosses a reportedly problematic culvert. Maintaining access to the shelter by repairing and upgrading culverts, and by trimming trees and branches, is critical. This is a state road. Sheltering capacity, access, and pet sheltering capabilities need to be addressed.

Essex also uses many of its public buildings during minor natural hazard events, such as cooling centers during heat waves.

The Middlesex Hospital's Shoreline Clinic, a stand-alone emergency room previously located in Essex, was relocated to Westbrook in 2014. While Middlesex Health facilities remain in Essex, none offer emergency services. Figure 4.1shows the location of critical facilities identified by the state and supplemented with local data from the RiverCOG flood susceptibility modeling project.

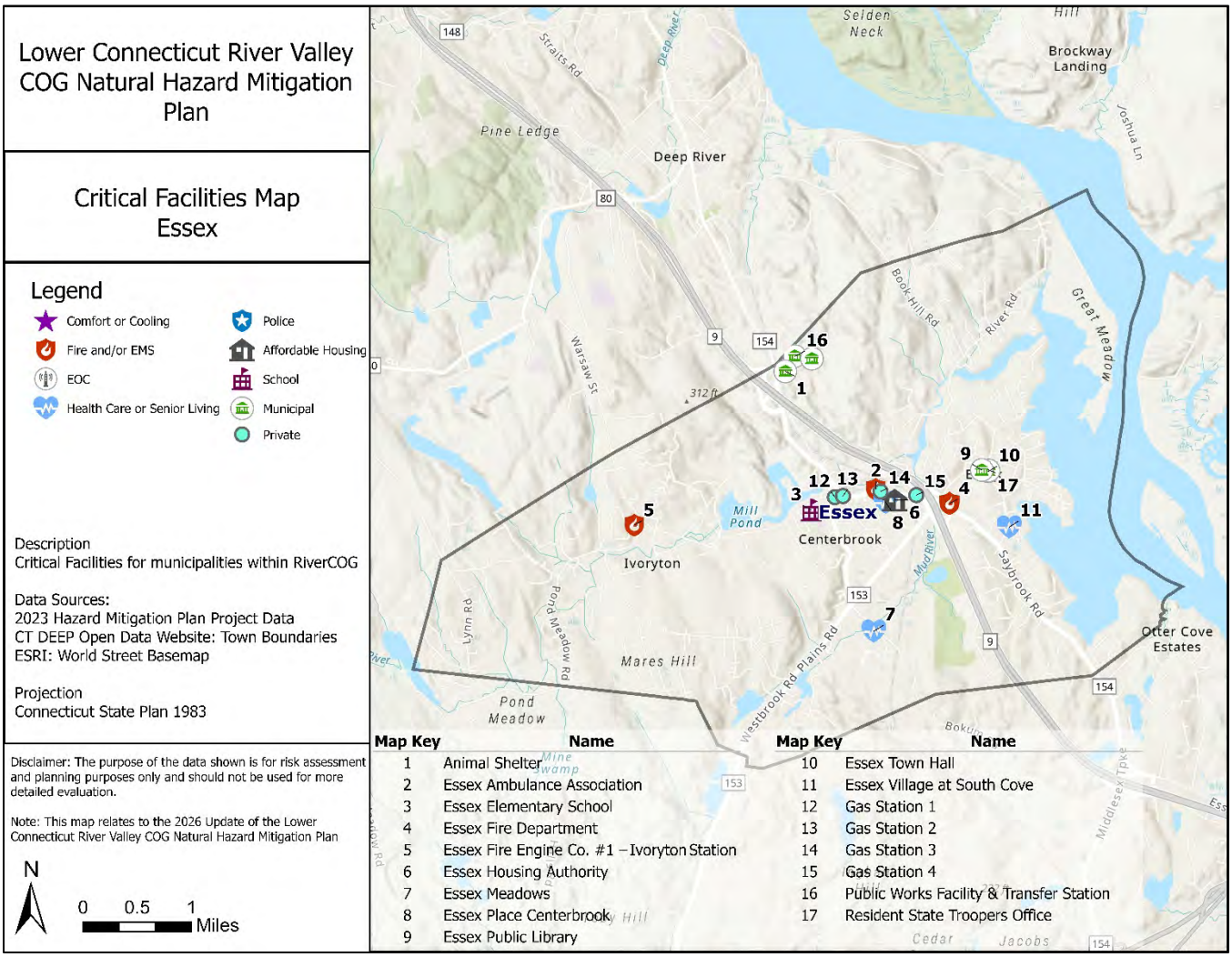


Figure 4.1. Location of Critical Facilities in Essex

Table 4.1 lists critical facilities identified by the Town.

Table 4.1. Critical Facilities

Facility	Type	Address	FEMA Flood Zone	Generator	Notes
Essex Town Hall	Municipal	29 West Ave	None	Yes	Can be used to support displaced

Facility	Type	Address	FEMA Flood Zone	Generator	Notes
	Emergency Operations Center				individuals during a disaster, but does not meet sheltering requirements, heating and cooling center
Resident State Troopers Office	Emergency Response	29 West Ave	None	Yes	
Essex Fire Department	Emergency Response	11 Saybrook Rd	None	Yes	
Essex Fire Engine Co. #1 – Ivoryton Station	Emergency Response	12 Summit St, Ivoryton	None		
Essex Ambulance Association	Emergency Response	149 Dennison Rd	None	Yes	
John Winthrop Middle School*	Shelter (Regional)	1 John Winthrop Rd, Deep River	None	Yes	Culvert near facility is reportedly in need of attention, which may affect access.
Public Works Facility & Transfer Station	Municipal	5 Dump Rd	None	Yes	Generator is old; a new portable generator is desired. Fuel stored at facility.
Animal Shelter	Municipal	1 Dump Rd	None	Yes	
Essex Elementary School	Municipal	108 Main Street	500-YEAR, 0.2% Annual Chance, on property and touches building	Yes	
Essex Public Library**	Municipal	33 West Ave	None		
Essex Meadows	Senior Living	30 Bokum Rd	None	Yes	Generator to be replaced in 2020
Essex Village at South Cove	Senior Living	59 S Main St	None		
Essex Place Centerbrook	Senior Living	26 Main Street Centerbrook	None	Yes	
Essex Housing Authority	Low Income Housing	16 Main St, Centerbrook	None	Partial	
Gas Station 1**	Critical Utility	82 Main St, Centerbrook	None		
Gas Station 2**	Critical Utility	55 Main St, Centerbrook	None		

Facility	Type	Address	FEMA Flood Zone	Generator	Notes
Gas Station 3**	Critical Utility	23 Main St, Centerbrook	None		
Gas Station 4**	Critical Utility	1 Saybrook Rd	None		

**Not included in map; located in Deep River. **Not included in available GIS datasets – not on map in Figure 4.1*

Fuel to power vehicles and generators during and following disaster events is stored at the Public Works Facility; however, the Town wants to increase the amount of fuel available. This may be accomplished by increasing long term storage or arranging for emergency supplies to be placed on standby prior to forecast storms.

Essex Meadows is a large over 55 residential community in the southern end of town located off Bokum Road. Essex Village at South Cove is both a retirement community and an assisted living facility located just off Route 154 in the Centerbrook section, near Route 9. Essex Place Centerbrook is a 220-unit senior housing facility located adjacent to Essex Court; this facility has a generator, and residents are expected to shelter in place during a disaster.

Public and private utility facilities, which are vital to maintaining or restoring normal services to areas of town before, during, and after a natural disaster, were not inventoried extensively. Public and private utility facilities are subject to the same loss of power, potable water, communications, and accessibility as is the community they serve. Sanitary sewer service is provided throughout the town by the Essex WPCA. Public water systems located in the town are owned and operated by Connecticut Water Company and small community system providers. Electricity is provided by Eversource.

Structures or facilities that produce, use, or store highly volatile, flammable, explosive, toxic, or water-reactive materials may exist primarily in the Light Industrial District along Route 153, Industrial Park Road and Westbrook Road. These areas are mostly outside of the 100-year floodplain. Gas stations in Essex are located along Route 154 and Route 153; none are equipped with back-up generators. Cumberland Farms station has a quick connection for a portable generator.

4.2. Critical Facility Assessment from Sustainable and Resilient Communities Planning Support

A select group of critical facilities were evaluated through a scoring process for the Climate Vulnerability Assessment funded by the Connecticut Sea Grant's SRC program. The work was completed in 2026. Ranked scores were assigned to each category of flood characterization tool as follows:

Table 4.2. Flood Susceptibility, Vulnerability, and Risk Scoring Rubric

FEMA Flood Zone	Flood CCVI Score	Flood Susceptibility Score	Hurricane Surge Zone
1 = none	1 = low	1 = none	1 = none

FEMA Flood Zone	Flood CCVI Score	Flood Susceptibility Score	Hurricane Surge Zone
2 = close to A zone 3 = 0.2% 4 = A or AE 5 = AE and floodway	2 = low/mod 3 = mod 4 = mod/high 5 = high	2 = mod 3 = mod/high 4 = mod/very high 5 = very high	2 = cat 4 3 = cat 3 4 = cat 2 5 = cat 1

The Table below summarizes the scores from the assessment.

Table 4.3. Flood Summary Score for Critical Assets

Facility	Address	FEMA Flood Zone	Flood CCVI Score	Flood Susceptibility Score	Hurricane Surge Zone	Flood Summary Score
Essex Town Hall	29 West Ave	No	Low-Moderate	N/A	N/A	**5**
Resident State Troopers Office	29 West Ave	No	Low-Moderate	N/A	N/A	**5**
Essex Fire Department	11 Saybrook Rd	No	Moderate	Moderate to Very High	N/A	**9**
Essex Fire Engine Co. #1 - Ivoryton Station	12 Summit St, Ivoryton	No	Moderate	N/A	N/A	**6**
Essex Ambulance Association	149 Dennison Rd	AE and 0.2% Annual Chance intersects unpaved back part of parcel	Moderate	Moderate to Very High	N/A	**12**
Public Works Facility & Transfer Station	5 Dump Rd	No	Low	N/A	N/A	**3**
Animal Shelter	1 Dump Rd	No	Moderate to High	Low-Moderate	N/A	**8**
Essex Elementary School	108 Main Street	0.2% Annual Chance, on property and touches building	Moderate	N/A	N/A	**8**
Essex Public Library**	33 West Ave	No	Low-Moderate	N/A	N/A	**5**
Essex Meadows	30 Bokum Rd	Adjacent to A Zone	Moderate	Very High	N/A	**11**
Essex Village at South Cove	59 S Main St	No	Low-Moderate	N/A	N/A	**5**
Essex Place Centerbrook	26 Main Street Centerbrook	No	Moderate	Moderate	N/A	**7**

Facility	Address	FEMA Flood Zone	Flood CCVI Score	Flood Susceptibility Score	Hurricane Surge Zone	Flood Summary Score
Essex Court (Housing Authority)	16 Main St, Centerbrook	No	Moderate	Moderate	N/A	**7**
Gas Station 1**	82 Main St, Centerbrook	No	Moderate	N/A	N/A	**6**
Gas Station 2**	55 Main St, Centerbrook	No	Moderate	Very High (Northern edge of parcel)	N/A	**10**
Gas Station 3**	23 Main St, Centerbrook	No	Low-Moderate	Moderate	N/A	**6**
Gas Station 4**	1 Saybrook Rd	No	Low-Moderate	Moderate	N/A	**6**
Middlesex Health	147 Westbrook Road	A Zone along back half of parcel	Moderate	Very High	N/A	**11**

Critical facilities in bold text were selected for additional analysis due to their relatively high summary scores. Field survey was completed as part of the study, and recommendations were developed to reduce flood risks. Furthermore, a subset of the critical facilities was carried forward to a scope development for future study funded by FEMA, DCRF, or CIRCA.

4.3. Municipal Capabilities

The Town of Essex has a variety of natural hazard mitigation capabilities, including local regulations and ordinances, operational protocols, and emergency response capabilities. Following is a list of some highlighted capabilities identified by municipal staff.

4.3.2. Regulations and Ordinances

Essex implements State Building and Fire Codes and local Flood Codes through its municipal code and zoning regulations to enforce construction standards that minimize risks due to natural hazards. Flood-proof construction standards for roads and structures within the flood plain are strictly enforced. All new development must be designed to minimize runoff.

Essex participates in the National Flood Insurance Program (NFIP) and is committed to continuing NFIP compliance and standards. The most recent FEMA Flood Insurance Study for the community, which identifies Special Flood Hazard Areas (SFHA), is dated February 6, 2013. Within the Essex Zoning and Subdivision Regulations and the Building Code, there are standards and criteria designed to meet NFIP requirements that govern the location and elevation of structures, construction methods, and the placement or removal of fill. For construction within the special flood hazard areas, the Zoning Enforcement Officer, Building Official and Town Engineer review and issue a flood permit and conduct follow-up

inspections to confirm compliance with the permit. The Flood Plain District regulations also apply to substantial improvements to existing structures located in SFHAs. Substantial improvements are defined as "any combination of… improvements to a structure taking place within a five-year period, in which the cumulative cost equals or exceeds 50% of the market value of the structure."

Section 103 of the Essex Zoning Regulations defines the Flood Plain District and lists requirements for anyone building or doing any construction activities within the management area.

The Subdivision Regulations state that the Planning Commission may order for the Fire Department and Fire Marshall to inspect any subdivision. When deemed necessary, storage tanks must be capable of holding at least 30,000 gallons of water. The applicant shall be required to demonstrate that such water supply meets or exceeds the minimum requirements as set forth in National Fire Protection Association (NFPA) Standard 1141 (Standards for Fire Protection in Planned Building Groups) and National Fire Protection Association (NFPA) Standard 1231 (Water Supplies For Suburban and Rural Firefighting).

4.3.3. Operations and Procedures

Complaints from members of the public about flooding are directed to the Selectman's Office and then Public Works; the Town notes that very few complaints about flooding are received.

The Public Works department cleans all catch basins yearly, or more if needed. The Department also has an inventory of all catch basins, detention areas and other storm water infrastructure throughout town. Essex uses best management practices (BMPs) as described in the Connecticut DEEP Storm water Management Guidelines on a site-by-site basis as advised by a professional engineer.

While there are some roads in town that flood during storm events, the Town has procedures in place to allow these roads to flood and then return to normal conditions without causing excessive disruption.

The Town is generally supportive of acquisition of properties to reduce hazard risk or increase open space, and a procedure for acquisition is in place. Acquisition of flood prone properties is a priority, and in recent years the Town attempted to acquire one such property, though the buyout ultimately was unsuccessful due to eligibility issues.

Essex has a tree warden, a forestry truck, and a budget for tree maintenance. The tree warden works with Eversource's local contact. Eversource reportedly focuses attention on the town and trims areas along utilities. Eversource typically assigns a liaison to the Town. There is good communication however response time is the issue. For example, the Town recently had a tree and lines down which blocked access to a neighborhood for two days. Many ash trees have been taken down in recent years. Town staff report that its tree maintenance capabilities are robust. Additionally, utilities are installed underground for most new developments.

The Town handles most winter plowing in-house, although it also subcontracts work as needed. If more than 10 inches of snow have accumulated, the Town will remove snow from Main Street to facilitate parking. The Town also attempts to clear sidewalks. Essex uses treated salt, which is less corrosive than standard road treatment salt, and which helps reduce icing by leaving a residue that can be functional during the next storm.

Essex has access to dry hydrants and other water sources for fighting wildfires. Underground cisterns are sometimes required for new development but are not always available. The Town has mutual aid agreements with neighboring communities for use of water tankers. The Land Trust owns the largest tracts of forest in Essex and maintains its own management plan.

4.3.4. Capital Improvements

Essex has a Capital Improvement Plan and consistently directs funding to replacement and upgrades of culverts and bridges. The Town plans to continue to fund bridge replacements over the next 20 years. The Town has successfully bonded bridge work in the past. The Town is proactive in seeking and applying for grants to fund infrastructure improvements and mitigation measures. When roads are reconstructed, the Town attempts to install adequate drainage systems.

4.3.5. Plan Integration with Other Planning Mechanisms

The town of Essex incorporated the findings from the NHMP into its Local Emergency Operations Plan (LEOP). The NHMP has also been incorporated into Essex's Plan of Conservation and Development (POCD). There is new legislation (P.A. 25-33) that now requires cities and towns to incorporate climate vulnerability (specifically including flooding) and resilience strategies into POCDs. Essex plans to comply with that new requirement during the next POCD Update, likely resulting in further references to this plan. Communities are now required to develop and maintain affordable housing plans. The mitigation plan will help inform siting criteria within that plan.

Additionally, the town of Essex uses the mitigation plan to inform its 5-year capital improvement plan and associated annual budgets. Essex staff reported that the plan has not been formally incorporated into any other planning documents.

4.3.6. Outreach, Education, Communication, and Warnings

The Town has implemented the "Safer Essex Emergency Alert Program," powered by Everbridge, for public alerts and other mass communications. The system is tested regularly. Literature from FEMA and other organizations about natural disasters and hazard mitigation is displayed in the Town Hall and Library. The Town website has a page dedicated to emergency management. The Habor Commission maintains a warning system which notifies boat owners of flooding which then prompts owners to remove boats and store them away from the flood hazard area.

4.3.7. Other Capabilities

Essex has in place a program to evacuate residents without means of transport or with mobility challenges. The Town Health Department maintains a registry of these individuals, and an evacuation registry process is posted on the Town website (https://www.essexct.gov/emergency-management).

Essex has an annually reviewed Emergency Operations Plan, and a contingency fund of $75,000 to help with immediate disaster recovery costs.

In anticipation of severe winter storms, the Town has the authority to order parking bans and can order evacuations in extreme situations if there is a significant threat of localized flooding. The Department of Public Works maintains a fleet of trucks and other snow removal equipment and monitors weather forecasts during the winter months to mobilize in advance of storms.

The Towns Emergency Management Director has the authority to establish a designated cooling center for those living without air conditioning should the need arise. These places provide a place for people to escape the heat as well as providing water. Table 4.3 through Table 4.5 list legal, regulatory, technical, administrative and financial capabilities that support hazard mitigation.

Table 4.4. Legal and Regulatory Capability

Table 4.3.a. Codes, Ordinances & Requirements

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Building Code	Yes	Yes	No	Yes	All municipalities enforce the State Building Code
Zoning Code	Yes	No	No	No	
Subdivisions	Yes	No	No	No	
Post Disaster Recovery	Yes	No	No	No	
Real Estate Disclosure	Yes	No	No	Yes	State requirement
Growth Management	No	No	No	No	
Site Plan Review	Yes	No	No	No	
Special Purpose (flood management, critical areas)	Yes	Yes	No	Yes	State flood management Statutes and regulations

Table 4.3.b. Planning Documents

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
General Plan	Yes	No	No	Yes	Current
Floodplain or Basin Plan	No	No	No	No	
Stormwater Plan	Yes	No	No	Yes	MS4 Community
Capital Improvement Plan	Yes	No	No	No	
Habitat Conservation Plan	No	No	No	No	
Economic Development Plan	Yes	No	No	No	Regional Comprehensive Economic Development Strategy
Emergency Response Plan	Yes	No	No	Yes	LEOP templates provided by DEMHS
Shoreline Management Plan	No	No	No	No	

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Post Disaster Recovery Plan	Yes	No	No	Yes	LEOP templates provided by DEMHS

Table 4.5. Administrative and Technical Capability

Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Planning & Zoning
Engineers or professionals trained in building or infrastructure construction practices	Yes	Building Official, Town Engineer (on-call), Public Works Director
Planners or engineers with an understanding of natural hazards	Yes	Town Planner, Town Engineer (on-call)
Staff with training in benefit/cost analysis	No	
Floodplain manager	Yes	Zoning/Wetlands Official - Carey and Building share this
Surveyors	No	Contracted as needed.
Personnel skilled or trained in GIS applications	Yes	Supported by RiverCOG
Emergency manager	Yes	Emergency Management
Grant writers	Yes	Municipal Staff

Table 4.6. Financial Resources

Financial Resources	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	Yes
Withhold Public Expenditures in Hazard-Prone Areas	Yes (State)
State Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	No
Other	NA

Gaps in Capabilities

Trees, as related to all the hazards, reportedly need attention. The Town would like to address trees by removing dead trees. The DEMHS statements about the next hurricane in Connecticut are alarming to the Town. The Town maintains debris management areas, but they want to be able to remove more trees. Property owner education is also necessary.

4.3.8. New Capabilities and Completed Actions

Since the last plan update in 2021 there have been many updated capabilities:

- Essex developed a strategy for how the town can improve its emergency sheltering capabilities, which considered capacity, access, and pet sheltering.
- Presciently, the plan included a contingency emergency shelter located withing the town that was able to support residents if the John Winthrop Middle School Regional Shelter in Deep River is inaccessible. When John Winthrop was shut down temporarily for mold remediation, Valley Regional High School served as a backup.
- Funded by Sea Grant, the town conducted a coastal risk and vulnerability study to identify potential impacts of shoreline change (and the effects of sea level rise on those dynamics) along the tidal Connecticut River in Essex.
- The town worked with private owners of Class B and C dams to complete Emergency Action Plans for their dams. The EAPs are on file with pertinent town departments.
- The town established a process by which backups of existing electronic records, including geographic information system (GIS) data, could be created, and established a process by which paper records could be digitized for their preservation.
- The town developed a written annual schedule for natural hazard public education and outreach efforts through the Town website, social media outlets, mailers, in-person outlets, neighborhood associations, and other media, to ensure consistent and long-term public education programs.
- The town also developed the Harbor Management Plan, which includes an emergency plan for private boat owners to relocate and store boats during flood and hurricane events.
- Lastly, the town implemented mapping and monitoring of catch basins, storm water outfalls, and related infrastructure.

5. Hazard Mitigation Action Plan

This section presents the progress made since the 2021 action plan and establishes new goals, objectives and actions identified for the 2026-2030 planning horizon.

5.1. Previous Mitigation Actions Disposition

During the process of developing the 2021 Essex Hazard Mitigation Plan, several hazard mitigation actions were identified to be pursued during the five-year planning horizon that followed. Table 5.1 presents the actions listed in that document, and the status of those actions.

Table 5.1. Status of Previous Mitigation Strategies and Actions.

Town Activity Number	Description	Status	Details
1	Create a secondary, emergency access route from Route 9 to the Cedar Grove Terrace, Cedar Grove Extension, and Hunters Trail neighborhood.	**Completed**	This is reportedly complete. The new Essex Glen development allowed creation of a new access road. The access road is mowed and fitted with a gate.
2	Create a secondary, emergency access route to Woodland Drive	**Carry Forward**	No progress. Carry forward.
3	Collaborate with residents of Architect Hill to identify an acceptable method of improving the neighborhood's supply of firefighting water (such as installation of underground water tanks). Implement the identified solution.	**Carry Forward**	No progress. Carry forward. This is a high priority for the Town. This road has a slope that is dangerous for tanker trucks, and this inhibits the ability to access mutual aid. The adjacent wildfire risk plus the lack of fire protection is not acceptable. Homeowner insurance rates reflect this risk. The cul-de-sac remains a potentially good location for the tank. The cost should be increased to >$100,000.
4	Develop a technical assistance and incentive program to help Essex residents with private drinking water wells improve the quality and reliability of those wells, especially under drought conditions.	**Carry Forward**	The Town would like to shift the focus to the NTNC and small CWSs located in Essex, as some of them lack redundant wells or standby power. Heritage Cove and Hemlock Apartments are examples. Two new actions are suggested: Make small water systems more resilient through redundant supplies and standby power; and extent CWC service as appropriate in Essex.

Town Activity Number	Description	Status	Details
5	Develop a plan for improving the emergency sheltering capabilities of Essex. Factors to consider include capacity, access, and pet sheltering. Plan may include establishing a backup emergency shelter located within Essex, which can support residents if the John Winthrop Middle School Regional Shelter in Deep River is inaccessible. Possible options for local sheltering include the Town Hall, Public Library, or Essex Elementary School	**Completed**	John Winthrop was shut down temporarily for mold remediation, and during this time, Valley Regional High School served as a backup. This demonstrates that a backup shelter is available when the primary shelter is shut down. Essex Elementary School is getting a larger generator to help enhance its sheltering abilities, though it will not meet all sheltering needs (e.g., the school will not have showers). Overall, sheltering needs appear adequate and this action can be dropped.
6	Perform an assessment and alternatives analysis of the (Old) Deep River Road, River Road, Dennison Road, and Pond Meadow Road bridges over the Falls River to determine what work needs to be done to mitigate the risk of flooding or washout at those sites and maintain traffic flow for access and egress during and following disasters.	**Carry Forward**	All of these bridges are up for bonding. This action can be modified to design and construction.
7	Acquire a portable generator to be stationed at the Essex Public Works Facility.	**Completed**	A STEAP grant was obtained for this generator, and it will be installed soon.
8	Increase the amount of emergency fuel available in Essex (target of at least 2,000 gallons) by either increasing long-term storage or arranging for emergency supplies to be placed on standby prior to forecast storms.	**Carry Forward**	No progress. Carry forward.
9	Conduct a coastal risk and vulnerability analysis or study to identify potential impacts of shoreline change (and the effects of sea level rise on those dynamics) along the tidal Connecticut River in Essex	**Completed**	Ferry street is being addressed through a road elevation design. The vulnerability assessment was completed in 2026 (funded by Sea Grant SRC program) is meeting the needs associated with this actions, and it can be dropped or refined to reflect a more specific need.
10	Perform drainage improvements on roads known to become icy due to water seepage during the winter season	**Carry Forward**	Remove action. These improvements have been made.
11	Work with private owners of Class B and C dams to complete Emergency Action Plans for their dams. Ensure that EAPs are on file with pertinent town departments.	**Completed**	Remove action. These are believed in place.
12	Incorporate hazard mitigation standards and considerations into the ongoing overhaul of the Town's Zoning Regulations.	**Completed**	Remove action. Further modifications are not believed needed.

Town Activity Number	Description	Status	Details
13	Conduct a direct outreach campaign to owners of Repetitive Loss and Severe Repetitive Loss properties informing them of mitigation options including elevation, relocation, and acquisition. Include information about funding and technical assistance from municipal, state, and federal sources.	**Carry Forward**	Carry forward to ensure this is done at some point.
14	Complete creation of back-ups of existing electronic records, including geographic information system (GIS) data, and establish a protocol or process for continual data back-up. Digitize all paper records as back up for their preservation.	**Completed**	Complete.
15	Develop a written annual schedule for natural hazard public education and outreach efforts through the Town website, social media outlets, mailers, in-person outlets, neighborhood associations, and other media, to ensure consistent and long-term public education programs. Education should include information on sheltering locations, private property owner mitigation action options, techniques for homeowner self-inspection, hazard insurance, and geographic distributions of natural hazard risk zones in Town.	**Completed**	As written here, this action is believed complete. The Town would like to purchase and deploy three fixed-in-place digital signs to enhance notifications in Essex. Potential messages could include wildfire risk levels, flood warnings, etc. The cost may be about $30,000 per sign. Make a new action for this.
16	Develop an emergency plan for private boat owners to relocate and store boats during flood and hurricane events.	**Completed**	The new Harbor Management Plan was adopted in 2024 and may address this. The action can be dropped.
17	Implement mapping and monitoring of catch basins, storm water outfalls and related infrastructure.	**Completed**	This is complete and the action can be dropped.

5.2. Updated Mitigation Goals, Objectives and Strategies

As noted in Section 3 of Volume 1, all the RiverCOG participating communities, including Essex, participated in setting regional goals and objectives. Essex has confirmed these goals and objectives valid for the Town's annex. The three goals and objectives are as follows:

Goal 1: Promote implementation of sound flood management and other natural hazard mitigation principles on a regional and local level. Note: Covers future development through policy, planning, regulation, emergency services, and environmental strategies.

- **Objective for Goal 1:** To promote the development, improvement and implementation of programs, policies, regulations and emergency services that result in the reduction of long-term risks to life and property.

Goal 2: Implementation of effective natural hazard mitigation projects at the regional and local level. Note: Covers infrastructure and building related projects – the existing built environment.

- **Objective for Goal 2:** To enhance the ability of RiverCOG, other regional entities, and local communities to reduce or eliminate risks to life and property from natural hazards through cost-effective hazard mitigation projects, including avoidance.

Goal 3: Increase research, planning and outreach activities for the mitigation of natural hazards on a regional and local level. Note: Covers the people component of mitigation via outreach and education, and integration with other planning and continuous improvement through increased research.

- **Objective for Goal 3:** To increase general awareness of the region's natural hazards and encourage State agencies, local communities, and the public to be proactive in taking actions to reduce long-term risk to life and property.

At a meeting in June 2025, the Essex town planning team reaffirmed these goals and objectives.

5.2.1. Prioritization of Mitigation Strategies

In considering which projects, processes, and other measures to undertake in the upcoming plan period, municipal and regional officials evaluated the need to address problems and vulnerabilities in their communities against the communities' resources and capabilities. To prioritize mitigation strategies, a set of criteria commonly used by public administration officials and planners was applied to each proposed strategy. The method, called STAPLEE, is outlined in FEMA planning documents such as Developing the Mitigation Plan (FEMA 386-3) and Using Benefit-Cost Review in Mitigation Planning (FEMA 386-5). STAPLEE stands for the "Social, Technical, Administrative, Political, Legal, Economic, and Environmental" criteria for making planning decisions. Benefit-cost review was emphasized in the prioritization process. Criteria were divided into potential benefits (pros) and potential costs (cons) for each mitigation strategy. The following questions were asked about the proposed mitigation strategies:

Social:

- Benefits: Is the proposed strategy socially acceptable to the community?
- Costs: Are there any equity issues involved that would mean that one segment of the community could be treated unfairly? Will the action disrupt established neighborhoods, break up voting districts, or cause the relocation of lower-income people? Is the action compatible with present and future community values?

Technical:

- Benefits: Will the proposed strategy work? Will it reduce losses in the long term with minimal secondary impacts?

- Costs: Is the action technically feasible? Will it create more problems than it will solve? Does it solve the problem or only a symptom?

Administrative:

- Benefits: Does the project make it easier for the community to administrate future mitigation or emergency response actions?
- Costs: Does the community have the capability (staff, technical experts, and/or funding) to implement the action, or can it be readily obtained? Can the community perform the necessary maintenance? Can the project be accomplished in a timely manner?

Political:

- Benefits: Is the strategy politically beneficial? Is there public support both to implement and maintain the project? Is there a local champion willing to see the project to completion? Can the mitigation objectives be accomplished at the lowest cost to the community (grants, etc.)?
- Costs: Have political leaders participated in the planning process? Do project stakeholders support the project enough to ensure success? Have the stakeholders been offered the opportunity to participate in the planning process?

Legal:

- Benefits: Is there a technical, scientific, or legal basis for the mitigation action? Are the proper laws, ordinances, and resolutions in place to implement the action?
- Costs: Does the community have the authority to implement the proposed action? Are there any potential legal consequences? Will the community be liable for the actions or support of actions or for lack of action? Is the action likely to be challenged by stakeholders who may be negatively affected?

Economic:

- Benefits: Are there currently sources of funds that can be used to implement the action? What benefits will the action provide? Does the action contribute to community goals such as capital improvements or economic development?

Costs: Does the cost seem reasonable for the size of the problem and the likely benefits? What burden will be placed on the tax base or local economy to implement this action? What proposed actions should be considered but be tabled for implementation until outside sources of funding are available?

Each proposed mitigation strategy presented in this plan was evaluated and quantitatively assigned a "benefit" score and a "cost" score for each of the seven STAPLEE criteria as outlined below:

- For potential benefits, a score of "1" was assigned if the project will have a beneficial effect for that criterion or a "0" if the project would have a negligible effect or if the questions were not applicable to the strategy.

- For potential costs, a score of "-1" was assigned if the project would have an unfavorable impact for that criterion or a "0" if the project would have a negligible impact or if the questions were not applicable to the strategy.
- Technical and Economic criteria were double weighted (multiplied by two) in the final sum of scores.
- The total benefit score and cost score for each mitigation strategy was summed to determine each strategy's final STAPLEE score.

Although a community may implement recommendations as prioritized by the STAPLEE method, an additional consideration is important for those recommendations that may be funded under the FEMA mitigation grant programs. To receive federal funding, the mitigation action must have a benefit-cost ratio (BCR) that exceeds a value of 1.0. Calculation of the BCR is conducted using FEMA's Benefit Cost Analysis (BCA) toolkit. The calculation method may be complex and vary with the mitigation action of interest. Calculations are dependent on detailed information such as property value appraisals, design and construction costs for structural projects, and tabulations of previous damages or NFIP claims. The BCR scoring system used is outlined in Table 5.2.

Table 5.2. BCR Scoring System

Scoring	Benefits	Costs
Low: 0-1 points	Few would benefit; the impacts being addressed are not severe; benefits may be short term	Likely to be done by existing personnel with little impact on budget; not complicated to accomplish. Costs to implement are likely to be under $10,000.
Medium: 2-3 points	Benefits may be felt by many in the community; the action may solve a problem or otherwise benefit the community for several years	May need additional funding or studies; may require change in practices; costs to implement may be between $10,000 and $100,000
High: 4-5 points	Benefits would accrue to many in the community; benefits may accrue to the most vulnerable or those not able to recover on their own; benefits would be long term and may permanently protect from damages	Likely to cost over $100,000 and require obtaining funding outside of operating budget; complicated, lengthy process to implement

The STAPLEE method accounts for cost-benefit considerations both directly (through the "Economic" category) and indirectly (through general consideration of costs and benefits of actions). Additionally, the range of estimated costs of each strategy are included in the STAPLEE table. The assumed costs of projects and generalized presentation of the benefits accruing from them are not based on specific detailed cost estimates as that level of analysis is not appropriate for this type of planning effort. For some projects, such as routine or recurring operations that are established practices and conducted with municipal general operating funds and existing staff, the STAPLEE results can be the only explicit comparison of costs and benefits. For projects for which bonding and/or grant funding will be sought, more in-depth evaluations of costs and benefits will be required. As project scopes are detailed, benefits and costs can be identified with

more precision, and the benefit-cost ratio which results from a full benefit-cost analysis may differ from the planning-level STAPLEE results presented here.

It should be noted that higher BCRs do not necessarily correspond to high priorities, nor do low BCRs or BCRs under 1.0 correspond to low-priority projects. An important project with a high priority to the community may have a lower BCR because of its complexity, assumed high expense, and other costs. Communities should not be discouraged or deterred from further consideration of projects that have low BCRs or BCRs less than 1.0 until additional, more specific evaluations of the costs and benefits have been undertaken.

5.2.2. 2021-2026 Prioritized Hazard Mitigation Actions

In addition to the regional mitigation actions endorsed by Essex and outlined in Section 3 of Volume 1 of the regional plan, the Town identified or carried over from the last update, ranked and evaluated the actions in Table 5.3. For each identified action, the goal and objective it addresses is noted. Additionally, a description, lead agency, indication of costs and potential funding sources and an estimated timeline for completion is included. Also included are the hazards addressed by a specific action.

Figure 5.1 shows the locations of the projects listed in Table 5.3 with spatial elements that have been carried forward or are new additions. Additionally, completed projects identified in Table 5.1with spatial elements are also shown on the map. Projects carried forward and new projects are identified by their activity number (from Table 5.3) while completed projects are identified by the description of the project completed.

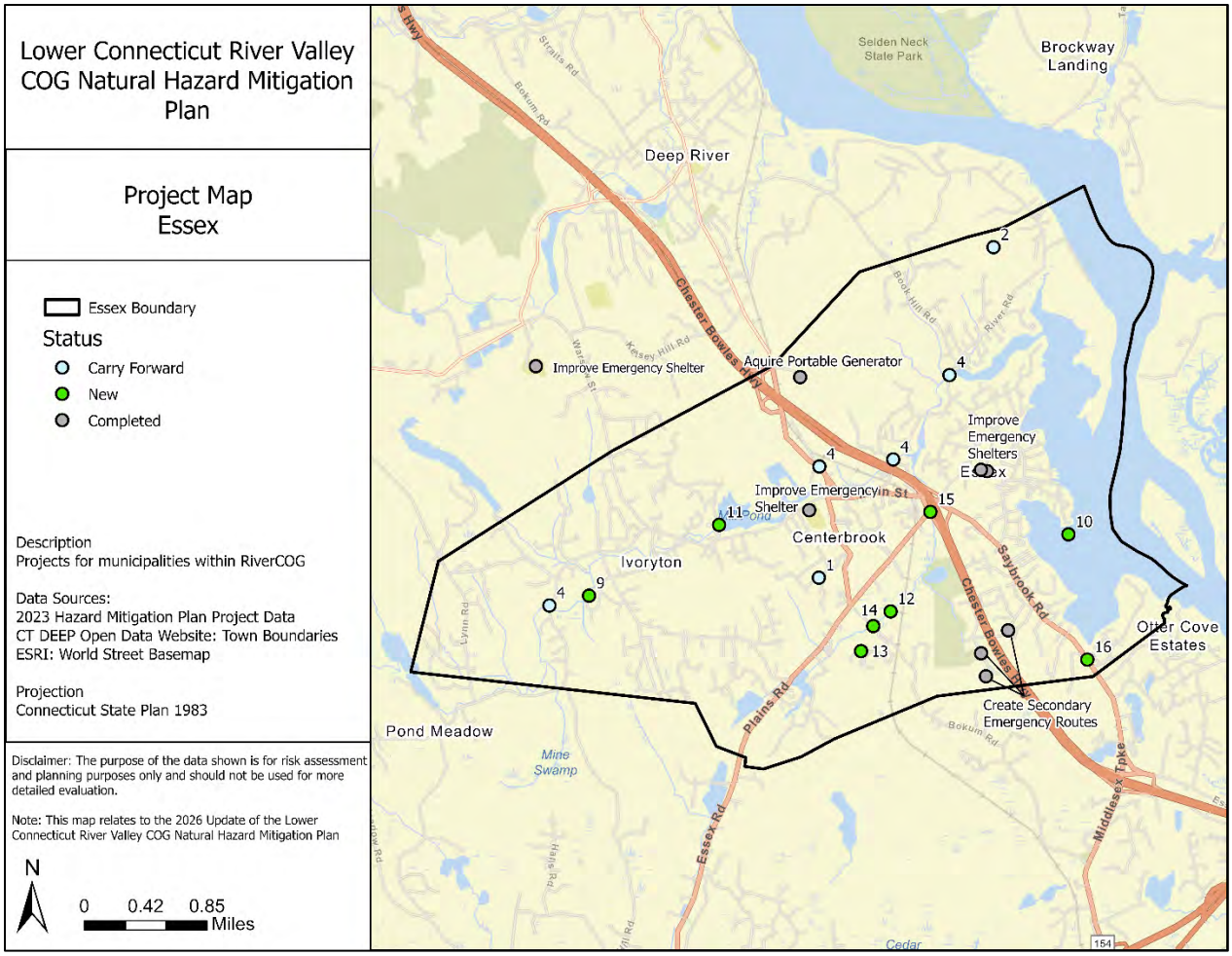


Figure 5.1. Carried Forward, New, and Completed Projects in Essex

Table 5.3. Essex Hazard Mitigation Strategies and Prioritization

KEY: SW= Severe Weather, TW = Tornado/Wind, ET = Extreme Temperatures, WS=Winter Storm, F = Flood, TI = Tree Damage and Invasive Species, WF = Wildfire, D = Drought, E = Earthquake, CC = Climate Change

Town Activity Number	Goal/ Objective	Activity	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	Total STAPLEE Score/ Priority
1	2-1	**Woodland Drive.** Create a secondary, emergency access route to Woodland Drive	P&Z	$50,000-$100,000	OB, Grant	2028-2029	SW, TW, WS, F	1	0	1	0	1	-1	1	0	1	0	0	0	1	0	6 – High
2	2-1	**Architect Hill Fire Suppression.** Collaborate with residents of Architect Hill to identify an acceptable method of improving the neighborhood's supply of firefighting water (such as installation of underground water tanks). Implement the identified solution.	FD, EM	>$100,000	OB	2026-2027	WF, D	1	0	1	0	1	0	1	0	1	0	1	0	1	0	9 – High
3	1-1	**Drought Resilience.** Develop a technical assistance and incentive program to help Essex residents with private drinking water wells improve the quality and reliability of those wells, especially under drought conditions. Make small water systems more resilient through redundant supplies and standby power; and extend CWC service as appropriate in Essex.	DPW	$1,000-$5,000	Ob, Staff time	2026-2027	WF, D	1	0	1	0	0	0	1	0	0	0	1	0	0	0	6 – High

Town Activity Number	Goal/ Objective	Activity	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	Total STAPLEE Score/ Priority
4	2-1	**Falls River Bridges.** Design and construct recommendations from alternatives analysis of the (Old) Deep River Road, River Road, Dennison Road, and Pond Meadow Road bridges over the Falls River to mitigate the risk of flooding or washout at those sites and maintain traffic flow for access and egress during and following disasters.	DPW	$10,000 - $20,000	OB, Grant	2027-2029	F	1	0	1	0	1	0	1	0	0	0	0	-1	1	0	4 – Med
5	2-1	**Fuel.** Increase the amount of emergency fuel available in Essex by either increasing long-term storage or arranging for emergency supplies to be placed on standby prior to forecast storms.	DPW, BOF	$1,000- $10,000	OB	2026-2027	SW, TW, WS, F, E	1	0	0	0	0	0	1	0	0	0	1	0	0	0	4 – Med
6	2-1	**Roadway Ice Management.** As issues arise, perform drainage improvements on roads that become icy due to water seepage during the winter season	DPW	>$100,000	OB	Ongoing	WS	1	0	1	0	1	0	1	0	1	0	0	-1	0	0	4 – Med
7	3-1	**Repetitive Loss Properties.** Conduct a direct outreach campaign to owners of Repetitive Loss and Severe Repetitive Loss properties informing them of mitigation options including elevation, relocation, and acquisition. Include information about funding and technical assistance from municipal, state, and federal sources.	BOS	$1,000- $5,000	OB, Staff time	2026-2027	F, CC	1	0	1	0	0	-1	0	0	0	0	0	0	1	0	3 – Low

Town Activity Number	Goal/ Objective	Activity	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	Total STAPLEE Score/ Priority
8	3-1	**Emergency Notification Signs.** Purchase and deploy three fixed-in-place digital signs to enhance notifications in Essex. Potential messages could include wildfire risk levels, flood warnings, extreme temperature warnings, etc. The cost may be about $30,000 per sign.	EM	>$100,000	Staff time	2027-2029	SW, TW, WS, F, ET	1	0	1	0	1	-1	1	0	0	0	0	-1	0	0	2 – Low
9	2-1	**Comstock Field.** Evaluate flood reduction strategies at Comstock Field.	P&Z, DPW	$10,000 - $20,000	OB, Staff time	2027-2028	F, CC	0	0	1	0	0	0	1	0	0	0	0	0	1	0	4 – Med
10	2-1	**Thatchbed Island Erosion.** Design and construct a Living Shoreline at Thatchbed Island to address erosion concerns.	P&Z, DPW	>$100,000	Sea Grant, OB, Staff time	2027-2030	F, CC, SW	0	0	1	0	0	0	1	0	0	0	1	0	1	0	6 – High
11	2-1	**Falls River Drive Culvert Replacements.** Design and seek funding for a replacement of the Falls River Drive culverts over Falls River to eliminate overtopping of the roadway. The culverts currently cannot convey the 10-year flood (or a greater/less frequent flood). Incorporate the findings of the road/crossing evaluation conducted for the Town under the Sea Grant SRC grant in 2026.	DPW	>$100,000	HMA, FMA, OB, Staff Time	2028-2030	F, CC	1	0	1	0	1	0	1	0	1	0	0	-1	1	0	5 – High
12	1-1, 2-1, 3-1	**Resilient Connecticut, SRC, and/or DCRF Program Deployment for Mud River corridor.** Work with the DEEP DCRF or CIRCA to advance study and concept designs in the “resilience opportunity area” which was incorporated into the detailed scope developed under the Sea Grant SRC grant in 2026.	BOS, EMD	$0 to $1,000 + staff costs	CIRCA, CT Sea Grant, and DEEP (DCRF)	2028-2030	F, CC	1	0	1	0	1	0	0	0	0	0	1	0	1	0	7 – High

Town Activity Number	Goal/ Objective	Activity	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	Total STAPLEE Score/ Priority
13	2-1	**Essex Meadows.** Evaluate potential Mitigation Actions to Reduce Flood Risks at the lowest-lying buildings and internal driveways of Essex Meadows. Incorporate the findings of the road/crossing evaluation conducted for the Town under the Sea Grant SRC grant in 2026.	BOS, EMD, FD, PW	$100,000-$500,000	FEMA HMA, STEAP, CIP, DCRF	2028-2030	F, CC	1	0	1	0	0	0	0	0	0	0	1	0	1	0	6 – High
14	2-1	**Bokum Road crossing of Mud River.** Ensure that appropriate upsizing of this culvert is included in future repairs or replacement. Incorporate the findings of the road/crossing evaluation conducted for the Town under the Sea Grant SRC grant in 2026.	PW	$100,000-$500,000	FEMA HMA, STEAP, CIP	2029-2031	F, CC	1	0	1	0	1	0	1	0	0	0	0	0	1	0	6 – High
15	2-1	**Route 153 crossing of Mud River.** Work with DOT to ensure that appropriate upsizing of this culvert is included in future repairs or replacement. Incorporate the findings of the road/crossing evaluation conducted for the Town under the Sea Grant SRC grant in 2026.	PW and CT DOT	$100,000-$500,000	CT DOT	2029-2031	F, CC	1	0	1	0	0	0	0	0	0	0	0	0	1	0	4 – Med
16	2-1	**Route 154 at South Cove and Middle Cove.** The Route 154 corridor is important because it connects communities when Route 9 is unavailable. In the vicinity of South Cove and Middle Cove, flood-risk areas associated with a few creeks intersect with Route 154. There may be a need to address all the Route 154 pinch points associated with small streams that flow into South Cover and Middle Cove. Work with CIRCA or Sea Grant SRC to advance a study of this area.	PW and CT DOT	$100,000-$500,000	CT DOT	2029-2031	F, CC	1	0	1	0	0	-1	0	0	0	0	0	0	1	0	3 – Low

Town Activity Number	Goal/ Objective	Activity	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	Total STAPLEE Score/ Priority
17	2-1, 3-1	Conduct a survey of elementary schools to evaluate if bookshelves and other heavy stationary objects that could fall and cause injury during an earthquake are secured to walls or other structures. Where deficiencies are identified, develop a plan of recommended repairs and share it with school administrators.	EMD	$2,000	OB	2027	E	1	0	0	1	1	1	0	0	1	0	0	0	1	0	3 – Low

LOWER CONNECTICUT RIVER VALLEY COUNCIL OF GOVERNMENTS
HAZARD MITIGATION PLAN 2026 UPDATE

TOWN OF HADDAM MUNICIPAL ANNEX

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1. Contact Information

1.1. Point of Contact

Table 1.1. Town of Haddam Contact Information

Information	Town of Haddam
Contact Name	Sean E. Donlan – First Selectman
Address	30 Field Park Drive
Telephone	Haddam CT 06438
Email	(860) 345-8531

1.2. Local Planning Team

The following representatives listed in Table 1.2 participated in meetings and provided input, data, and council toward the development of Volume 1 and this Haddam, Connecticut Annex.

Table 1.2. Town of Haddam Planning Team

Name	Title
Bill Warner	Town Planner
Sean E. Donlan*	First Selectman/Dir. DPW
Chris Corsa	Assistant Director of Public Works

**Local Coordinator*

1.3. Lower Connecticut River Valley Council of Governments

Table 1.3. RiverCOG Contact Information

Information	RiverCOG Information
Contact Name	Margot Burns – Senior Environmental Planner
Address	RiverCOG 145 Dennison Rd. Essex, CT 06426
Telephone	(860) 581-8554 x 702
Email	mburns@rivercog.org

2. Jurisdiction Profile

2.1. Town Profile

The Town of Haddam comprises 43.9 square miles just south of the geographical center of the state along the banks of the Connecticut River. It lies about 24 miles south of Hartford and about 22 miles northeast of New Haven. The town is split by the Connecticut River, with most of the community along the west bank of the river.

Figure 2.1 shows the location and corporate boundaries of Haddam.

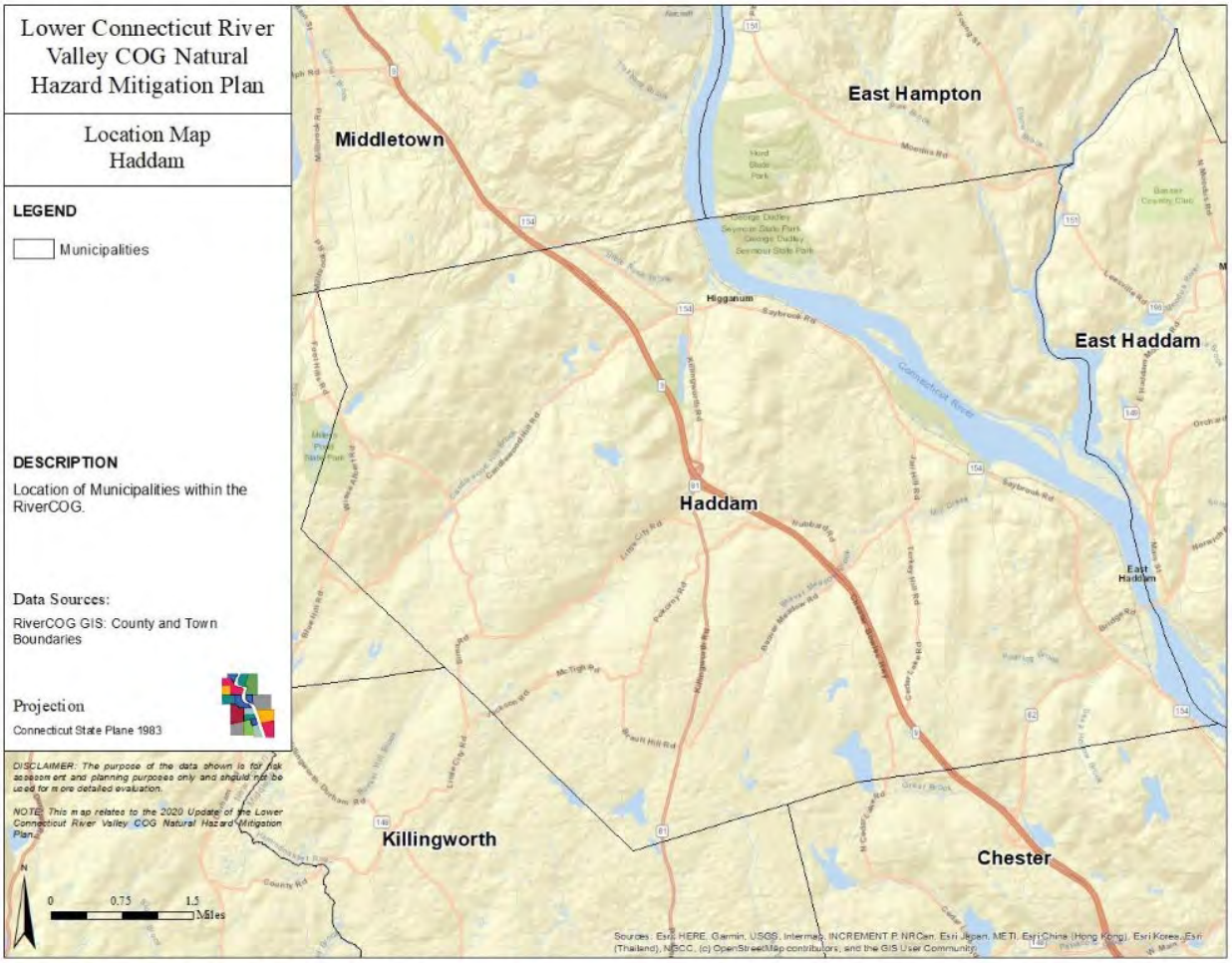


Figure 2.1. Haddam Location

This rural community is home to numerous State Parks, Cockaponset State Forest, and numerous riverside attractions. In addition, the community thrives on its agricultural roots with large- and small-scale farms, and the annual Haddam Neck Fair which celebrates the farming history of The Neck. Higganum, a northern village along Route 154 and Route 81, is situated not far from the river and is the most densely developed area within the town. Higganum is home to numerous community

amenities such as churches, fuel, schools, a pharmacy, and other small businesses. This village was developed along the confluence of Bible Rock Brook, Candlewood Hill Brook, and Higganum Creek, posing a flood risk to a critical area of town.

Overall, the town of Haddam is predominantly residential, with small areas of industrial zoning adjacent to the Tylerville Village district, one small area in The Neck, and small parcels along Route 154 in Higganum.

Route 9 bisects the town in a north-south direction with 3 exits leading directly into the town (although the interchange of Exit 7 and Route 9 lies in Chester, the 2.5-mile off-ramp ends on Route 154 in Haddam). Route 154 runs parallel to the Connecticut River, making this the primary road for river access.

The town is geographically comprised of hills that run north to south, is bisected by the Connecticut River, and bordered by the Salmon River along the east. While elevations in town exceed 600 ft above sea level, riverside slopes are steep along some banks, and gradual along others. These gradually sloped riverside areas are often residentially developed, with some areas belonging to State Parks. Figure 2.2 shows land cover in Haddam.

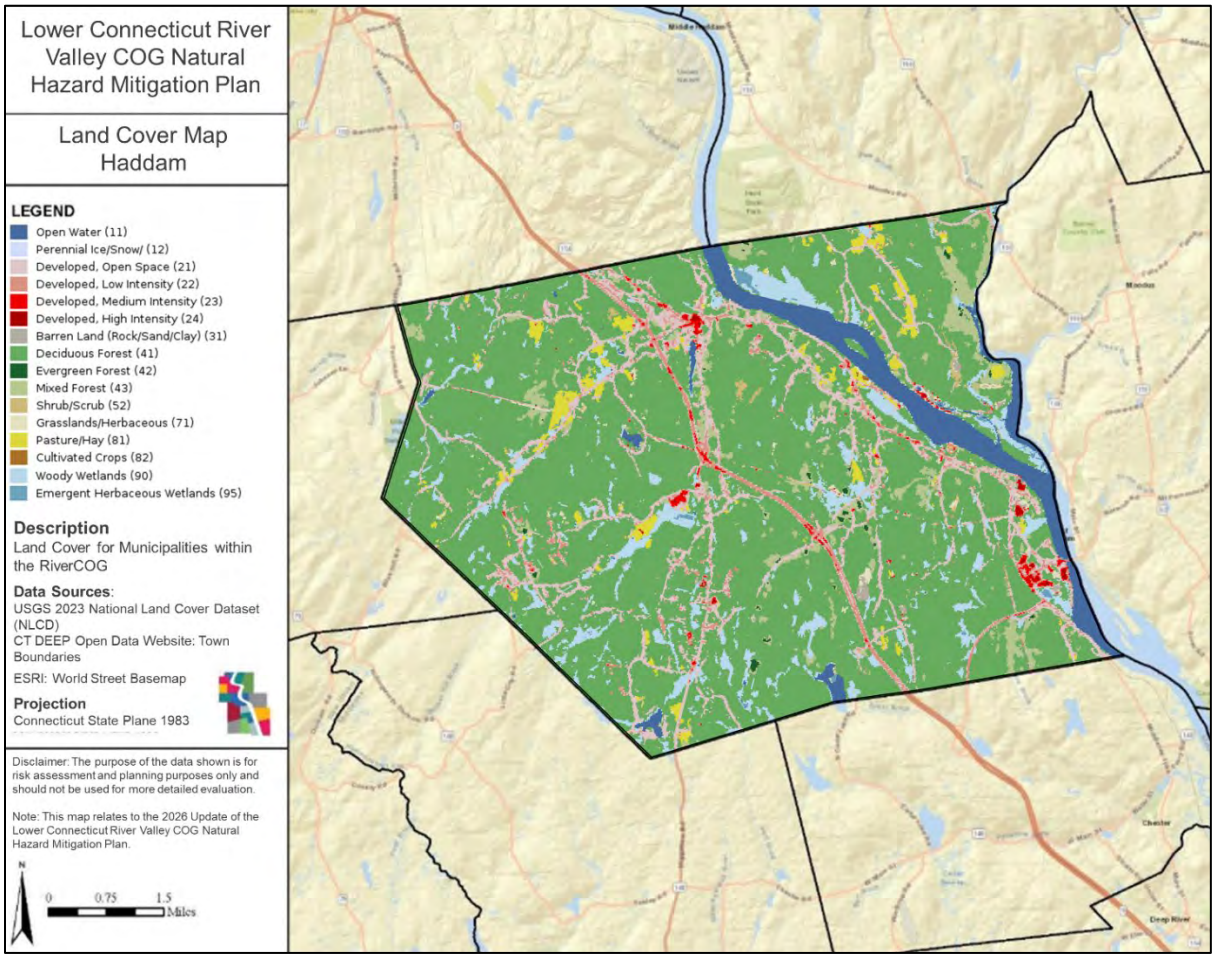
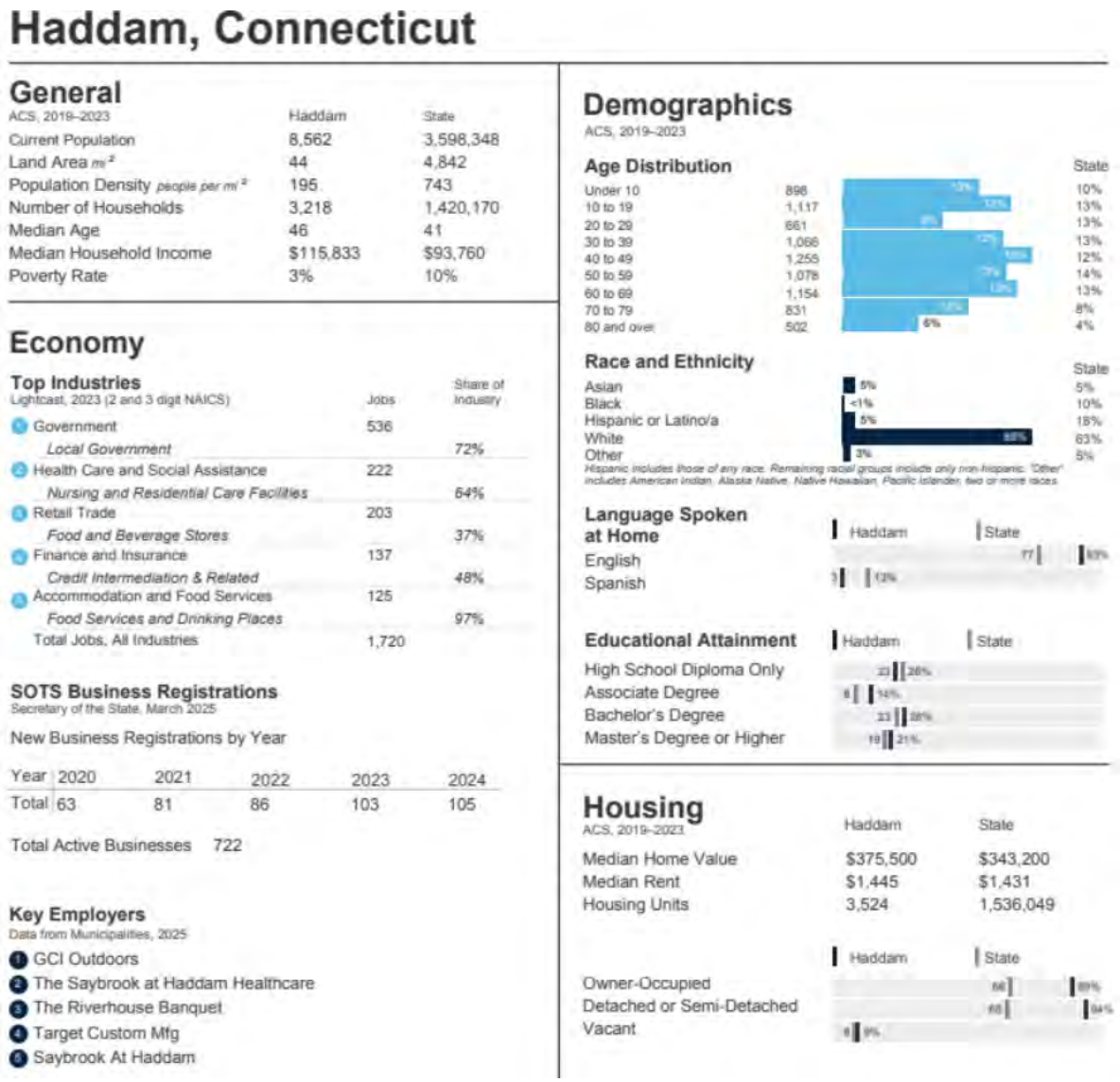


Figure 2.2. Haddam Land Cover

With these elevations in mind, and numerous streams running throughout the town, flooding is one of the primary concerns for Haddam. A damaging flooding event is one of the most likely events to occur in town, with a hurricane being an additional concern. While the town is vulnerable to wind damage from a hurricane or tropical storm event, a major hurricane can potentially result in drastic mature tree damage throughout town.

The 2023 American Community Survey (ACS) reported a town population of 8,562 people which represents a 4.1% increase from 2019.[1] Figure 2.3 provides a demographic profile for Haddam.[2]



Haddam, Connecticut

General

ACS, 2019–2023

	Haddam	State
Current Population	8,562	3,598,348
Land Area mi²	44	4,842
Population Density people per mi²	195	743
Number of Households	3,218	1,420,170
Median Age	46	41
Median Household Income	$115,833	$93,760
Poverty Rate	3%	10%

Economy

Top Industries

Lightcast, 2023 (2 and 3 digit NAICS)

	Jobs	Share of Industry
Government	536	
Local Government		72%
Health Care and Social Assistance	222	
Nursing and Residential Care Facilities		64%
Retail Trade	203	
Food and Beverage Stores		37%
Finance and Insurance	137	
Credit Intermediation & Related		48%
Accommodation and Food Services	125	
Food Services and Drinking Places		97%
Total Jobs, All Industries	1,720	

SOTS Business Registrations

Secretary of the State, March 2025

New Business Registrations by Year

Year	2020	2021	2022	2023	2024
Total	63	81	86	103	105

Total Active Businesses 722

Key Employers

Data from Municipalities, 2025

1. GCI Outdoors
2. The Saybrook at Haddam Healthcare
3. The Riverhouse Banquet
4. Target Custom Mfg
5. Saybrook At Haddam

Demographics

ACS, 2019–2023

Age Distribution

		State
Under 10	898	10%
10 to 19	1,117	13%
20 to 29	661	13%
30 to 39	1,066	13%
40 to 49	1,255	12%
50 to 59	1,078	14%
60 to 69	1,154	13%
70 to 79	831	8%
80 and over	502	4%

Race and Ethnicity

	State
Asian	5%
Black	10%
Hispanic or Latino/a	18%
White	63%
Other	5%

Hispanic includes those of any race. Remaining racial groups include only non-hispanic. 'Other' includes American Indian, Alaska Native, Native Hawaiian, Pacific Islander, two or more races.

Language Spoken at Home

	Haddam	State
English	77	83%
Spanish	3	13%

Educational Attainment

	Haddam	State
High School Diploma Only	23	26%
Associate Degree	8	14%
Bachelor's Degree	33	28%
Master's Degree or Higher	19	21%

Housing

ACS, 2019–2023

	Haddam	State
Median Home Value	$375,500	$343,200
Median Rent	$1,445	$1,431
Housing Units	3,524	1,536,049

	Haddam	State
Owner-Occupied	66	69%
Detached or Semi-Detached	66	64%
Vacant	8	9%

Figure 2.3. Town of Haddam Demographics

[1] https://s3-us-west-2.amazonaws.com/cerc-pdfs/2025/Haddam.pdf

[2] - Published on Town of Haddam, CT *(Source: Connecticut Data Collaborative)*

2.2. Climate

Average weather data in Haddam was sourced from the Weather Spark website (weatherspark.com).

Over the course of the year, the temperature typically varies from 21°F to 82°F and is rarely below 7°F or above 90°F. The warm season lasts for 3.5 months, from May 31 to September 14, with an average daily high temperature above 73°F. The hottest day of the year is July 20, with an average high of 82°F and low of 65°F. The cold season lasts for 3.4 months, from December 1 to March 12, with an average daily high temperature below 45°F. The coldest day of the year is January 30, with an average low of 21°F and high of 36°F.

A wet day is one with at least 0.04 inches of liquid or liquid-equivalent precipitation. The chance of wet days in Higganum varies throughout the year. The wetter season lasts 4.6 months, from March 25 to August 12, with a greater than 28% chance of a given day being a wet day. The chance of a wet day peaks at 33% on May 30. The majority of rain falls during the 31 days centered around April 4, with an average total accumulation of 3.8 inches.

The snowy period of the year lasts for 5.1 months, from November 9 to April 11, with a sliding 31-day liquid-equivalent snowfall of at least 0.1 inches. The most snow falls during the 31 days centered around January 27, with an average total liquid-equivalent accumulation of 0.9 inches.

The windier part of the year lasts for 5.9 months, from October 27 to April 22, with average wind speeds of more than 5.7 miles per hour. The windiest day of the year is February 26, with an average hourly wind speed of 7.3 miles per hour.

2.3. Government Style

Haddam has a Selectman-Town Meeting style of Government and shares a regional school district (17) with the neighboring Town of Killingworth. Haddam is the only town in Connecticut separated by the Connecticut River without a bridge to connect the two parts. This leads to residents having to travel through other towns to travel between the two parts of Haddam. This presents certain logistical challenges.

2.4. Development Trends

Development has occurred at a relatively slow rate in Haddam, with no major developments in the planning phases at the time of this plan update.

Town staff note that a new public water system has been developed in the Tylerville area, operated by The Connecticut Water Company, which will allow that area to support more development in the future. A 160-unit residential project for that area has been completed since the 2021 plan update. Redevelopment in Higganum is desired but is hindered by challenges including a lack of public water and sewer, as well as flood concerns created by the confluence of Candlewood Hill Brook, Bible

Rock Brook, and Higganum Creek. Northwest of Higganum Center, an existing building was converted to a brewery; this typifies the types of redevelopment in Haddam.

In Scoville, 7-8 Candlewood Road, Higganum, a new wedding venue is planned after property remediation in parking area. It is partially in a flood zone and will be developed in accordance with NFIP standards. There are no changes proposed to the building's footprint. The Haddam Elementary School on Rt. 154, is in preliminary planning to be converted to partially elderly housing (apartments) and a Town Sr. Center and Offices. Haddam is revamping a Public Works building on Depot Road, renovating two steel buildings and constructing permanent salt sheds and storage, all in floodplain. This project will be completed in accordance with NFIP standards. There is an eight home subdivision in the planning phase on Chamberlin Hill Road. It is not located in any known hazard areas.

While any new development that adds people and property to the town increases vulnerability, building to newer codes and standards has a mitigating effect. The properties noted as in, or near, flood hazard areas will be designed to NFIP and stormwater standards as administered by the town of Haddam. The redevelopment projects noted, while in flood prone areas, are replacing or retrofitting existing buildings to higher standards, thereby mitigating some of the current vulnerability.

2.1. Town-Specific Hazard Concerns

Municipal staff reported several specific hazard concern issues, which are listed below. The information below is intended to supplement the hazard-specific analysis completed in Section 2, of Volume I of this plan. Not all hazards potentially impacting Haddam are included in this Annex.

A note: To preserve the reader's ability to align RiverCOG-Level and town-level hazard identification and risk analysis, the order of the following hazards aligns with the order of hazards in Volume I. Individual towns have ranked these hazards differently. This town-level ranking can be found in Section 3.3 Hazard Risk Ranking.

2.1.1. Severe Winter Weather

With the exception of two heavy snowfall events during the 2025/2026 winter season, there have been no damaging winter weather events since the 2021 update of this plan.

2.1.2. Flooding

Flooding - Riverine and Inland Flooding

Flash flooding can be localized when a storm cell stalls over an area, as was the case in 1982. The 1982 flood was caused when approximately sixteen (16) inches of rain fell within a 24-hour period and caused 2 dams upstream of the town center to give way. Flash floods are the most dangerous flooding condition as evidenced by the history of flooding in the area. A major challenge in Higganum is the convergence of Candlewood Hill Brook, Bible Rock Brook, and Higganum Creek. Each creek

has a narrow FEMA Special Flood Hazard Area (SFHA) and Floodway. The Town has worked to mitigate flooding from these sources since the 1982 event, culverts have been replaced and upgraded including the new Dublin Hill Bridge.

Some noteworthy flood hazard concerns include the following:

- The Department of Public Works (DPW) building is located at the confluence of Candlewood Hill Brook and Higganum Creek, partly within a FEMA flood hazard zone.
- Some culverts in and near Higganum need refurbishment and clearing of debris.
- Beaver Meadow Road, running along Beaver Meadow Brook, is a challenging corridor due to the many stream crossings. This road is a key connection between Route 9 and Saybrook Road.

Sea Level Rise

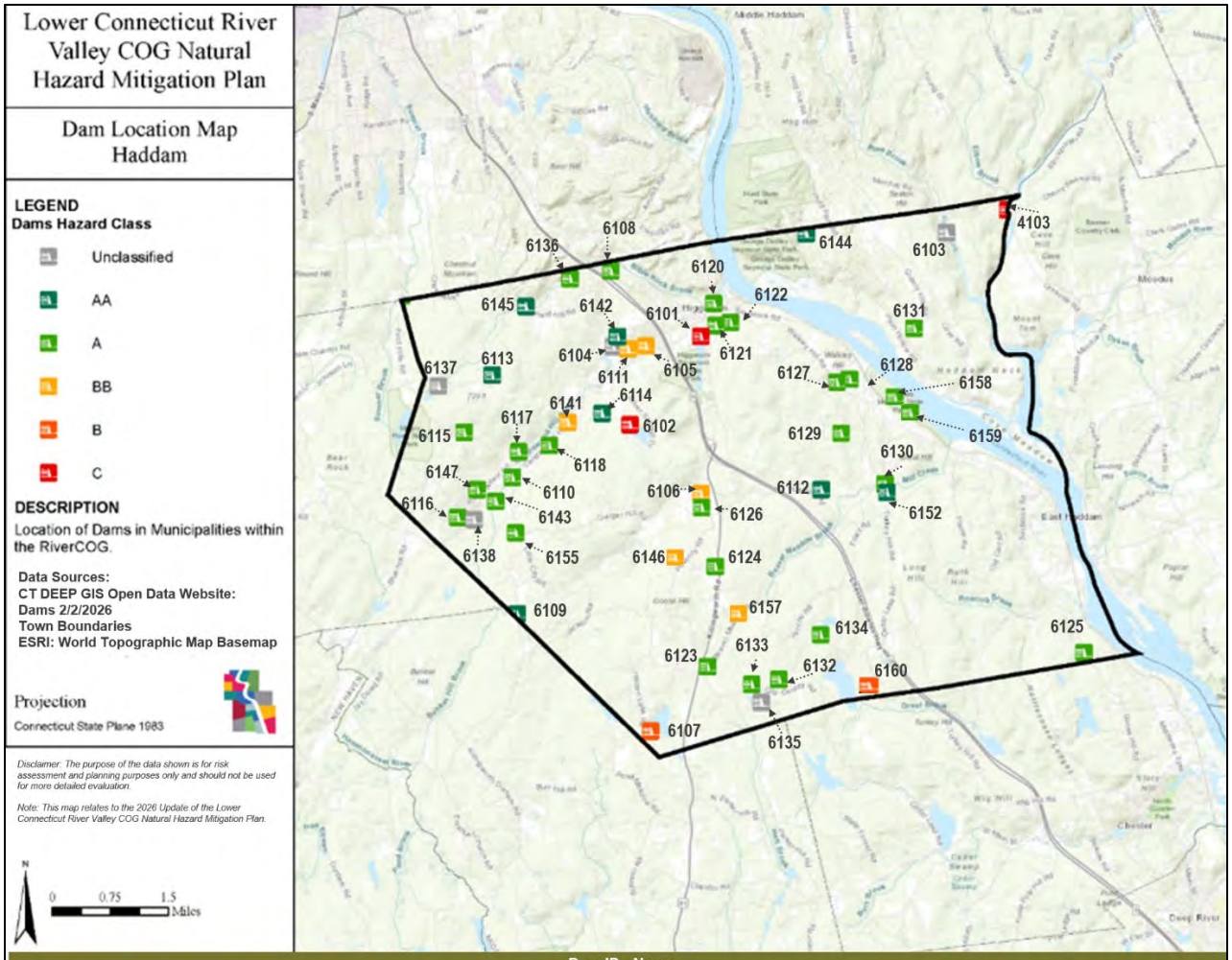
The Connecticut River is tidally influenced in Haddam. Sea level rise will have long-term consequences to tidal water surface elevations of the Connecticut River, Higganum Cove, Salmon Cover, and portions of Eightmile River, and associated wetlands. In the long term, changes to flood water surface elevations could be noticed. Researchers in Connecticut believe that Connecticut River communities should plan for about half of the vertical sea level rise projected for Long Island Sound. In other words, the State-mandated planning threshold of 20 inches by 2050 could translate to ten inches of vertical flooding added to tidal flooding along the Connecticut River by 2050. Nevertheless, over the five-year timeframe for this plan, changes in horizontal flood extents associated with this vertical increment are not likely to be noticeable.

2.1.3. Dam Breach

In the town of Haddam, the Connecticut Department of Energy and Environmental Protection (DEEP) has 54 dams in their dam inventory. Of those 54 dams, two dams are rated as High Hazard dams (Class C), one dam is rated as a Significant Hazard dam (Class B) and six are rated Moderate Hazard (Class BB). All remaining dams are rated either Negligible Hazard (Class AA) or Low Hazard (Class A). Figure 24 shows the location of dams in the community. Note that several small dams are missing coordinates for mapping.

Figure 2.4 shows the location of all dams within Haddam. Moderate, Significant, and high hazard-class dams are presented in

Table 2.1. A full list of dams is provided in Appendix B.



Dam ID - Name									
4103 – Leesville Dam	6106 – Little City Pond Dam	6111 – Black Shop Pond Dam	6116 – Horseshoe Pond Dam	6122 – Recreation Pond Dam	6127 – Kreiger Brook Pond West Dam	6132 – Cockaponset Marsh #2	6137 – Stepanski Pond Dam	6144 – Deer Pond Dam	6155 – Oktavec Pond Dam
6101 – Higganum Reservoir	6107 – Hidden Lake Dam	6112 – Wood Road Pond Dam	6117 – New York Pond Dam	6123 – Oblong Pond Dam	6128 – Kreiger Brook Pond East Dam	6133 – Hackney Pond	6138 – Langers Pond Dam	6145 – Hemlock Pond Dam	6157 – Beaver Meadow Dam
6102 – Scovill Reservoir Dam	6108 – Adametz Pond	6113 – Oxbow Rd Wldlf Marsh Dam	6118 – Lead Pond Dam	6124 – {Unnamed Dam}	6129 – Timms Hill Road Pond Dam	6134 – Filley Road Pond	6141 – Dunham Pond Dam	6146 – Bartman Road Pond Dam	6158 – Haddam Meadows Pike Dike 1
6103 – Eva K Johnson Dam	6109 – Sawmill Pond Dam	6114 – Novista Pond Dam	6120 – Border Line Pond Dam	6125 – Chase Brook Dam	6130 – Lucian Wilson Pond Dam	6135 – Natural Pond Dam	6142 – Bather Pond	6147 – Aduskevich Pond	6159 – Haddam Meadows Pike Dike 2
6104 – Upper Pond Dam	6110 – Priest Pond Dam	6115 – Photo Pond Dam	6121 – Fun Pond Dam	6126 – Ponset Brook Dam	6131 – Morning Pond Dam	6136 – Biega Pond Dam	6143 – Rose Pond	6152 – Lentz Pond	6160 – Turkey Hill Reservoir Dike
6105 – Bell Shop Pond Dam									

Figure 2.4. Location of Dams, Haddam, CT

Table 2.1. Moderate, Significant and High Hazard Dams, Haddam, CT

CT Dam #	Dam Name	Hazard Class	Owner
6105	BELL SHOP POND	BB - Moderate	Private
6106	LITTLE CITY POND	BB - Moderate	Private
6111	BLACK SHOP POND	BB - Moderate	SACRED HEART, INC.
6141	DUNHAM POND	BB - Moderate	WILLIAM K. & INGRID A. MCMANUS
6146	ADAMETZ POND	BB - Moderate	Private
6156	STABA POND	BB - Moderate	HELEN M. STABA, TRUSTEE
6107	HIDDEN LAKE DAM	B - Significant	HIDDEN LAKE ASSOC
4103	LEESVILLE DAM	C - High	Connecticut DEEP
6101	HIGGANUM RESERVOIR DAM	C - High	Connecticut DEEP
6102	SCOVILLE RESERVOIR DAM	C - High	Private – Was transferred from town in 2025.

The subject plan update seeks approval under Element G of the Local Plan Review Tool, for potential HHPD eligibility. Three high hazard dams are located in Haddam: the Leesville Dam, Higganum Reservoir Dam, and Scovill Reservoir Dam. These dams were introduced and described in the multi-jurisdiction document. Two Emergency Action Plans (EAP) were obtained and reviewed to understand the people, critical facilities, and community assets in the dam failure inundation areas. One EAP was not available. Details are provided below.

- Leesville Dam: The State of Connecticut owns this dam. An EAP was prepared and accepted by DEEP. The dam is a run of the river dam that impounds the Salmon River approximately four miles before it joins the Connecticut River in a very rural, remote part of Haddam.
    - According to the EAP, "Downstream areas at risk for flooding due to a dam failure consist mainly of residential properties. The greatest threat to flooding due to a breach is the immediate structures located just downstream. These include homes along Powerhouse Road and Leesville Road in East Haddam as well as Haines Trail in Haddam. Additional structures further downstream along Pettipaug Road and Sherwood Camp Road Extension in Haddam are also at risk."
    - A close review of the inundation mapping shows that most of the properties at risk are oriented such that homes and buildings are not at risk.
    - Furthermore, based on the mapping in the EAP, Route 151 will not overtop during a dam breach scenario. This helps ensure that north-south access through the inundation area will remain viable.
- Higganum Reservoir Dam: The State of Connecticut owns this dam. An EAP was prepared and accepted by DEEP. The dam impounds Ponset Brook a little over a mile from where it flows into the Connecticut River.

  - According to the EAP, "Downstream areas at risk for flooding due to a dam failure consist of residential properties, businesses, and road crossings. The greatest threat to flooding due to a breach is the immediate buildings located just downstream along Killingworth Road and near the intersection with Saybrook Road. Additional structures along Depot Road are also at risk."
  - The population center of the Town of Haddam – known as Higganum – is in the dam breach inundation area. Potentially affected buildings include the local supermarket, a pharmacy, small apartment complexes, and the Town of Haddam Public Works facility. The Public Works facility is a critical facility, and many of the businesses in Higganum are considered essential facilities given the rural nature of Haddam.
  - Important roads that would be impacted by a dam breach are Route 81 (Killingworth Road) and Route 154 (Saybrook Road), including the intersection at Higganum Center. These roads would be impassable during a dam breach.
- Scoville Reservoir Dam: This dam is owned by a private entity. An EAP was not available for review. The dam impounds a tributary of Candlewood Hill Brook upstream of the Higganum section of Haddam. Candlewood Hill Brook flows eastward and joins Ponset Brook in Higganum Center. In lieu of dam failure inundation mapping, FEMA mapping was reviewed to understand downstream risks during a potential dam breach of failure.
- Developed properties are not located along the tributary of Candlewood Hill Brook where the earliest parts of a flood arrival would occur.
- After reaching Candlewood Hill Brook, a flood occurring from a dam breach would likely overtop Candlewood Hill Road in multiple locations. This is because Candlewood Hill Brook crosses under the road several times, and flows alongside the road for several miles. This situation would likely cut off one of the only west-east routes across the rural north-central part of the Town of Haddam.
- Multiple residential properties along Candlewood Hill Road could be isolated or directly impacted by a flood from a dam breach.
- Higganum center is potentially in a dam breach inundation area. Potentially affected buildings include the local supermarket, a pharmacy, small apartment complexes, and the Town of Haddam Public Works facility. The Public Works facility is a critical facility, and many of the businesses in Higganum are considered essential facilities given the rural nature of Haddam. Without inundation mapping within a current EAP, Town officials may have difficulty knowing whether inundation depths would be significant in Higganum.

2.1.4. Hurricanes and Tropical Storms

Hurricanes, though not a regular occurrence, have the potential to create severe damage throughout the town of Haddam. Its location along the Connecticut River leave it susceptible to river flooding if water is pushed upstream from Long Island Sound.

Municipal staff report that the west side of Haddam seems to experience more wind damage than the rest of town. The Town has many hazardous trees and during a hurricane or tropical storm some of them are close to power lines and present a risk of power outages. Town staff report that trees located along State highways need more attention, and that trees addressed by Eversource do not always line up with those that the Town would like addressed. Generally, private utility companies such as Frontier Internet Services do not always respond as quickly as businesses and residents would prefer. Haddam does not have its own tree maintenance crews, and the Public Works Department has difficulty finding experienced, competent crews to complete tree maintenance and removal work.

2.1.5. Tornado

Historically there have been tornados and microburst wind events in other parts of the state. Thus, these events should not be dismissed entirely. Severe thunderstorms have been known to occur and spawn small tornados. Damage from sheer downburst winds has been suspected as another source of damage in the state.

Overall, residents throughout Haddam are equally susceptible to the chance of a tornado occurrence. However, a strong tornado would likely cause more damage in the more densely developed Haddam Center area. High wind can lead to extended power outages when downed trees and telephone poles fall on lines. Haddam has experienced power outages of more than a week in duration from this hazard.

The Town has many hazardous trees. Some of them are close to power lines and present a risk of power outages. Town staff report that trees located along state highways need more attention, and that trees addressed by Eversource do not always line up with those that the town would like addressed. Generally, private utility companies do not always respond as quickly as businesses and residents would prefer. Haddam does not have its own tree maintenance crews, and the Public Works Department has difficulty finding experienced, competent crews to complete tree maintenance and removal work.

2.1.6. Earthquakes

The entire town could be affected by an earthquake in this region; however, impacts could vary locally.

In Haddam and the surrounding region, recorded impacts have been limited to shaking to the extent that things were knocked off shelves and people were alarmed. Structural damage has been limited to building components such as chimneys and buildings in poor repair; but failing structures have caused property damage in nearby towns. The vast majority of construction in town is wood-framed, which tends to be less vulnerable to major damage.

2.1.7. Droughts and Wildfires

Severe droughts are not frequently occurring natural events, but flashy droughts have been occurring with some regularity. Unlike floods, hurricanes and earthquakes, droughts rarely pose an immediate threat to life and property. Instead, drought causes economic hardship through failed crops, loss of livestock and increased expenses and/or lost revenue for water dependent businesses. In addition, drought can have health consequences, especially when ground water quality degrades or becomes unavailable to residences using wells. Municipalities and water companies often ask for the public's help in conserving water during dry periods to prevent the depletion of water supplies. Droughts can exacerbate the risk of wildfire or brush fire.

Large forests in the region include Cockaponset State Forest, a forest encompassing over 17,000 acres in the towns of Middletown, Durham, Chester, Haddam, Killingworth, Guilford, and Madison. The Town experiences small brush fires on a seasonal basis, but the Town has the capacity to contain and control such fires. Larger wildfires have occurred in the past but are very rare. Haddam is heavily forested which means there are several areas of the Town that are vulnerable to major forest fires. The risk is exacerbated by the encroachment of residential development closer to woodland areas.

Since the 2021plan update there have been an average of four or five brush fires each year. Haddam pulls water from the Connecticut River into tanker trucks for fire suppression. There is a cistern on Jail Hill, which holds 20k gallons + and supplies water to the jail. There are dry hydrants throughout town and Haddam requires new tanks and/or standpipes for new subdivisions and developments of more than four houses. Testing of these systems is necessary. The Tylerville section of town has hydrants following the completion of a major public works project in 2019. Outside of this area, Haddam continues to use alternative methods of fire suppression.

2.1.8. Extreme Temperature

Extreme heat and heat waves are a possibility during the summer months, particularly between June and August. The elderly in homes without air conditioning are vulnerable. Town officials have identified cooling centers for those desiring a place to go to cool off. Similarly, there are days of extreme cold. The same population is vulnerable, especially when combined with power outages during winter storms. Cooling centers may also be made available for warming.

2.1.9. Tree Diseases and Pests

Tree removal as a result of pests and diseases has been a common and expensive issue since the 2021 Update. Many of the trees that need to be removed are not within the town's control because they are located on large areas of state forest. Even still, the town spends about $130,000 per year on tree removal. The town noted that rangers from DEEP will help out, and Eversource is a good partner, but more action needs to be taken to address this issue. Many are on private property and have to be coordinated between the property owner and Eversource.

3. Hazard Risk

3.1. Historical Events

Table 3.1 lists the Federal Disaster declarations for Middlesex County, for which Haddam requested assistance. There have been no disasters since the 2021 update where disaster assistance was requested.

Table 3.1. Haddam Natural Hazard Events

Type of Event	Date	Preliminary Damage Assessment
Hurricane Event (DR-4023)	09/02/2011	$165,837
Hurricane Event (DR-4087)	10/30/2012	$90,816
Winter Weather Event (DR-4106)	03/21/2013	$106,119
Winter Weather Event (DR-4046)	11/17/2011	$174,667

3.2. Recent Events

The Haddam Local Planning Team indicated that there have been no significant disaster events since the 2021 plan update.

Public assistance is often provided by FEMA after Presidentially declared disasters. Funding is typically for extraordinary expenses incurred by the community such as public safety and public works overtime, certain equipment and contracted resources and debris cleanup.

Table 3.2 and Table 3. list PA reimbursements in Haddam.

Total PA reimbursements to the community (1998-2025) were as follows:

- Flood Events: $0 ($0 annually)
- Hurricane (Wind) Events: $256,653 ($9,506 annually)
- Winter (Snow) Storm Events: $280,786 ($10,399 annually)

Table 3.2. Hurricane Wind Event PA Reimbursements, Haddam, CT

Disaster No.	4023	4087
Incident Dates	Aug-Sep 2011 (T.S. Irene)	Oct-Nov 2012 (Super Storm Sandy)
Declaration	11/17/2011	10/30/2012
Entity	FEMA PA Reimbursement	FEMA PA Reimbursement
State	$	$
Municipal	$	$
Nonprofit	$	$
Total	$165,837	$90,816
Annualized	$6,142	$3,364

Table 3.3. Winter Storm PA Reimbursements, Haddam, CT

Disaster #	4046	4106
Incident Dates	Oct - 2011	Feb 2013
Declaration	11/17/2011	3/21/13
Entity	FEMA PA Reimbursement	FEMA PA Reimbursement
State	$	$
Municipal	$	$
Nonprofit	$	$
Total	$174,667	$106,119
Annualized	**$6,469**	**$3,930**

3.3. Hazard Risk Ranking

Haddam participated in the regional hazard ranking conducted by the Hazard Mitigation Planning Team. Table 3.3 shows the scoring for the various ranking parameters that were used. The probability of each hazard is determined by assigning a level, from unlikely to highly likely, based on the likelihood of occurrence from historical data. The total impact value includes the affected area, primary impact, and secondary impact levels of each hazard. Level of Community Concern reflects the perceived risk of each hazard as indicated by respondents to question 6 of the community survey. This question asks, “How concerned are you about each of the following hazards impacting your home, business, community, or organization?” and received 157 responses.

Each of these five criteria are assigned weights, as well as point values for each of their responses. Each level's score is reflected in the matrix. The total score for each hazard is the probability score multiplied by its importance factor times the sum of the impact level scores multiplied by their

importance factors. Based on this total score, the hazards are separated into three categories based on the hazard level they pose to the communities: Significant, Moderate, Limited. Table 3.3. Hazard Ranking Parameters provides a summary of the categories used to rank the hazards and their weighted values for the Composite Hazard Risk Index.

Table 3.3. Hazard Ranking Parameters

Criteria	Weight	1 Point	2 Points	3 Points	4 Points
Hazard Probability	2.0	**Unlikely** Less than 1% probability in next 100 years or has a recurrence interval of greater than every 100 years.	**Somewhat Likely** Between 1 and 10% probability in next year or has a recurrence interval of 11 to 100 years.	**Likely** Between 10 and 100% probability in next year or has a recurrence interval of 10 years or less	**Highly Likely** Near 100% probability in next year or happens every year.
Impact – Affected Area	0.8	**Isolated** Less than 1% of area affected	**Small** Between 1 and 10% of area affected	**Medium** Between 10 and 50% of area affected	**Large** Between 50 and 100% of area affected
Impact – Primary Impact	0.7	**Negligible** 1 to 10% of people or property	**Limited** 10% to 25% of people or property	**Critical** 25 to 50% of people or property	**Catastrophic** >50% of people or property
Impact – Secondary Impact	0.5	**Negligible** No loss of function, downtime, and/or evacuations	**Limited** Minimal loss of function, downtime, and/or evacuations	**Moderate** Some loss of function, downtime, and/or evacuations	**High** Major loss of function, downtime, and/or evacuations
Level of Community Concern	1.0	**Low Concern**	**Moderate Concern**	**High Concern**	-

The hazard risk ranking generated from this exercise, along with consideration of available data, was used to prioritize the level of effort assigned to further analysis of each hazard in the vulnerability analysis and lost estimation sections. All the participating communities agreed upon the results of the hazard ranking for the overall region. Based on the results of the exercise, the hazards were ranked as follows in Table 3.3. Hazard Ranking Parameters. Haddam endorsed the ranking as accurate for the Town.

Table 3.4. Summary of Potential Hazard Impacts.

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
Aquatic Invasive Species	Semi-quantitative, supplemented by state and municipal figures, recommend survey	**Highly Likely - 4**	**Large - 4**	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant
Terrestrial Invasive Species	Semi-quantitative, supplemented by state and municipal figures, recommend survey	**Highly Likely - 4**	**Large - 4**	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant
Tree Infestation	Semi-quantitative, supplemented by state and municipal figures, recommend survey	**Highly Likely - 4**	**Large - 4**	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant
Hurricanes	Hazus for wind	Likely - 3	**Large - 4**	Critical - 3	Moderate - 3	High Concern - 3	15.8	Significant
Winter Storms (Snow, Ice, Wind, including Noreasters)	Historic analysis for probability and annualized damages	**Highly Likely - 4**	**Large - 4**	Negligible - 1	Moderate - 3	Moderate Concern - 2	15.4	Significant

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
Flood – Riverine and Inland Flooding (Riverine, Drainage, Coastal Surge, Sea Level Rise - includes flooding from Nor'easters)	Hazus, SLR Overlay, FS Model Overlay, Historic data and damages for additional probability	Likely - 3	Medium - 3	Limited - 2	Moderate - 3	High Concern - 3	14.3	Significant
Extreme Heat and Cold	Qualitative based on historic	Likely - 3	**Large - 4**	Negligible - 1	Limited - 2	High Concern - 3	13.9	Moderate
Severe Weather (thunderstorms, downbursts, hail, lightning)	Historic analysis for probability and annualized damages	**Highly Likely - 4**	Small - 2	Negligible - 1	Limited - 2	Moderate Concern - 2	13.3	Moderate
Wildfire	Historic analysis for probability and annualized damages	Likely - 3	Small - 2	Critical - 3	Moderate - 3	Moderate Concern - 2	13.2	Moderate
Drought	Historic analysis for probability and annualized damages - some qualitative	Likely - 3	Medium - 3	Negligible - 1	Limited - 2	High Concern - 3	13.1	Moderate

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
Tornadoes	Historic analysis for probability and annualized damages - pulling in surrounding counties	Likely - 3	Isolated - 1	**Catastrophic - 4**	Limited - 2	Moderate Concern - 2	12.6	Moderate
Earthquakes	Hazus, 3 scenarios	Somewhat Likely - 2	Small - 2	**Catastrophic - 4**	**High - 4**	Low Concern - 1	11.4	Limited
Flooding from Dam Failure	Dam Inundation areas, Historic analysis for probability and annualized damages	Unlikely - 1	Small - 2	Limited - 2	Moderate - 3	Moderate Concern - 2	8.5	Limited

3.3.1. National Flood Insurance Program (NFIP) Participation

Haddam began participating in the NFIP in 1975 and joined the regular phase in 1980. There are a total of 38 policies in force for coverage of approximately $11 million. Total claim payments have equaled $391,932.

Repetitive Loss Property Detail

Five properties are listed as repetitive loss (RL) properties. All of the RLPs are located in the floodplain along the Connecticut River and are residential. There are no severe repetitive losses (SRL) listed. Some of the RL properties are in the Landing Road National Historic Preservation District. This district designation complicates home elevation or demolition. A number of RLPs are also located in Haddam Neck, especially on Rock Landing Road.

For the properties listed, there have been a total of 12 losses, with cumulative payments of $148,500. The Town does not believe that Substantial Damage/Substantial Improvement thresholds have been reached for projects completed in the RLPs. There is little interest among property owners to mitigate.

4. Capability Assessment

This section discusses capabilities and operational procedures that Haddam undertakes that contribute to or have the potential to contribute to hazard mitigation. It also notes deficiencies in those capabilities that could be addressed to strengthen resilience.

4.1. Critical Facilities

Public and private utility facilities are vital to maintaining or restoring normal services to areas of town before, during, and after a natural disaster.

In addition to the state identified critical facilities, supplemented by RiverCOG, and addressed in Volume I of this plan update, Haddam has identified 12 facilities it considers critical. The DPW is located at the confluence of Candlewood Hill Brook and Higganum Creek, partly within a FEMA flood hazard zone.

Figure 4.1 shows the location of critical facilities in Haddam which are identified at the regional level.

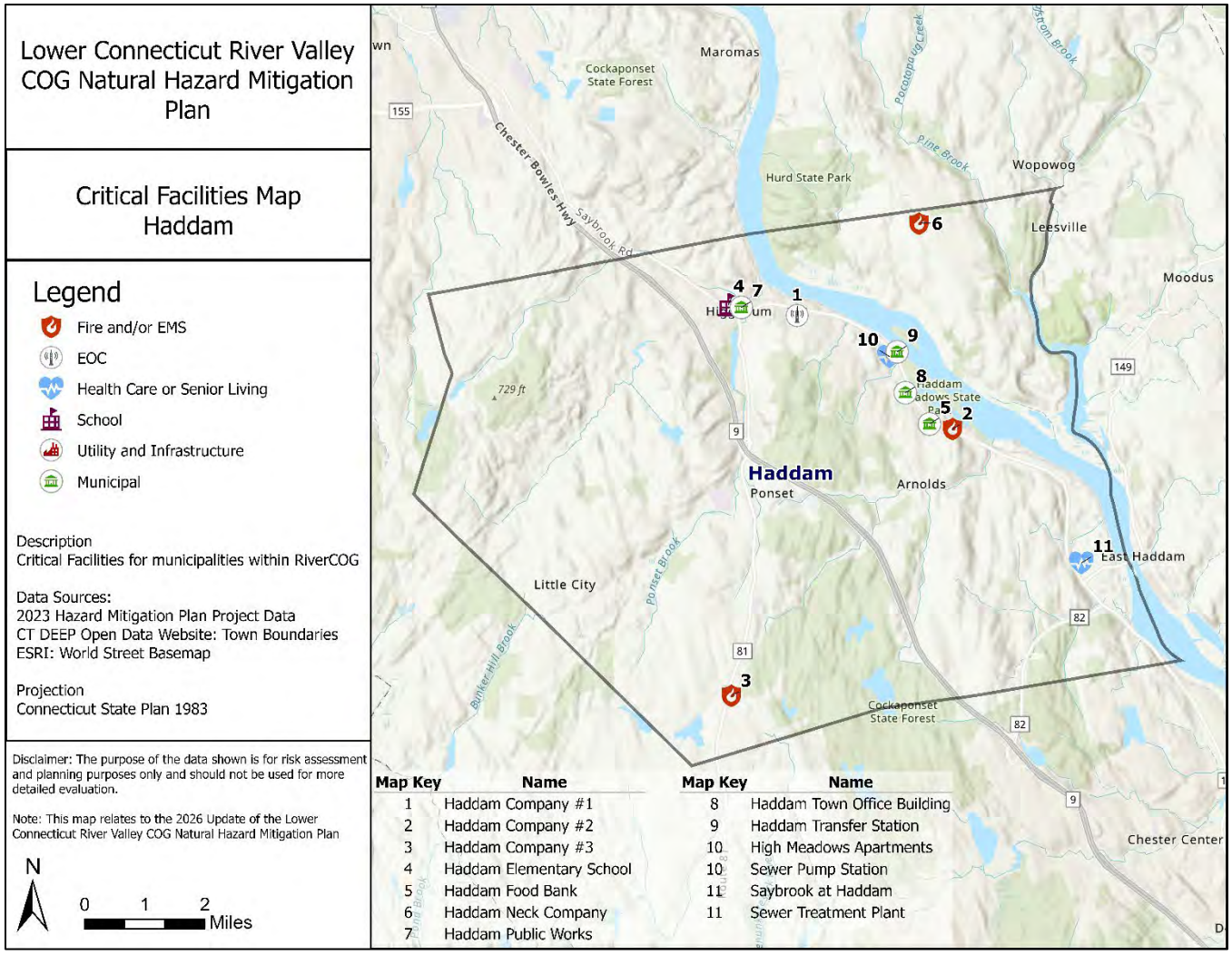


Figure 4.1. Location of Critical Facilities in Haddam

* Gas station with generator and two schools not used as shelters are included in the state critical facility layer and appear on the map but are not listed by the town as critical.

Haddam does not provide public sanitary sewer service, and there are only a few small community public water systems in town (High Meadow, Saybrook at Haddam and Tylerville); residents and businesses outside those service areas rely on private wells and septic systems. Electricity is provided by Eversource. There is no natural gas system in Haddam. Public and private utility facilities are subject to the same loss of power, potable water, communications, and accessibility as is the community they serve.

Table 4.1 lists critical facilities identified by the Town.

Table 4.1. Critical Facilities

Facility	Type	Address	Flood Zone	Generator	Notes
Haddam Town Office Building	Municipal	30 Field Park Drive	No	Yes	

Facility	Type	Address	Flood Zone	Generator	Notes
Haddam Company #1	EOC Emergency Response	439 Saybrook Road	No	Yes	Comfort Station
Haddam-Killingworth Middle School	Emergency Shelter	451 CT-81, Killingworth	No	Yes	
Haddam Neck Company	Emergency Response	50 Rock Landing Road	500-year, parcel and part of building	Yes	Comfort Station
Haddam Company #2	Emergency Response	1010 Saybrook Road	No		Comfort Station
Haddam Company #3	Emergency Response	1040 Killingworth Road	No		Comfort Station
High Meadows Apartments	Elderly Housing	25 High Meadow Place	No, but entrance at the street is in 500-year floodplain.	Partial	24 Units
Saybrook at Haddam	Assisted Living	1556 Saybrook Road	No	Yes	
Former Connecticut Yankee Nuclear Plant Spent Fuel Storage Facility*	Hazardous Material	Haddam Neck	100-year, Partial AE, mostly X	Yes	Town would be first responder if incident occurred
Haddam Elementary School	Municipal	272 Saybrook Road	No		The school has closed and will become a new senior center/community center.
Haddam Public Works	Municipal	103 Depot Road	1---year Partial – AE, including building		
Haddam Food Bank	Municipal	11 Jail Hill Road	No	Yes	
Haddam Transfer Station	Municipal	750 Saybrook Road	100-year AE Zone, Including Buildings		

*Not mapped due to location being in another community or not included in available GIS data.

Over the last few years, a few changes in critical facilities have occurred:

- The Jail Hill annex building is a food bank and has been fitted with standby power.

- The former DOT building was acquired by the Town, but the new use will likely not be a critical facility.

Many communities also look at private facilities such as gas stations and grocery stores as "essential," as opposed to "critical" facilities during times of natural hazard events. Only two grocery stores are located in Haddam (in Tylerville and Higganum) but the Town does not consider them essential facilities.

4.2. Municipal Capabilities

The Town of Haddam has a variety of natural hazard mitigation capabilities, including local regulations and ordinances, operational protocols, and emergency response capabilities. Following is a list of some highlighted capabilities identified by municipal staff.

4.2.1. Regulations and Ordinances

The Town of Haddam participates in the NFIP and is committed to participating in the future. The most recent FEMA Flood Insurance Study for the community, which identifies Special Flood Hazard Areas (SFHA), is dated February 6, 2018. Section 11 of the Haddam Zoning Regulations defines the SFHA within the town. These regulations allow the Town to control growth and expansion within flood zones.

All new construction and substantial improvements located within the 100-year flood plain must conform to minimum elevation requirements and construction standards so as to minimize flood damage. Substantial improvements is defined as any combination of improvements, the cost of which equals or exceeds 50% of the market value before improvement started.

The Subdivision Regulations, Zoning Regulations and Regulations for Public Improvements all include measures to minimize damage from flooding. The regulations require Storm Water Runoff Control Plans that incorporate measures to minimize surface runoff and maximize infiltration before discharging storm water from a site. The regulations also require protection of natural features, including natural drainage system. In addition to flooding, the regulations address damaging winds by requiring buried utility lines for new subdivisions.

Haddam implements the State Building Code to ensure safe structures that can withstand high winds and snow loads. The town also has the authority to order backup water supplies to be installed in new subdivisions when water for firefighting is not sufficient.

The Haddam Plan of Conservation and Development identifies the "FEMA 100-year flood plain" and discusses the Higganum Creek, Connecticut River, Salmon River, and Mill Creek watersheds. It guides future development in Haddam. It is scheduled to undergo an update in 2027.

4.2.2. Operations and Procedures

The Assistant Public Works Director serves as the Town tree warden. The Town historically has a budget of around $70,000 per year for tree maintenance, but in the 2019-2020 fiscal year it increased by $50,000 to address additional needs. The Town relies on private contractors to perform tree maintenance work.

Eversource is the local energy provider. Eversource reportedly focuses its attention on Haddam and maintains trees along its utility lines. Haddam has reported that Eversource does not always focus its attention on the same trees that the Town would like.

Haddam is supportive of property owners who wish to apply for acquisition or elevation grants and provides technical assistance when feasible; however, the Town is not able to offer financial support.

Haddam handles most snowplowing in-house, only occasionally needing to hire contractors for assistance. The Town uses salt for deicing, except in Haddam Neck where sand is utilized. A potential challenge for the Town under extreme snow accumulation conditions would be snow storage; Haddam has 60 miles of roadways, and during the January 2011 snowstorm struggled to find space for storage. The 2011 storm also caused significant building structure failures throughout the county. The Town has the authority to order parking bans in the event of a snowstorm.

The DPW regularly cleans catch basins.

4.2.3. Emergency Response Capabilities

Haddam can set up shelters, cooling centers, and heating centers when needed for residents.

Haddam has developed a database of resident contact information to be used with the Everbridge notification system.

4.2.4. Capital Improvements

The Capital Improvement Plan addresses municipal improvements including rights-of-way, land, housing, and infrastructure or utilities for public purposes. Mitigation actions from this NHMP should be included in the CIP. Larger items such as bridge and culvert replacements and elevation of roads are included in the 5-year CIP. The CIP should be reviewed often so that it can include new mitigation action items each time the NHMP is updated. This is a good way for the town to prioritize mitigation items. Haddam uses Capital Improvement Program (CIP) to set aside funds for infrastructure improvements to reduce loss of life and property during natural hazard (NH) events.

4.2.5. Plan Integration with Other Planning Mechanisms

The town of Haddam uses the mitigation plan to inform its 5-year capital improvement plan and associated annual budgets. Haddam staff reported that the plan has not been formally incorporated into other planning documents. There is new legislation (P.A. 25-33) that now requires cities and towns to incorporate climate vulnerability (specifically including flooding) and resilience strategies into Plans of Conservation and Development (POCDs). Haddam plans to comply with that new requirement during the next POCD Update. Further, communities are now required to develop and maintain affordable housing plans. The mitigation plan will help inform siting criteria within that plan.

4.2.6. Outreach, Education, Communication, and Warnings

The Town uses Everbridge as its emergency notification system. The Haddam Volunteer Fire Department and Haddam Neck Fire Department participate in a regional mutual-aid agreement, making fire companies

from nearby communities available to assist when needed. The Fire Department maintains more than twenty dry hydrants around Town. Underground cisterns are required for some new developments, as determined on a case-by-case basis.

4.2.7. Other Capabilities

Table 4.2, Table 4.3, and Table 4.4 Table 4.4list legal, regulatory, technical, administrative and financial capabilities that support hazard mitigation.

Table 4.2. Legal and Regulatory Capability

Table 4.2.a. Codes, Ordinances & Requirements

PLANNING/Regulatory Tool	Current Relevance	Comments
Hazard Mitigation Plan	Y	
Threat and Hazard Identification and Risk Assessment (THIRA)	N	
Plan of Conservation and Development	Y	Current
Floodplain Management Plan/Flood Mitigation Plan	N	
Open Space Management Plan (Parks & Rec/Greenway Plan)	N	
Stormwater Management Plan/Ordinance	Y	MS4 community
Natural Resource Protection Plan	N	
Flood Response Plan	N	
Emergency Operations Plan	Y	
Emergency Management Accreditation Program (EMAP Accreditation)	N	
Continuity of Operations Plan	N	
Evacuation Plan	N	
Disaster Recovery Plan	N	
Capital Improvements Plan	Y	
Economic Development Plan	N	Covered in POCD
Historic Preservation Plan	N	Covered in POCD
Flood Damage Prevention Ordinance	Y	
Zoning Ordinance	Y	
Subdivision Ordinance	Y	
Post-Disaster Redevelopment/ Reconstruction Plan/Ordinance	N	
Building Code	Y	
Fire Code	Y	
National Flood Insurance Program (NFIP)	Y	
NFIP Community Rating System (CRS Program)	N	

Table 4.3. Administrative and Technical Capability

Staff/Personnel Resources	Current Relevance	Comments
Planners with knowledge of land development/land management practices	Y	Consulting
Engineers or professionals trained in construction practices related to buildings and/or infrastructure	Y	Consulting
Planners or engineers with an understanding of natural and/or human-caused hazards	Y	Consulting
Emergency Manager	Y	Volunteer
Floodplain Manager	Y	Zoning Officer
Land Surveyors	N	
Scientists familiar with the hazards of the community	N	
Staff with education or expertise to assess the community's vulnerability to hazards	N	Experienced Responders
Personnel skilled in GIS and/or Hazus	N	Consulting, some skills in house
Resource development staff or grant writers	Y	Town Planner

Table 4.4. Financial Resources

Fiscal Tool/Resource	Current Relevance	Comments
Capital Improvement Programming	Y	
Community Development Block Grants (CDBG)	N	
Special Purpose Taxes (or taxing districts)		Hidden Lake District for Private Roads
Gas/Electric Utility Fees	N	Private
Water/Sewer Fees	N	Public water in village only, Septic for Sewer

Gaps in Capabilities

The Haddam Local Planning Team did not note any current gaps in capabilities.

4.2.8. New Capabilities and Completed Actions

Since the last plan update in 2021 there have been many updated capabilities:

- The town has conducted preliminary research and preparatory work to relocate the DPW, which is partially located in the SFHA, into another area. A consultant is currently looking for sites, but the town is exploring the potential to not relocate but instead retrofit and mitigate flooding.
- The double culver along Beaver Meadow Road has been completed. The town is still pursuing further improvement to the area.
- The town has identified two contractors that have been successfully removing trees.
- On Walkley Hill Road, the town completed a drainage study and installed precast box culvert over Krieger Brook.
- A HOA is now the owner of Chatham Lake and is currently pursuing an engineering study on Sawmill Pond Dam.

5. Hazard Mitigation Action Plan

This section presents the progress made since the 2021 action plan and establishes new goals, objectives and actions identified for the 2026-2030 planning horizon.

5.1. Previous Mitigation Actions Disposition

During the process of developing the 2021 Haddam Hazard Mitigation Plan, several hazard mitigation actions were identified to be pursued during the five-year planning horizon that followed. Table 5.1 presents the actions listed in that document, and the status of those actions.

Table 5.1. Status of Previous Mitigation Strategies and Actions.

Action	Description	Status	Notes
01	Relocate the DPW which is partially located in the SFHA	Carry Forward/Underway	Re-write to have an option to leave the DPW where it is but to instead retrofit and mitigate.
02	Evaluate the capacity of all stream crossing infrastructure along Beaver Meadow Road to identify components that need upgrades or repairs.	Carry Forward/Modify	Add new strategy to continue with improvement if funding is available
03	Collaborate with other communities within the region to identify capable tree removal contractors.	Completed	
04	Develop an inventory of areas tree assets that raise concerns, and coordinate with Eversource Vegetation Management on addressing these assets.	Carry Forward /Modify	Reluctant to have tree inventory because of liability issues. Modify strategy to say continue monitoring.
05	Upgrade 2 undersized culverts and aging, undersized bridge on Wiese Albert Road	Carry Forward	
06	On Brainerd Hill Road: replace undersized culvert with single span bridge and drainage system, replace culvert (at Joseph Cir. Intersection) with a precast box culvert, and conduct a drainage study and upgrade culvert over inlet to Black Shop Pond.	Carry Forward	

Action	Description	Status	Notes
07	On Jackson Road: Conduct a drainage study and replace undersized culverts over an unnamed stream and Ponset Brook.	Carry Forward	
08	Conduct drainage study and replace culverts over Ponset Brook at Valley Ridge Drive and Little City Road.	Carry Forward	
09	Conduct drainage study for improvements along Bible Rock Brook at Thayer Road and Thayer Road Extension.	Carry Forward	
10	Conduct drainage study along the brook at Dish Mill Road (North).	Carry Forward	
11	On Walkley Hill Road, conduct a drainage study and install precast box culvert over Krieger Brook.	Completed	
12	On Turkey Hill Road: Conduct a drainage study and install a precast box culvert over Turkey Hill Brook.	Completed	
13	Intersection of Jail Hill, Beaver Meadow, Hayden Hill and Turkey Hill Roads. Conduct drainage study and construct detention system.	Deleted	
14	On Camp Bethel Road: Conduct drainage study and upgrade undersized culvert over Rutty Creek.	Carry Forward	
15	Educate the property owners of mitigation actions they can take in areas of increased risk including Andrews Marina/Harpers Landing, and little Meadow Road (elevate or floodproof homes).	Carry Forward	
16	Work with the owner of Sawmill Pond Dam (#6109) to pursue an engineering study.	Deleted	

Action	Description	Status	Notes
17	Identify strategies to minimize remaining flood risk at the Higganum Center, including debris maintenance.	Carry Forward/Ongoing	
18	Upgrade culverts on Candlewood Hill Road.	Carry Forward	
19	On Foot Hills Road: Conduct drainage study to remedy roadway flooding and winter icing problems.	Carry Forward	Since last plan, curtain drains have been added but nothing major.

5.2. Updated Mitigation Goals, Objectives, and Strategies

As noted in Section 3 of Volume 1, all the RiverCOG participating communities, including Haddam, participated in setting regional goals and objectives. Haddam has confirmed these goals and objectives valid for the Town's annex. The three goals and objectives are as follows:

Goal 1: Promote implementation of sound flood management and other natural hazard mitigation principles on a regional and local level. Note: Covers future development through policy, planning, regulation, emergency services, and environmental strategies.

- **Objective for Goal 1:** To promote the development, improvement and implementation of programs, policies, regulations, and emergency services that result in the reduction of long-term risks to life and property.

Goal 2: Implementation of effective natural hazard mitigation projects at the regional and local level. Note: Covers infrastructure and building related projects – the existing built environment.

- **Objective for Goal 2:** To enhance the ability of RiverCOG, other regional entities, and local communities to reduce or eliminate risks to life and property from natural hazards through cost-effective hazard mitigation projects, including avoidance.

Goal 3: Increase research, planning and outreach activities for the mitigation of natural hazards on a regional and local level. Note: Covers the human component of mitigation via outreach and education, and integration with other planning and continuous improvement through increased research.

- **Objective for Goal 3:** To increase general awareness of the region's natural hazards and encourage State agencies, local communities, and the public to be proactive in taking actions to reduce long-term risk to life and property.

The Local Planning Team of Haddam reviewed these goals and objectives during meetings in June of 2025 and acknowledged that they are still aligned with the priorities of the town.

5.2.1. Prioritization of Mitigation Strategies

In considering which projects, processes, and other measures to undertake in the upcoming plan period, municipal and regional officials evaluated the need to address problems and vulnerabilities in their communities against the communities' resources and capabilities. To prioritize mitigation strategies, a set of criteria commonly used by public administration officials and planners was applied to each proposed strategy. The method, called STAPLEE, is outlined in FEMA planning documents such as Developing the Mitigation Plan (FEMA 386-3) and Using Benefit-Cost Review in Mitigation Planning (FEMA 386-5). STAPLEE stands for the "Social, Technical, Administrative, Political, Legal, Economic, and Environmental" criteria for making planning decisions. Benefit-cost review was emphasized in the prioritization process. Criteria were divided into potential benefits (pros) and potential costs (cons) for each mitigation strategy. The following questions were asked about the proposed mitigation strategies:

Social:

- Benefits: Is the proposed strategy socially acceptable to the community?
- Costs: Are there any equity issues involved that would mean that one segment of the community could be treated unfairly? Will the action disrupt established neighborhoods, break up voting districts, or cause the relocation of lower-income people? Is the action compatible with present and future community values?

Technical:

- Benefits: Will the proposed strategy work? Will it reduce losses in the long term with minimal secondary impacts?
- Costs: Is the action technically feasible? Will it create more problems than it will solve? Does it solve the problem or only a symptom?

Administrative:

- Benefits: Does the project make it easier for the community to administrate future mitigation or emergency response actions?
- Costs: Does the community have the capability (staff, technical experts, and/or funding) to implement the action, or can it be readily obtained? Can the community perform the necessary maintenance? Can the project be accomplished in a timely manner?

Political:

- Benefits: Is the strategy politically beneficial? Is there public support both to implement and maintain the project? Is there a local champion willing to see the project to completion? Can the mitigation objectives be accomplished at the lowest cost to the community (grants, etc.)?
- Costs: Have political leaders participated in the planning process? Do project stakeholders support the project enough to ensure success? Have the stakeholders been offered the opportunity to participate in the planning process?

Legal:

- Benefits: Is there a technical, scientific, or legal basis for the mitigation action? Are the proper laws, ordinances, and resolutions in place to implement the action?
- Costs: Does the community have the authority to implement the proposed action? Are there any potential legal consequences? Will the community be liable for the actions or support of actions or for lack of action? Is the action likely to be challenged by stakeholders who may be negatively affected?

Economic:

- Benefits: Are there currently sources of funds that can be used to implement the action? What benefits will the action provide? Does the action contribute to community goals such as capital improvements or economic development?

Costs: Does the cost seem reasonable for the size of the problem and the likely benefits? What burden will be placed on the tax base or local economy to implement this action? What proposed actions should be considered but be tabled for implementation until outside sources of funding are available?

Each proposed mitigation strategy presented in this plan was evaluated and quantitatively assigned a "benefit" score and a "cost" score for each of the seven STAPLEE criteria as outlined below:

- For potential benefits, a score of "1" was assigned if the project will have a beneficial effect for that criterion or a "0" if the project would have a negligible effect or if the questions were not applicable to the strategy.
- For potential costs, a score of "-1" was assigned if the project would have an unfavorable impact for that criterion or a "0" if the project would have a negligible impact or if the questions were not applicable to the strategy.
- Technical and Economic criteria were double weighted (multiplied by two) in the final sum of scores.
- The total benefit score and cost score for each mitigation strategy was summed to determine each strategy's final STAPLEE score.

Although a community may implement recommendations as prioritized by the STAPLEE method, an additional consideration is important for those recommendations that may be funded under the FEMA mitigation grant programs. To receive federal funding, the mitigation action must have a benefit-cost ratio (BCR) that exceeds a value of 1.0. Calculation of the BCR is conducted using FEMA's Benefit Cost Analysis (BCA) toolkit. The calculation method may be complex and vary with the mitigation action of interest. Calculations are dependent on detailed information such as property value appraisals, design and construction costs for structural projects, and tabulations of previous damages or NFIP claims. The BCR scoring system used is outlined in Table 5.2.

Table 5.2. BCR Scoring System

Scoring	Benefits	Costs
Low: 0-1 points	Few would benefit; the impacts being addressed are not severe; benefits may be short term	Likely to be done by existing personnel with little impact on budget; not

Scoring	Benefits	Costs
		complicated to accomplish. Costs to implement is likely to be under $10,000.
Medium: 2-3 points	Benefits may be felt by many in the community; the action may solve a problem or otherwise benefit the community for several years	May need additional funding or studies; may require change in practices; costs to implement may be between $10,000 and $100,000
High: 4-5 points	Benefits would accrue to many in the community; benefits may accrue to the most vulnerable or those not able to recover on their own; benefits would be long term and may permanently protect from damages	Likely to cost over $100,000 and require obtaining funding outside of operating budget; complicated, lengthy process to implement

The STAPLEE method accounts for cost-benefit considerations both directly (through the "Economic" category) and indirectly (through general consideration of costs and benefits of actions). Additionally, the range of estimated costs of each strategy are included in the STAPLEE table. The assumed costs of projects and generalized presentation of the benefits accruing from them are not based on specific detailed cost estimates as that level of analysis is not appropriate for this type of planning effort. For some projects, such as routine or recurring operations that are established practices and conducted with municipal general operating funds and existing staff, the STAPLEE results can be the only explicit comparison of costs and benefits. For projects for which bonding and/or grant funding will be sought, more in-depth evaluations of costs and benefits will be required. As project scopes are detailed, benefits and costs can be identified with more precision, and the benefit-cost ratio which results from a full benefit-cost analysis may differ from the planning-level STAPLEE results presented here.

It should be noted that higher BCRs do not necessarily correspond to high priorities, nor do low BCRs or BCRs under 1.0 correspond to low-priority projects. An important project with a high priority to the community may have a lower BCR because of its complexity, assumed high expense, and other costs. Communities should not be discouraged or deterred from further consideration of projects that have low BCRs or BCRs less than 1.0 until additional, more specific evaluations of the costs and benefits have been undertaken.

5.2.2. 2021-2026 Prioritized Hazard Mitigation Actions

In addition to the regional mitigation actions endorsed by Haddam and outlined in Section 3 of Volume 1 of the regional plan, the Town identified or carried over from the last update, ranked and evaluated the actions in Table 5.3. For each identified action, the goal and objective it addresses is noted. Additionally, a description, lead agency, indication of costs and potential funding sources, and an estimated timeline for completion is included. Also included are the hazards addressed by a specific action.

Figure 5.1 shows the locations of the projects listed in Table 5.3 with spatial elements that have been carried forward or are new additions. Additionally, completed projects identified in Table 5.1 with spatial elements are also shown on the map. Projects carried forward and new projects are identified by their

activity number (from Table 5.3) while completed projects are identified by the description of the project completed.

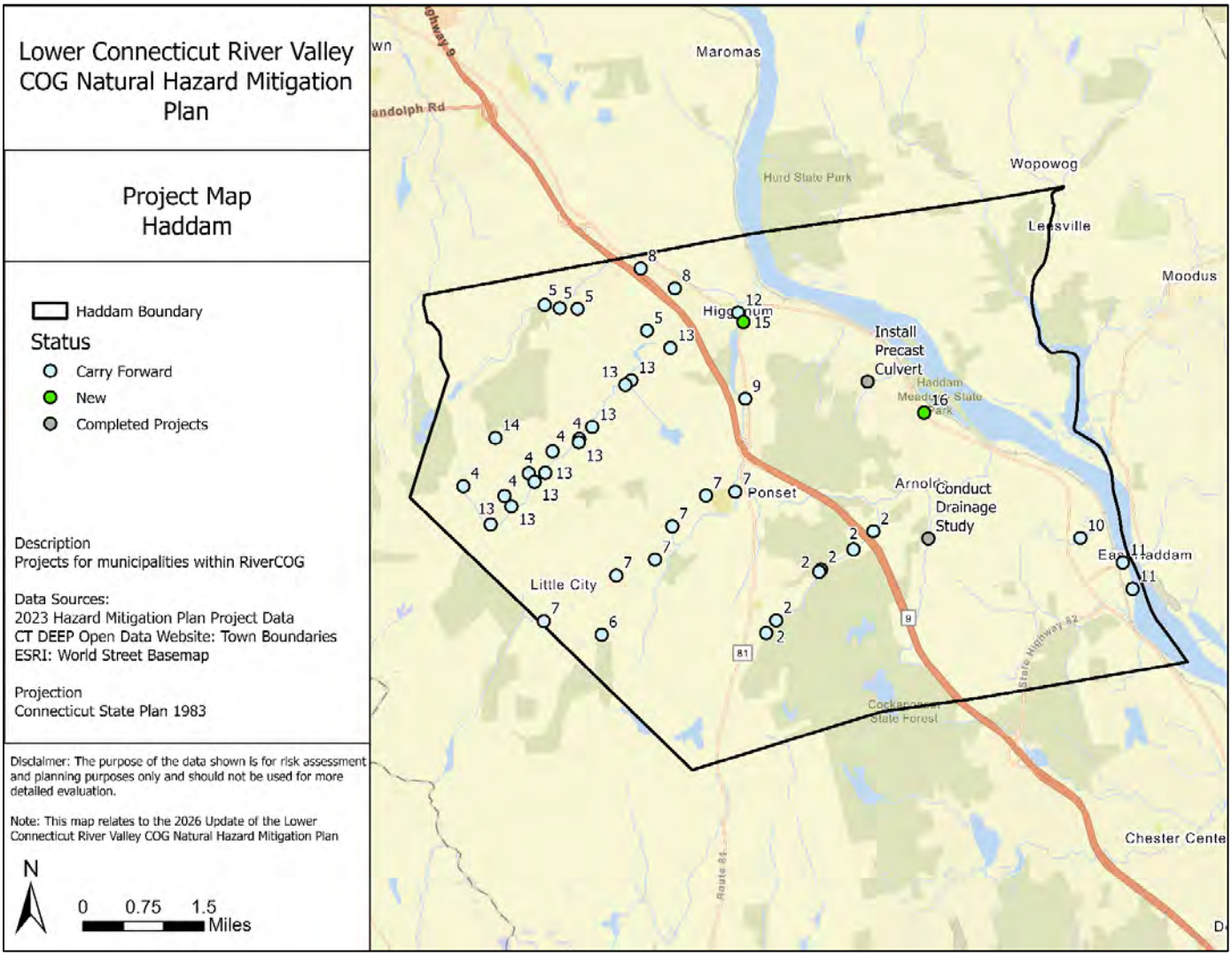


Figure 5.1. Carried Forward, New, and Completed Projects in Haddam

Table 5.3. Haddam Hazard Mitigation Strategies and Prioritization

KEY: SW= Severe Weather, TW = Tornado/Wind, ET = Extreme Temperatures, WS=Winter Storm, F = Flood, TI = Tree Damage and Invasive Species, WF = Wildfire, D = Drought, E = Earthquake, CC = Climate Change

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
1 mod	2-1	Relocate the DPW which is partially located in the SFHA, or design and complete an onsite floodproof retrofit	DPW, BOS, BOF	$500,000 +	OB, Grants	2027-2028	SW, F, CC	0	0	1	0	1	1	0	1	1	0	1	0	0	0	8/H
2 mod	2-1	Evaluate the capacity of all stream crossing infrastructure along Beaver Meadow Road to identify components that need upgrades or repairs. Continue progress as funding is available	DPW, BOS, BOF	$25,000-$50,000	OB	2026-2030	SW, F, CC	1	0	0	0	1	0	0	0	1	0	1	0	1	0	7/H

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
3 mod	2-1	Continue monitoring tree assets that raise concerns, and coordinate with Eversource Vegetation Management on addressing these assets.	DPW	$1,000-$5,000	Staff Time	2026-2030	SW, TW, WS, TI, WF, CC	1	0	1	0	1	0	1	0	0	0	0	0	0	0	5/M
4	2-1	Upgrade 2 undersized culverts and aging, undersized bridge on Wiese Albert Road	DPW, BOS, BOF	$50,000-$100,000	OB, Grants	2025-2027	SW, F, CC	0	0	1	0	1	0	1	0	1	0	1	0	1	0	8/H

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
5	2-1	On Brainerd Hill Road: replace undersized culvert with single span bridge and drainage system, replace culvert (at Joseph Cir. Intersection) with a precast box culvert, and conduct a drainage study and upgrade culvert over inlet to Black Shop Pond.	DPW, BOS, BOF	$200,000 +	OB, Grant	2026-2027	SW, F, CC	0	0	1	0	1	0	1	0	1	0	1	0	1	0	8/H
6	2-1	On Jackson Road: Conduct a drainage study and replace undersized culverts over an unnamed stream and Ponset Brook.	DPW, BOS, BOF	$200,000 +	OB, Grant	2027-2028	SW, F, CC	0	0	1	0	1	0	1	0	1	0	1	0	1	0	8/H

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
7	2-1	Conduct drainage study and replace culverts over Ponset Brook at Valley Ridge Drive and Little City Road.	DPW, BOS, BOF	$200,000 +	OB, Grant	2027-2028	SW, F, CC	0	0	1	1	1	0	0	0	1	0	1	0	0	0	8/H
8	2-1	Conduct drainage study for improvements along Bible Rock Brook at Thayer Road and Thayer Road Extension.	DPW, BOS, BOF	$200,000 +	OB, Grant	2027-2028	SW, F, CC	0	0	1	1	1	0	0	0	1	0	1	0	0	0	8/H
9	2-1	Conduct drainage study along the brook at Dish Mill Road (North).	DPW, BOS, BOF	$50,000-$100,000	OB, Staff Time	2026-2027	SW, F, CC	0	0	1	1	1	0	0	0	1	0	1	0	0	0	8/H
10	2-1	On Camp Bethel Road: Conduct drainage study and upgrade undersized culvert over Rutty Creek.	DPW, BOS, BOF	$100,000 +	OB, Grant	2027-2028	SW, F, CC	0	0	1	1	1	0	0	0	1	0	1	0	0	0	8/H

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
11	3-1	Educate the property owners of mitigation actions they can take in areas of increased risk including Andrews Marina/Harpers Landing, and little Meadow Road (elevate or floodproof homes).	BOS, LUO, FM, BO	$1,000-$5,000	Staff Time	2026	SW, F, CC	1	0	1	0	1	0	1	0	1	0	0	0	0	0	6/M
12	1-1	Identify strategies to minimize remaining flood risk at the Higganum Center, including debris maintenance.	DPW, BOS, BOF	$1,000-$10,000	Staff Time	2026-2027	SW, WS, F, CC	0	0	1	0	1	0	1	0	1	0	1	0	0	0	7/H
13	2-1	Upgrade culverts on Candlewood Hill Road.	DPW, BOS, BOF	$50,000-$100,000	OB, Grant	2027	SW, F, CC	0	0	1	1	1	0	0	0	1	0	1	0	0	0	8/H

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
14	2-1	On Foot Hills Road: Conduct drainage study to remedy roadway flooding and winter icing problems.	DPW, BOS, BOF	$10,000-$25,000	OB, Grant	2027	SW, WS, F, CC	0	0	1	1	1	0	0	0	1	0	1	0	0	0	8/H
15 new	2-1	Complete a study to identify solutions to flooding behind Village Plaza which prevents access to the Post Office and restaurants	DPW, P&Z, BOS	$75,000+	OB, HMA	2027	SW, F, CC	0	0	1	1	1	0	0	0	1	0	1	0	0	0	8/H
16 new	2-1	Under the Resilient Connecticut program, work with CIRCA to develop a scope of work for a study and concept design for the CIRCA identified Resilience Opportunity Area (ROAR)	DPW, P&Z, BOS	$150,000 +	OB, CIRCA Resilient CT	2027-2028	SW, F, CC, ET	0	0	1	0	1	0	1	0	1	0	1	0	0	0	7/H

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
17 new	2-1, 3-1	Conduct a survey of elementary schools to evaluate if bookshelves and other heavy stationary objects that could fall and cause injury during an earthquake are secured to walls or other structures. Where deficiencies are identified, develop a plan of recommended repairs and share it with school administrators.	EM, BOE	$2,000	OB	2027	E	1	0	0	1	1	1	0	0	1	0	0	0	1	0	3/L

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
18 new	1-1	During future updates to municipal regulations and ordinances, consider a requirement for moisture sensing sprinkler for new development that includes irrigation systems to conserve water during periods of drought. Moisture sensing sprinklers prevent unnecessary use of irrigation when grass and soils are already wet.	LUO	$5,000	OB	2030	D	1	0	1	0	0	0	0	1	0	0	1	0	1	0	3/L

BO	Building Office	DPW	Department of Public Works
BOE	Board of Education	EM	Emergency Management
BOF	Board of Finance	FM	Floodplain Manager
BOS	Board of Selectman	LUO	Land Use Office



LOWER CONNECTICUT RIVER VALLEY COUNCIL OF GOVERNMENTS
HAZARD MITIGATION PLAN 2026 UPDATE

TOWN OF KILLINGWORTH MUNICIPAL ANNEX

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1. Contact Information

1.1. Point of Contact

Table 1.1. Town of Killingworth Contact Information

Information	Town of Killingworth
Contact Name	Anthony Gentile, Emergency Management Director
Address	323 Route 81 Killingworth, CT 06419
Telephone	(860) 663-3508 (Office), (860) 391-2512 (Cell)
Email	emergencymanage@townofkillingworth.com

1.2. Local Planning Team

The following representatives listed in Table 1.2 participated in meetings and provided input, data, and council toward the development of Volume 1 and this Killingworth, Connecticut Annex.

Table 1.2. Town of Killingworth Planning Team

Name	Title
Eric Couture	1st Selectman
Anthony Gentile*	Emergency Management Director
Christopher Mello	Public Works Director

**Local Coordinator*

1.3. Lower Connecticut River Valley Council of Governments

Table 1.3. RiverCOG Contact Information

Information	RiverCOG Information
Contact Name	Margot Burns – Senior Environmental Planner
Address	RiverCOG 145 Dennison Rd. Essex, CT 06426
Telephone	(860) 581-8554 x 702
Email	mburns@rivercog.org

2. Jurisdiction Profile

2.1. Town Profile

Killingworth historically has been a rural community without much industry or commerce. The town dates from 1663 and developed as a farming community with some industry in the form of water-powered mills. Today, Killingworth is primarily rural and, to a lesser degree, ex-urban in character. While Killingworth does not have a "town center" most community amenities and features are easily accessible along Route 81 between Routes 148 and 80. Located within that corridor are municipal offices, schools, and churches, with most commercial development just to the south of the Route 80 and 81 rotary. In addition, there are several highly visited attractions in town, including Chatfield Hollow State Park, Lavender Pond Farm, and Parmelee Farm.

Killingworth is bounded on the east by Chester, Deep River, and Westbrook; to the south by Clinton; to the north by Durham and Haddam; and to the west by Madison. The total area in Killingworth is 36.0 square miles, of which 35.4 square miles is land area. It does not include any coastal area fronting either Long Island Sound or the Connecticut River. Killingworth is located on the primary transportation corridor of Route 80, which links the RiverCOG region with the City of New Haven.

Figure 2.1 shows the location and corporate boundaries of Killingworth.

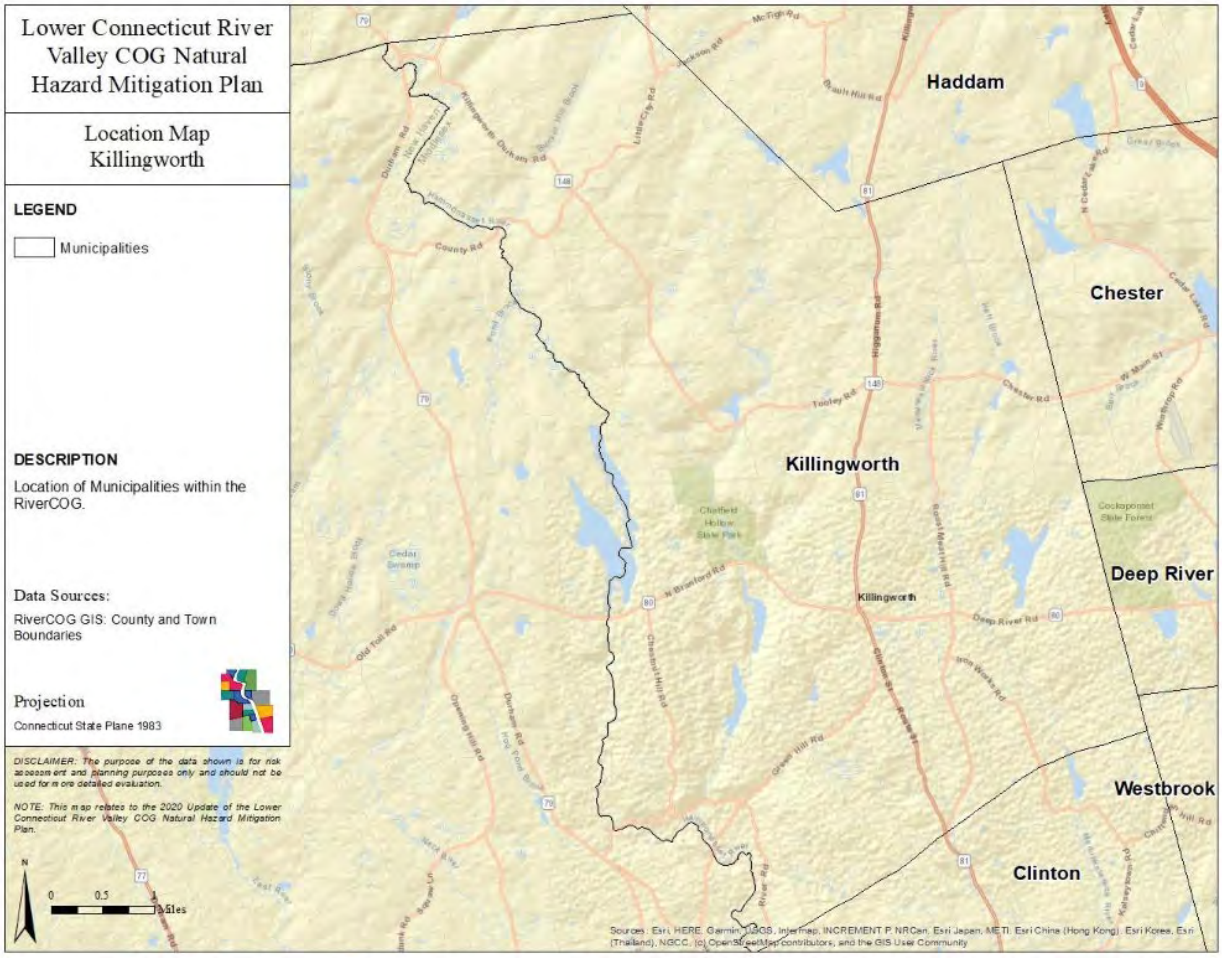


Figure 2.1. Killingworth Location

The topography of Killingworth ranges from gently rolling terrain in the valleys to steep hilly terrain in several upland areas. The land area of Killingworth consists of mainly soil developed on well-drained, glacial, stratified drift in the valleys and glacial till and bedrock in the uplands.

Killingworth is drained by three river basins running directly into Long Island Sound. Most of the town lies within the Hammonasset River Basin. The eastern portion of town lies in the Menunketesuck River Basin. A smaller area between these two in the southern portion of town lies within the Indian River Basin. The largest surface-water bodies are dammed reservoirs. The Hammonasset Reservoir (South Central Connecticut Regional Water Authority (RWA)) lies in the Hammonasset River Basin and has a surface area of 377 acres and a total storage capacity of 1400 million gallons. This reservoir straddles the border of Madison and Killingworth. The Killingworth Reservoir (owned by The Connecticut Water Company) lies in the Menunketesuck River Basin and has a surface area of 107 acres and total storage capacity of 415 million gallons. Deer Lake and Forster's Ponds are formed by dams along streams running into the Hammonasset River.

According to the latest POCD (2018), the predominant land use in Killingworth is for residential purposes. The Commercial District is located in the center of town along Routes 80 and 81. Commercial development is in the form of strip development and small, commercial clusters. The commercial buildings are not large except for two large buildings near the traffic circle. The most concentrated development is the shopping center just south of Killingworth circle on Route 81. A total of 50 acres are devoted to commercial uses. The industrial use category is small in extent with two acres currently used for industrial purposes. The Industrial Zone is located on Route 80 at the Deep River Town line. Small portions of Killingworth land are taken up by institutional uses, town and state roads and highways, and utilities.

The remaining land is designated open space including State forests and parks, Town-owned lands, Land Trust land, and water company land. More than 5,000 acres are currently committed to open space. In total, Killingworth has more land set aside as committed open space than any other town in the Estuary Region. Killingworth plays a unique role in this respect. Rarely does a town have within its jurisdiction such a large amount of land set aside for recreation, conservation or natural resource purposes as Killingworth does.

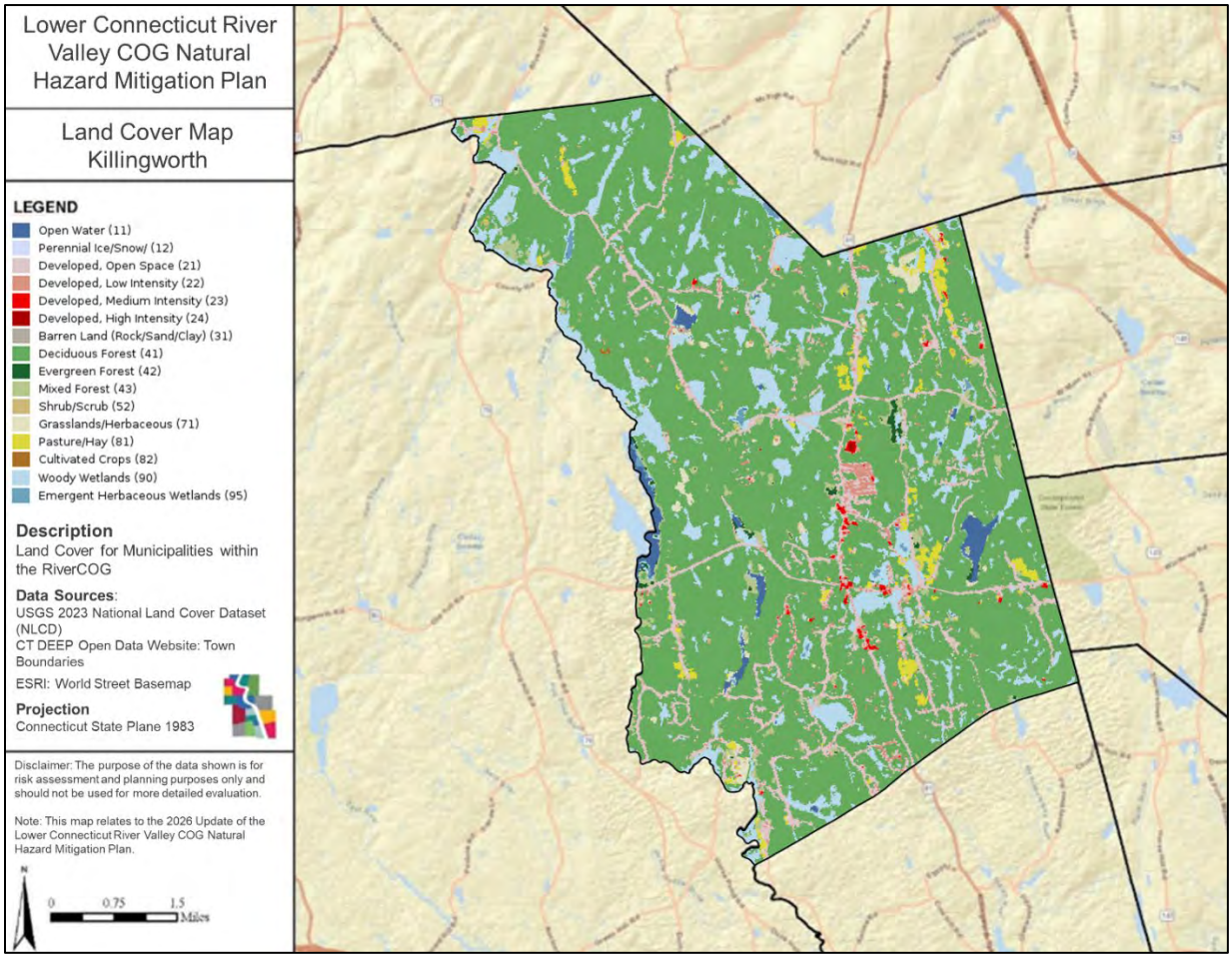


Figure 2.2. Killingworth Land Cover

The 2023 American Community Survey (ACS) reported a town population of 6,219 people which represents an 2.7% decrease from 2019. [1] Figure 2.3 provides a demographic profile for Killingworth. [2]

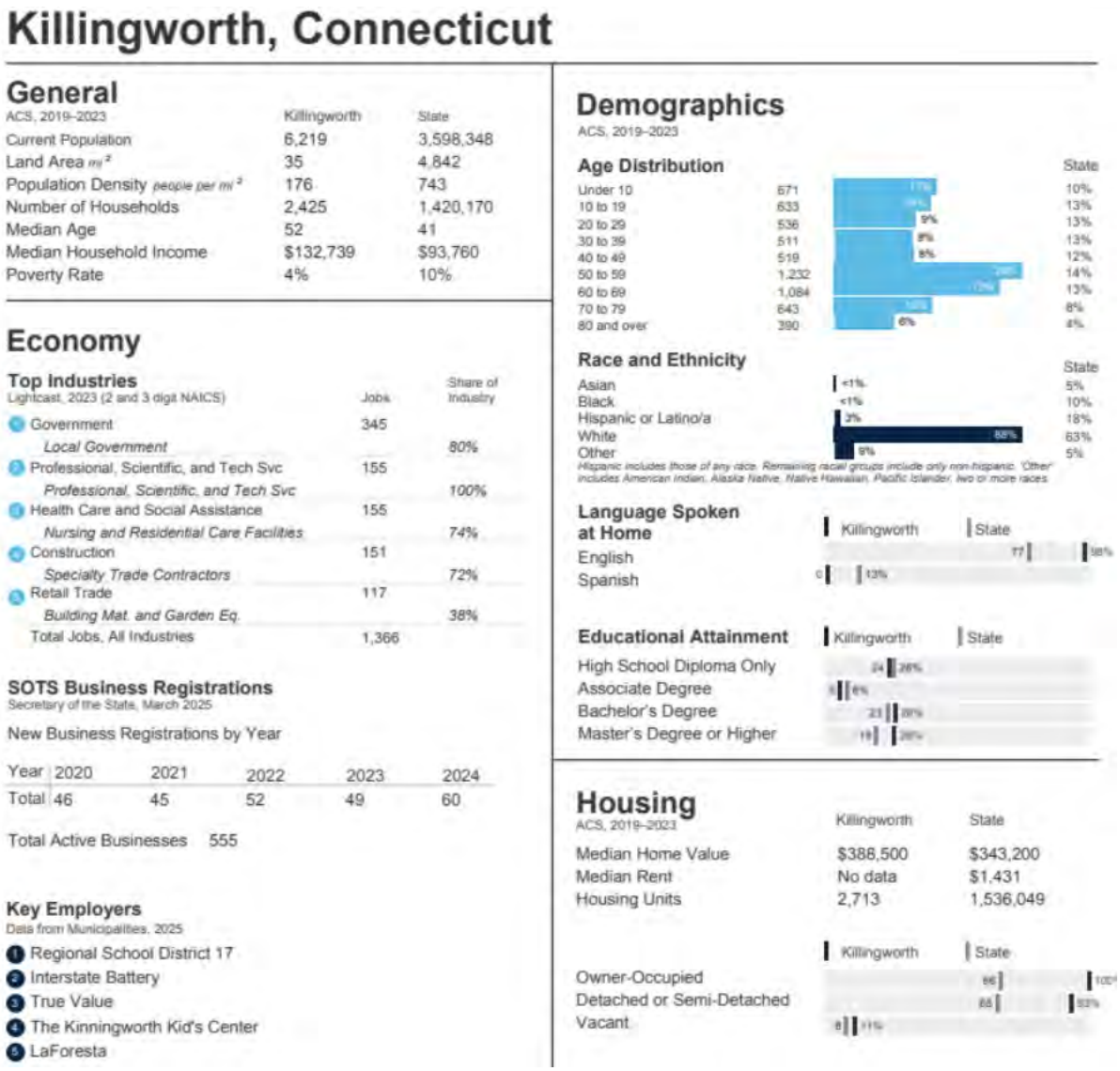


Figure 2.3. Town of Killingworth Demographics

2.2. Climate

Average weather data in Killingworth was sourced from the Weather Spark website (weatherspark.com).

[1] https://s3-us-west-2.amazonaws.com/cerc-pdfs/2025/Killingworth.pdf
[2] - Published on Town of Killingworth, CT *(Source: Connecticut Data Collaborative)*

It is worth noting that because Killingworth is only about ten miles inland, the town experiences many of the high wind events coming from the Long Island Sound, while because of its relatively high elevation, it is also consistently colder, snowier, and icier than shoreline towns.

Over the course of the year, the temperature typically varies from 23°F to 81°F and is rarely below 9°F or above 89°F. The warm season lasts for 3.4 months, from June 2 to September 14, with an average daily high temperature above 73°F. The hottest day of the year is July 20, with an average high of 81°F and low of 65°F. The cold season lasts for 3.4 months, from December 1 to March 13, with an average daily high temperature below 46°F. The coldest day of the year is January 30, with an average low of 23°F and high of 37°F.

Killingworth does not experience significant seasonal variation in the frequency of wet days (i.e., those with greater than 0.04 inches of liquid or liquid-equivalent precipitation). The frequency ranges from 23% to 33%, with an average value of 27%. The most rain falls during the 31 days centered around April 3, with an average total accumulation of 3.8 inches. The snowy period of the year lasts for 5.0 months, from November 12 to April 10, with a sliding 31-day liquid-equivalent snowfall of at least 0.1 inches. The most snow falls during the 31 days centered around January 27, with an average total liquid-equivalent accumulation of 0.8 inches.

The windier part of the year lasts for 6.2 months, from October 14 to April 21, with average wind speeds of more than 6.9 miles per hour. The windiest day of the year is January 30, with an average hourly wind speed of 8.6 miles per hour.

As global temperatures continue to climb, New England as a whole can expect more frequent and longer heat waves and more days of extreme heat throughout summer months.

2.3. Government Style

The Town of Killingworth has a Selectmen-Town Meeting form of government. The First Selectman is the chief elected official and chairman of a three-member Board of Selectmen, who collectively serve as the executive branch. The Town Meeting is the legislative body; it is composed of all residents who are registered voters or who own property assessed at $1,000 or more. Numerous specialized boards and commissions of elected or appointed residents have responsibility for specific functions of town governance.

2.4. Development Trends

Very little development is under way in Killingworth or since the last plan update in 2021. Most development that does occur is of single-family homes. The Killingworth population has leveled off with slight increase since 2020. Additionally, open space preservation is important to Killingworth residents, so major development is not foreseen. A minor amount of redevelopment may occur in the small commercial areas. No new development in SFHAs since the last plan update. No increases in vulnerability are anticipated.

2.5. Town-Specific Hazard Concerns

Rising from a low of about 35 feet above sea level in some areas to over 600 feet above sea level in others, Killingworth has areas that are affected very differently by the same weather events. The effects of high winds, floods, and hurricanes are of highest concern to the Town. Specifically, the Town is concerned about flooding or road washouts and trees and limbs falling on power lines and causing outages. Since 2021, There has recently been an increase in storminess and wind events, with an increased tendency for microbursts in the last few years, causing downed trees, power outages and damage. Municipal staff reported several other specific hazard concern issues.

Spring floods are common and are caused by rainfall in combination with snowmelt. Floods in late summer and fall are usually the result of hurricanes or other storms moving northeast along the Atlantic coast. Winter floods result from occasional thaws, particularly in years of heavy snowfall.

With its dense forest coverage, abundant water features, and variable topography, Killingworth is slightly more protected from extreme heat and high winds than some of its neighbors.

Municipal staff reported several specific hazard concern issues, which are listed below. The information below is intended to supplement the hazard-specific analysis completed in Section 2, of Volume I of this plan. Not all hazards impacting Killingworth, and analyzed in Volume I, are included in this annex.

A note: To preserve the reader's ability to align RiverCOG-Level and town-level hazard identification and risk analysis, the order of the following hazards aligns with the order of hazards in Volume I. Individual towns have ranked these hazards differently. This town-level ranking can be found in Section 3.3 Hazard Risk Ranking.

2.5.1. Severe Winter Weather

Rising from a low of about 35 feet above sea level in some areas to over 600 feet above sea level in others, Killingworth has areas that are affected very differently by the same weather events. Winter storms are part of life in Killingworth and are normally taken as a matter of course. Winter storms are most likely between November 1 and April 1, but as in October 2011, storms can happen outside that time frame, and unseasonable storms can be especially damaging.

Snowstorms cause significant disruption and damage, but often do not result in an emergency declaration, making federal funding for recovery or mitigation inaccessible. The Fire Department, part of Town Hall, and the emergency shelters have flat roofs, creating a risk of collapse during a heavy snowfall. There are many dead trees in Town due to the impacts of Emerald Ash Borer and other insect infestations and beech bark disease and previous storms. There were two major winter storms in January and February of 2026 resulting in significant snowfall, however there was minimal damage. These stands of dead trees throughout town exacerbate the potential effects of certain hazards, such as hurricanes, nor'easters, and wildfires.

2.5.2. Flooding

Flooding - Riverine and Inland Flooding

Killingworth is located on the primary transportation corridor of Route 80. Flooding in Killingworth occurs in every season of the year. Spring floods are common and are caused by rainfall in combination with snowmelt. In some areas of town, roads are periodically closed, owing to flooding or winter storms, and access becomes an important issue for residents. The severity of the floods depends on the type of rain event, duration, and ground conditions. Killingworth has numerous small and large streams, ponds, and reservoirs. As evidenced from the damage in a 1982 flood event, flooding is an important hazard for mitigation planning within Killingworth.

Development of single-family homes continues to incrementally increase the rate of runoff to streams by increasing impermeable surfaces; coupled with projections of increased rainfall rates due to climate change, flooding along rivers is expected to continue to be a challenge. This challenge will primarily affect infrastructure and natural or recreational areas, as there are few homes located in flood prone areas. The FEMA FIRMs are reportedly based on older hydrology and do not consider recent development and newer runoff patterns; therefore, they do not accurately reflect flood risk.

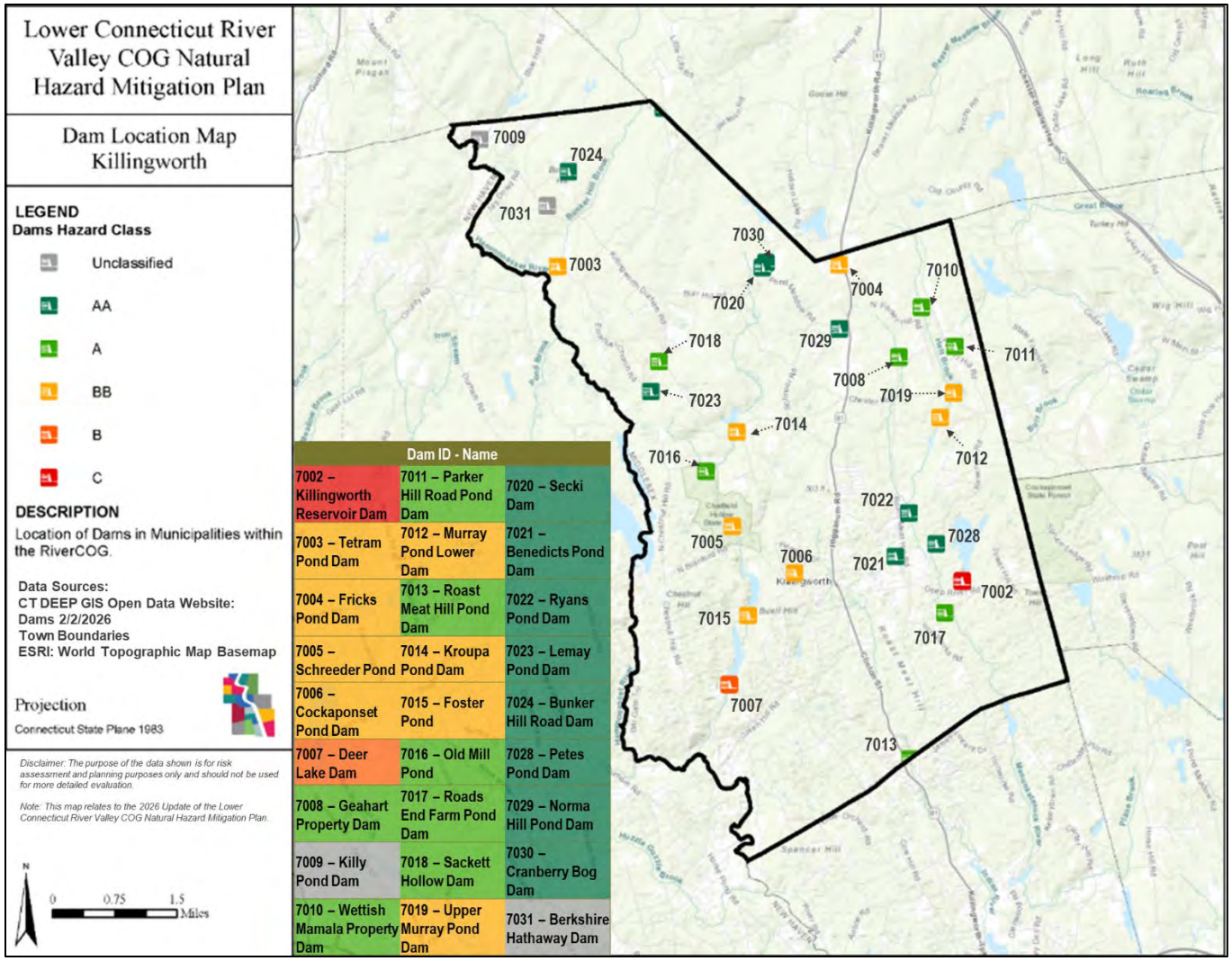
Specific roadways at risk from flooding include:

- Reservoir Road
- Emanuel Church Road, Bethke Road, and areas along Roast Meat Hill Road (where some improvements have been made): risk of flooding and washouts; in need of road or culvert repair
- Certain parts of Route 148 (occasionally)
- Green Hill Road, River Road, Lovers Lane (usually closed during winter months): flood in large storms, with more than 5 inches of rain. Flooding of Lovers Lane regularly forces traffic rerouting that causes backups that can hinder emergency vehicle access.

2.5.3. Dam Breach

The town of Killingworth has a total of 29 dams within its borders, according to the CT DEEP registry. Four dams have unclassified hazard classes. Eight dams are in the Negligible Hazard class (AA); six are classified as Low Hazard (A); nine are classified as Moderate Hazard (BB); and two are classified High Hazard (C).

Figure 2.4 shows the location of all dams within Killingworth (with coordinates for mapping). Moderate, Significant and high hazard-class dams are presented in Table 2.1. A full list of dams is provided in Appendix B.



*Hammonaset Dam is primarily in Madison and not shown.

Figure 2.4. Location of Dams, Killingworth, CT

Table 2.1. Moderate, Significant and High Hazard Dams, Killingworth, CT

CT Dam #	Dam Name	Hazard Class	Owner
7003	Tetram Pond Dam	BB - Moderate	Hammonassett Fishing Association
7004	Fricks Pond Dam	BB - Moderate	Private – Recently Breached
7005	Schreeder Pond	BB - Moderate	Connecticut DEEP
7006	Cockaponset Pond Dam	BB - Moderate	Silverbush
7012	Murray Pond Lower Dam	BB - Moderate	Sawmill Hollow Incorporated, Swensen
7014	Kroupa Pond Dam*	BB - Moderate	Hutchins
7015	Foster Pond	BB - Moderate	Connecticut DEEP
7019	Upper Murray Pond Dam	BB - Moderate	Accola
7007	Deer Lake Dam	B – Significant	Pathfinders, Inc.
7002	Killingworth Reservoir Dam	C - High	Connecticut Water Company
7001	Hammonasset Dam	C-High	So. Central RWA – only partially in Killingsworth

*Kroupa Pond Dam serves as the base for Rte. 146. There has been some sagging requiring emergency buttressing by DOT in December of 2025. More work is planned.

In 1982, the Paper Mill Dam on the south end of Deer Lake failed, sending water downstream which washed out a portion of Paper Mill Road. The Deer Lake Dam has had issues in the past but is privately owned and not monitored by the Town. There have been no issues at the Hammonasset Dam (owned by RWA). Although there is only one recorded dam failure in Killingworth, the risk is present. Old dams, some dating to the 1700s, can become overburdened during flooding events and heavy rainstorms. The dams, if not maintained properly could collapse under the stress of more water than normal.

A breach of the Killingworth Reservoir Dam would inundate primarily undeveloped portions of properties in the Town of Killingworth along the Menunketesuck River.

- Very few local roads would be inundated. However, Route 80 (a major west-east arterial road) would be significantly flooded. This is considered the primary risk in the Town of Killingworth.

Since the 2021 plan update, the privately owned Frick's Pond Dam was breached as part of an improvement project at the pond. As noted below the table, Kroupa Pond Dam serves as the base for Rte. 148. There has been some sagging requiring emergency buttressing by DOT in December of 2025. More work is planned.

2.5.4. Hurricanes and Tropical Storms

The primary risk for Killingworth in the event of a hurricane is high wind and stream and river flooding from heavy rain. High winds damage power lines, trees, and mobile homes. Most recently, Killingworth was affected by the remnants of Hurricane Ida, on September 1, 2021; Tropical Storm

Isiais, on August 4, 2020; Superstorm Sandy, on October 29, 2012; Tropical Storm Irene, on September 2, 2011; all of which caused extensive damage to the electric grid, blocked roads, damaged property, and caused sustained power outages. No damage from hurricanes or tropical storms have been noted since the adoption of the 2021 update to this plan.

If rainfall totals are high enough, dams, especially those on small ponds, could become overstressed and suffer a breach. Many smaller, less significant dams throughout Killingworth could collapse, causing extreme flooding in lower elevations. In the largest category 3 and 4 storms, storm surge from Long Island Sound could travel up the Hammonasset River, reaching the very southwestern portion of Killingworth near the Clinton and Madison borders.

There are many dead trees in Town due to the impacts of Emerald Ash Borer and previous storms. These stands of dead trees throughout town exacerbate the potential effects of certain hazards, such as hurricanes, nor'easters, Tornados, microbursts and wildfires.

2.5.5. Tornado

Killingworth's rolling terrain makes a sustained tornado event unlikely. However, high wind can cause considerable damage throughout town. While historically tornado damage is minimal in Middlesex County, tornadoes do occur in Connecticut. Killingworth is likely to experience high wind but not likely to experience a tornado. High wind events in Killingworth can cause trees and tree limbs to collapse on power lines, taking out power, phone service, and other forms of communication. Dead trees throughout town are expected to exacerbate these hazards.

Residents of the 300-unit Beechwood Community are particularly susceptible to tornadoes. These are manufactured homes, and while many older "trailers" have been replaced with newer, stronger manufactured buildings, the older units are not permanently fastened to the ground and could be destroyed by tornadoes.

2.5.6. Earthquakes

Although earthquakes in the region are rare in Killingworth there is a risk of one happening. As recently as March 23, 2011, the village of Moodus in East Haddam, just northeast of Killingworth, experienced a tremor of magnitude 1.3 on the Richter scale. With numerous older buildings in Killingworth not built to resist earthquakes, a major event could cause many buildings to collapse. However, the impacts from the more common tremors that affect the area are limited. There are no known building failures in the area due to an earthquake. Most buildings in Killingworth are two stories or less and wood-framed, further reducing vulnerability. Since the last plan update, there was a low magnitude quakes along the Moodus fault line in January of 2026 (mag. 1.9). It did not cause damage.

2.5.7. Drought and Wildfire

Severe droughts are not frequently occurring natural events, but flashy droughts have been occurring with some regularity. Summer tends to be the driest time, while fall spring and winter tend to be quite wet. The largest threat of drought conditions in Killingworth is the potential for fire. The Fire Department is volunteer, and does not own any all-terrain vehicles, making it difficult to access remote forest fires. Large expanses of forested land are present throughout town. Areas of town that are not heavily forested are the exception. Roads, bodies of water, and streams provide breaks which would make it difficult for a brush fire to spread. Streams and water bodies are abundant in Killingworth and would offer some natural protection against the spread of fire. These water bodies would also provide the water necessary to fire crews battling the flames. The Town requires open burning permits through the state program, but unauthorized burning does occur. As noted in the previous subsection, stands of dead trees throughout town exacerbate the potential effects of certain hazards including wildfires. Much like the rest of the region, wildfire in an increasing concern. However, no significant events have occurred in Killingworth since the last plan update in 2021. Killingworth uses tankers for fire suppression and mutual aid. There are a series of fire ponds throughout town that are regularly inspected and maintained on an annual basis by the Fire Department. Fire code requires new subdivisions to have fire tanks installed.

2.5.8. Extreme Temperature

Killingworth falls in the humid continental climate zone, as does much of interior Connecticut. The elevated summer temperatures bring the risk of extreme heat. With its dense forest coverage and abundant water features, Killingworth is slightly more protected from extreme heat than some of its neighbors, but heat waves do occur.

Elderly and very young populations, especially those living in homes with no air conditioning, are most likely to be adversely impacted by extreme heat. Dehydration, heat stroke, and other negative health effects are likely during heat waves.

Physical infrastructure can also be affected negatively by extreme heat. Heat always brings with it the potential for strong thunderstorms, which could knock out power by downing trees. Asphalt, especially in places where there is not a substantial base, can buckle or crack significantly under heat. Extended periods of very high temperatures can also exacerbate droughts.

Energy Reliability

There are emergency generators at Town Hall and the middle school, which serves as a regional shelter. Middle School is only partially powered when on the generator

Climate Change

Municipal staff are concerned about the effect that changing weather patterns may have on the spread of mosquito-borne illnesses. Specifically, longer periods without major freezes may be contributing to increasing incidence of Eastern Equine Encephalitis. This is somewhat outside the scope of this plan. As noted previously, increases in high intensity short duration rainfall events and increased storminess have been observed.

3. Hazard Risk

3.1. Historical Events

Table 3.1 lists the Federal Disaster declarations for Middlesex County, for which Killingworth requested assistance. There have been no Presidentially Declared disasters since the adoption of the last plan update in 2021.

Table 3.1. Killingworth Natural Hazard Events

Type of Event	Date	Preliminary Damage Assessment
Flood Event (DR-1904)	04/23/2010	$4,700
Wind Event (DR-1904)	04/23/2010	$7,364
Winter Weather Event (DR-4046)	11/17/2011	$105,050
Hurricane Event (DR-4023)	09/02/2011	$207,871
Hurricane Event (DR-4087)	10/30/2012	$76,734
Winter Weather Event (DR-4106)	03/21/2013	$129,020
Flood Event (DR-4410)	12/05/2018	$655,811
Wind Event (DR-4410)	12/05/2018	$71,680
Tropical Storm Isaias (DR-4580)	1/12/2021	$180,003
Hurricane Ida (DR-4629)	10/30/2021	$27,425

3.2. Recent Events

The most recent flood event of note occurred in September 2018 during a flood event that affected most of Connecticut from the Fairfield area east-northeastward to the Lebanon area. During this storm, Killingworth received approximately 7 inches of rain in four hours. Flooding was mostly confined to floodplains and wetlands; however, several roads washed out due to undersized culverts that did not meet current engineering standards. Bethke Road is currently undergoing repairs related to that storm. Reservoirs also rose during that storm; the Connecticut Water Company evacuated the area downstream of Kelseytown Reservoir (including Clinton residents) due to concerns that the dam could be breached. The dam was ultimately found to be safe. Killingworth reports that the drought of 2016 did not cause any issues in Town. There may have been a few properties with private wells that experienced problems, but this was not widespread.

A tornado in 1998 caused tree damage in Killingworth but did not damage any structures. Two brushfires occurred in 2020.

Public assistance is often provided by FEMA after Presidentially declared disasters. Funding is typically for extraordinary expenses incurred by the community such as public safety and public works overtime, certain equipment and contracted resources and debris cleanup.

Total public assistance (PA) reimbursements (1998-2025) to the community were as follows:

- Flood Events: $660,511 ($24,463 annually)
- Hurricane (Wind) Events: $571,077 ($21,151 annually)
- Winter (Snow) Storm Events: $234,070 ($8,669 annually)

Table 3.2 through Table 3.4 list PA reimbursements in Killingworth.

Table 3.2. Flood Event PA Reimbursements, Killingworth, CT

Disaster #	1904	4410
Incident Dates	Mar-May 2010	Sep 2018
Declaration	4/23/2010	12/05/2018
Entity	FEMA PA Reimbursement	FEMA PA Reimbursement
State	$	$
Municipal	$	$
Nonprofit	$	$
Total	$4,700	$655,811
Annualized	$174	$24,289

Table 3.3. Hurricane Wind Event PA Reimbursements, Killingworth, CT

Disaster #	1904	4023	4087	4410	4580	4629
Incident Dates	Mar-May 2010	Aug-Sep 2011 (Tropical Storm Irene)	Oct-Nov 2012 (SuperStorm Sandy)	Sept 2018	Jan 2021 (Tropical Storm Isaias)	Oct 2021 (Hurricane Ida)
Declaration	4/23/2010	9/2/2011	10/30/2012	12/05/2018	1/12/2021	10/30/2021
Entity	FEMA PA Reimbursement	FEMA PA Reimbursement	FEMA PA Reimbursement	FEMA PA Reimbursement	FEMA PA Reimbursement	FEMA PA Reimbursement
State	$	$	$	$	$	$
Municipal	$	$	$	$	$	$
Nonprofit	$	$	$	$	$	$
Total	$7,364	$207,871	$76,734	$71,680	$180,003	$27,425
Annualized	**$273**	**$7,699**	**$2,842**	**$2,655**	**$6,667**	**$1,016**

Table 3.4. Winter Storm PA Reimbursements, Killingworth, CT

Disaster #	4046	4106
Incident Dates	Oct 2011	Feb 2013
Declaration	11/17/2011	3/21/13
Entity	FEMA PA Reimbursement	FEMA PA Reimbursement
State	$	$
Municipal	$	$
Nonprofit	$	$
Total	$105,050	$129,020
Annualized	**$3,891**	**$4,779**

3.3. Hazard Risk Ranking

Killingworth participated in the regional hazard ranking conducted by the Hazard Mitigation Planning Team. Table 3.5 shows the scoring for the various ranking parameters that were used. The probability of each hazard is determined by assigning a level, from unlikely to highly likely, based on the likelihood of occurrence from historical data. The total impact value includes the affected area, primary impact, and secondary impact levels of each hazard. Level of Community Concern reflects the perceived risk of each hazard as indicated by respondents to question 6 of the community

survey. This question asks "How concerned are you about each of the following hazards impacting your home, business, community, or organization?" and received 204 responses.

Each of these five criteria are assigned weights, as well as point values for each of their responses. Each level's score is reflected in the matrix. The total score for each hazard is the probability score multiplied by its importance factor times the sum of the impact level scores multiplied by their importance factors. Based on this total score, the hazards are separated into three categories based on the hazard level they pose to the communities: Significant, Moderate, Limited. Table 3.5. Hazard Ranking Parameters provides a summary of the categories used to rank the hazards and their weighted values for the Composite Hazard Risk Index.

Table 3.5. Hazard Ranking Parameters

Criteria	Weight	1 Point	2 Points	3 Points	4 Points
Hazard Probability	2.0	**Unlikely** Less than 1% probability in next 100 years or has a recurrence interval of greater than every 100 years.	**Somewhat Likely** Between 1 and 10% probability in next year or has a recurrence interval of 11 to 100 years.	**Likely** Between 10 and 100% probability in next year or has a recurrence interval of 10 years or less	**Highly Likely** Near 100% probability in next year or happens every year.
Impact – Affected Area	0.8	**Isolated** Less than 1% of area affected	**Small** Between 1 and 10% of area affected	**Medium** Between 10 and 50% of area affected	**Large** Between 50 and 100% of area affected
Impact – Primary Impact	0.7	**Negligible** 1 to 10% of people or property	**Limited** 10% to 25% of people or property	**Critical** 25 to 50% of people or property	**Catastrophic** >50% of people or property
Impact – Secondary Impact	0.5	**Negligible** No loss of function, downtime, and/or evacuations	**Limited** Minimal loss of function, downtime, and/or evacuations	**Moderate** Some loss of function, downtime, and/or evacuations	**High** Major loss of function, downtime, and/or evacuations
Level of Community Concern	1.0	**Low Concern**	**Moderate Concern**	**High Concern**	-

The hazard risk ranking generated from this exercise, along with consideration of available data, was used to prioritize the level of effort assigned to further analysis of each hazard in the vulnerability analysis and lost estimation sections. All the participating communities agreed upon the results of the hazard ranking for the overall region. Based on the results of the exercise, the hazards were

ranked as follows in Table 3.5. Hazard Ranking Parameters. Killingworth endorsed the ranking as accurate for the Town.

Table 3.6. Summary of Potential Hazard Impacts.

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
Aquatic Invasive Species	Semi-quantitative, supplemented by state and municipal figures, recommend survey	**Highly Likely - 4**	**Large - 4**	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant
Terrestrial Invasive Species	Semi-quantitative, supplemented by state and municipal figures, recommend survey	**Highly Likely - 4**	**Large - 4**	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant
Tree Infestation	Semi-quantitative, supplemented by state and municipal figures, recommend survey	**Highly Likely - 4**	**Large - 4**	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
Hurricanes	Hazus for wind	Likely - 3	**Large - 4**	Critical - 3	Moderate - 3	High Concern - 3	15.8	Significant
Winter Storms (Snow, Ice, Wind, including Nor'easters)	Historic analysis for probability and annualized damages	**Highly Likely - 4**	**Large - 4**	Negligible - 1	Moderate - 3	Moderate Concern - 2	15.4	Significant
Flood – Riverine and Inland Flooding (Riverine, Drainage, Coastal Surge, Sea Level Rise - includes flooding from Nor'easters)	Hazus, SLR Overlay, FS Model Overlay, Historic data and damages for additional probability	Likely - 3	Medium - 3	Limited - 2	Moderate - 3	High Concern - 3	14.3	Significant
Extreme Heat and Cold	Qualitative based on historic	Likely - 3	**Large - 4**	Negligible - 1	Limited - 2	High Concern - 3	13.9	Moderate
Severe Weather (thunderstorms, downbursts, hail, lightning)	Historic analysis for probability and annualized damages	**Highly Likely - 4**	Small - 2	Negligible - 1	Limited - 2	Moderate Concern - 2	13.3	Moderate

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
Wildfire	Historic analysis for probability and annualized damages	Likely - 3	Small - 2	Critical - 3	Moderate - 3	Moderate Concern - 2	13.2	Moderate
Drought	Historic analysis for probability and annualized damages - some qualitative	Likely - 3	Medium - 3	Negligible - 1	Limited - 2	High Concern - 3	13.1	Moderate
Tornadoes	Historic analysis for probability and annualized damage - pulling in surrounding counties	Likely - 3	Isolated - 1	**Catastrophic - 4**	Limited - 2	Moderate Concern - 2	12.6	Moderate
Earthquakes	Hazus, 3 scenarios	Somewhat Likely - 2	Small - 2	**Catastrophic - 4**	**High - 4**	Low Concern - 1	11.4	Limited
Flooding from Dam Failure	Dam Inundation areas, Historic analysis for probability and annualized damages	Unlikely - 1	Small - 2	Limited - 2	Moderate - 3	Moderate Concern - 2	8.5	Limited

3.3.1. National Flood Insurance Program (NFIP) Participation

Overall, the National Flood Insurance Program (NFIP) has 16 policies in force with coverage to date totaling $6,204,300. Payments on these policies have equaled $34,173.

Repetitive Loss Property Detail

Killingworth has 2 RL property claims to date for 1 RL property $5,592.00. The single repetitive loss (RL) property that had previously existed in Killingworth, which was residential, most recently experienced flooding during the September 2018 storm. The property has reportedly been mitigated since that time.

4. Capability Assessment

This section discusses capabilities and operational procedures that Killingworth undertakes that contribute to or have the potential to contribute to hazard mitigation. It also notes deficiencies in those capabilities that could be addressed to strengthen resilience.

4.1. Critical Facilities

Public and private utility facilities are vital to maintaining or restoring normal services to areas of town before, during, and after a natural disaster.

Municipal facilities are concentrated within the "Town Campus" on Route 81. All these facilities have emergency generators. Killingworth uses many of its public buildings to provide relief for residents during minor natural hazard events such as heat waves.

The Haddam-Killingworth Middle/Intermediate School is the Town's primary, Red Cross-certified shelter; the facility is also designated as a regional shelter. The building has an emergency generator, but it is not able to support kitchen operations. A dedicated area is available for pet sheltering. The Killingworth Elementary School serves as a backup shelter and is also equipped with a generator. The Elementary School gymnasium is to be used as the first shelter in a high wind event owing to its lack of windows; however, space is limited. If the gymnasium becomes full during such an event, the central hallway at the Middle School can be used as well.

Since the adoption of the previous edition of the HMP, Killingworth has relocated its Emergency Operations Center (EOC) to a new location on the Town Campus, using a grant received in October of 2012. The new EOC is adjacent to the Resident State Trooper office and is built partly below ground. The old EOC has been converted into a food pantry. The Town has also installed a generator at the Public Works Garage.

Killingworth does not provide public sanitary sewer service and only has one community public water system in town (Beechwood Community); residents and businesses outside this service area rely on private wells and septic systems. Electricity is provided by Eversource. There is no natural gas system in Killingworth. Public and private utility facilities are subject to the same loss of power, potable

water, communications, and accessibility as the community they serve. Figure 4-1 shows the location of the critical facilities in Killingworth based on a regionally supplemented state critical facility layer.

Figure 4.1 shows the location of critical facilities in Killingworth which are identified at the regional level.

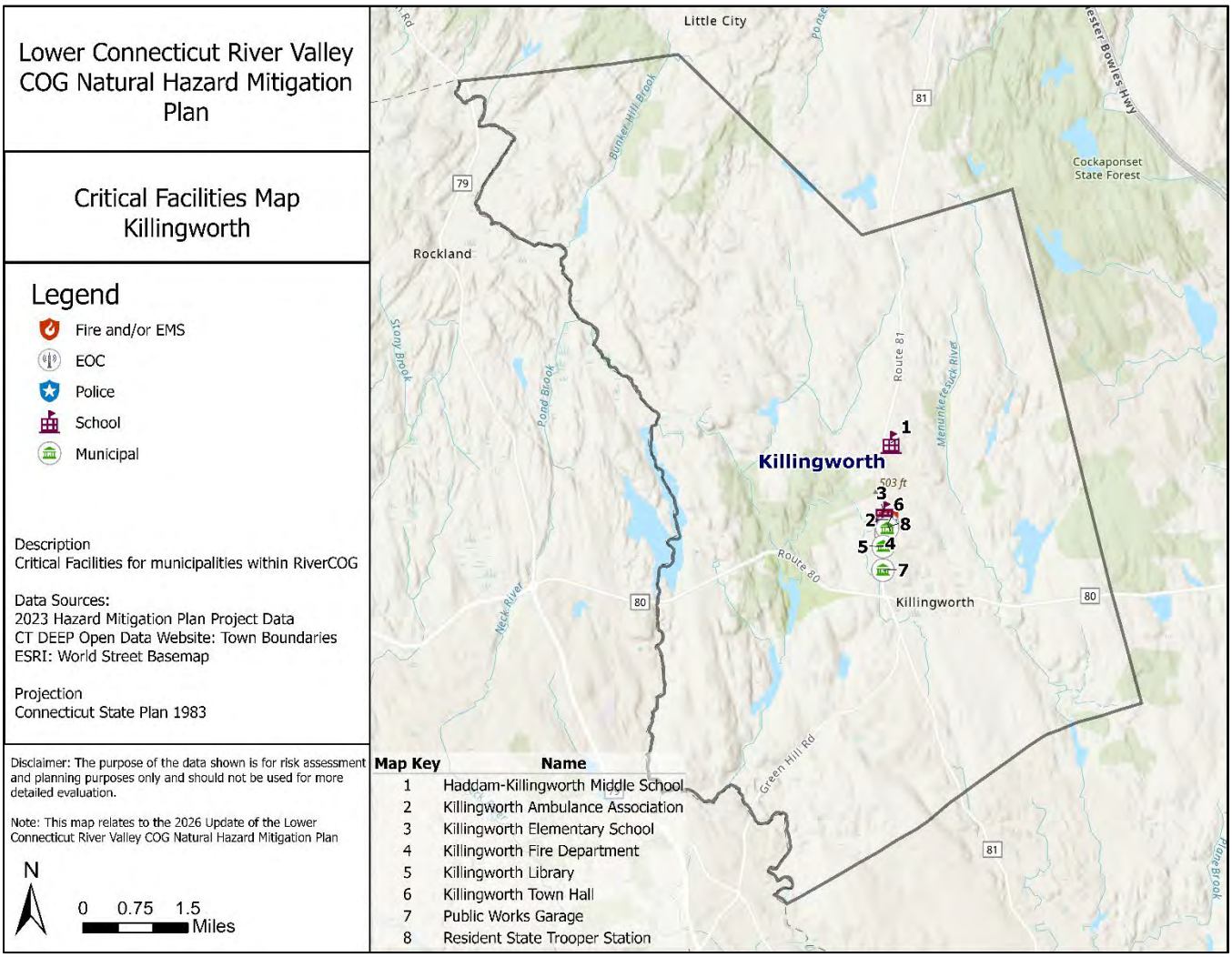


Figure 4.1. Location of Critical Facilities in Killingworth

**Gas station and care facilities are considered critical facilities by the state but are not identified as such by the town in the list contained in the following table.*

Table 4.1 lists critical facilities identified by the Town.

Table 4.1. Critical Facilities

Facility	Type	Address	Flood Zone	Generator	Notes
Killingworth Fire Department	Emergency Response	333 Route 81	No	Yes	
Resident State Trooper Station	Emergency Response	323 Route 81	No	Yes	
Killingworth Town Hall	Municipal	323 Route 81	No	Yes	
Killingworth Library	Municipal	301 Route 81	No		Not used as shelter. It is an unofficial warming and cooling center.
Killingworth Elementary School	Backup Shelter	340 Route 81	No	Yes	
Public Works Garage	Municipal	Route 81	No	Yes	
Emergency Operations Center	EOC	323 Route 81	No	Yes	Newly relocated to current site
Haddam-Killingworth Middle School	Shelter Pet Shelter	323 Route 81	No	Partial	No generator for kitchen Regional
Killingworth Ambulance Association	Emergency Response	333 Route 81	No	Yes	

The Town is concerned about its internal communication capabilities during a disaster. Municipal staff and emergency responders often have to rely on cell phones, which is not optimal because the geography is very hilly. In general, the EOC is able to communicate with emergency services, public works, and other disaster responders by radio, however this system is not wholly consistent. There were significant communications challenges during Tropical Storm Irene and Winter Storm Alfred in 2011, and again in Tropical Storm Isiais in August 2020, as cell phone towers were not operational.

9-1-1 calls for 12 Towns are routed through the Valley Shore Regional Dispatch Center and Reverse 9-1-1 calls are generated from it. The building is reportedly located in an area susceptible to flooding and has gone offline in the past during storms. Killingworth also has a separate Everbridge subscription through which it can communicate with targeted portions of the town as well as the town at large.

There is only one gas station in Killingworth (a second one closed in the last decade). Enabling residents to access fuel during recovery from a disaster is of concern to municipal officials because there is only the single existing gas station, and it does not have emergency power, or a hookup installed through which one of the Town's portable generators could be connected.

The Town has an old (around 30 years) portable generator, which could serve as backup if one of the newer, permanent generators fails.

The Town has not set up formal comfort stations outside of the traditional shelters.

There is a private addiction recovery center in the town, which is continuously growing, but would not be considered a public resource. If a hazard were to impact the town, this recovery center could drain public resources. However, this facility is not located in an area with high hazard risk.

4.2. Municipal Capabilities

The Town of Killingworth has a variety of natural hazard mitigation capabilities, including local regulations and ordinances, operational protocols, and emergency response capabilities. Following is a list of some highlighted capabilities identified by municipal staff.

4.2.1. Regulations and Ordinances

The most recent FEMA Flood Insurance Rate Map (FIRM), which identifies Special Flood Hazard Areas (SFHA), is effective as of February 6, 2013. Killingworth implements State Building Code and NFIP-compliant floodplain regulations within its local ordinances; floodplain regulations are enforced in the Flood Plain District on all new construction and substantial improvements. Substantial improvement is defined as improvements occurring over any 10-year period that cost 50% or more than the value of the structure at the beginning of that period. Subdivision and zoning regulations require new roads and lots be designed to allow access and egress for emergency vehicles. New construction is also required to minimize stormwater runoff and have firefighting water available where the water supply is inadequate.

The Killingworth POCD identifies open space preservation as a priority.

4.2.2. Operations and Procedures

Complaints related to flooding, drainage, or other hazard-related issues are routed to the First Selectman. Killingworth maintains a funding reserve from which it would be able to draw in the event that emergency spending was required following a disaster. The Town is confident in its ability to address any significant loss of tax revenue due to a disaster. Stormwater drainage infrastructure is inspected annually and maintenance and cleaning is performed as needed.

The Killingworth transfer station does not have a generator, and installing one is unlikely. The compactors require large amounts of power in short bursts, which generators often are not capable of producing. Instead, the Town has established agreements with waste haulers to bring in garbage trucks to do the compacting during outages. There is a contract with Equipment Share for a generator rental in case of emergency for the transfer station. Telecommunications towers in Killingworth are now fitted with backup power generators.

The Town has an Open Space Committee that recommends properties to be acquired and/or preserved. The Town works with the Killingworth Land Preservation Trust on acquisitions when funding is available.

Beechwood Community has tie-downs installed on the manufactured homes on site, per the State Building Code. Tie-downs are required for new buildings, which implies that some older structures may still be at risk.

Killingworth works with Eversource and property owners to identify dangerous trees and encourage their removal. The Fire Department and Public Works also cut trees and branches along roadways and Town property.

Killingworth has developed a GIS database of municipal assets and other features that can be used to guide hazard mitigation as well as emergency response and recovery.

4.2.3. Capital Improvements

Killingworth has a Capital Improvement Plan (CIP) that is updated annually and includes line items relevant to hazard mitigation. A CIP addresses municipal improvements including rights-of-way, land, housing, or utilities for public purposes.

4.2.4. Plan Integration with Other Planning Mechanisms

The town of Killingworth uses the mitigation plan to inform its 5-year capital improvement plan and associated annual budgets. Killingworth staff reported that the plan has not been formally incorporated into other planning documents. There is new legislation (P.A. 25-33) that now requires cities and towns to incorporate climate vulnerability (specifically including flooding) and resilience strategies into Plans of Conservation and Development (POCDs). Killingworth plans to comply with that new requirement during the next POCD Update. Further, communities are now required to develop and maintain affordable housing plans. The mitigation plan will help inform siting criteria within that plan.

4.2.5. Emergency Response Capabilities

Killingworth has equipped its critical infrastructure with generators, and the town has an additional, portable generator that can be used to provide emergency power to critical facilities or essential local businesses (such as gas stations) during a major power outage.

Killingworth maintains dry hydrants for firefighting, and most developments in Town have cisterns to store water. The Town recently relocated the dry hydrant at Frick Pond due to the partial breaching of the pond's dam and drawdown of the impoundment. The Town worked with the dam owner and CT DEEP to ensure sufficient water continued to be available to the hydrant. Overall, firefighting water coverage is considered adequate.

The regional public transit system, "9-Town Transit," provides capacity to transport residents without vehicles.

4.2.6. Outreach, Education, Communication, and Warnings

Killingworth is served by the Valley Shore Regional Dispatch Center, operated out of the Connecticut State Police Troop F building in Westbrook. All 9-1-1 calls in the area are routed through this facility, and the facility has the capacity to generate Reverse 9-1-1 calls. Killingworth is able to send Reverse 9-1-1 messages to

residents through the dispatch center. The Town also uses social media and traditional media to communicate with residents about emergencies.

Most of the Town's outreach to schools is regarding fire prevention. The Town also conducts facility tours of fire stations every few years. While the Town is supportive of schools running programs related to hazard mitigation, additional public education activities for children are not anticipated at this time. Killingworth conducts other education and outreach activities on occasion.

4.2.7. Other Capabilities

Table 4.2 (incl 4.2a and 4.2b), Table 4.3, and Table 4.4 list legal, regulatory, technical, administrative and financial capabilities that support hazard mitigation.

Table 4.2. Legal and Regulatory Capability

Table 4.2.a. Codes, Ordinances & Requirements

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Building Code	Yes	Yes	No	Yes	All municipalities enforce the State Building Code
Zoning Code	Yes	No	No	No	
Subdivisions	Yes	No	No	No	
Post Disaster Recovery	No	No	No	No	
Real Estate Disclosure		No	No	Yes	State requirement
Growth Management	No - but new housing requirements may warrant it.	No	No	No	
Site Plan Review	Yes	No	No	No	
Special Purpose (flood management, critical areas)	No	Yes	No	No	

Table 4.2.b. Planning Documents

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
POCD - due to be updated in 2028 - on website	Yes	No	No	Yes	Current
Floodplain or Basin Plan	No	No	No	No	

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Stormwater Plan	No	No	No	No	Tier 1 community
Capital Improvement Plan	Yes	No	No	No	
Habitat Conservation Plan	No	No	No	No	
Economic Development Plan	Yes in POCD	No	No	No	Regional Comprehensive Economic Development Strategy
Emergency Response Plan - updated often	Yes	No	No	Yes	LEOP templated provided by DEMHS. Working on improving .
Shoreline Management Plan	No	No	No	No	
Post Disaster Recovery Plan	No	No	No	Yes	LEOP templates provided by DEMHS

Table 4.3. Administrative and Technical Capability

Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Zoning enforcement officer and town engineer (contracted)
Engineers or professionals trained in building or infrastructure construction practices	Yes	Nathan L. Jacobsen, LLC., Town Engineer
Planners or engineers with an understanding of natural hazards	Yes	RiverCOG
Staff with training in benefit/cost analysis	No	
Floodplain manager	Yes	Inland Wetlands & Watercourses Officer
Surveyors	No	Contracted as needed
Personnel skilled or trained in GIS applications	Yes	RiverCOG; No Hazus, GIS yes, consultant
Emergency manager	Yes	Director of Emergency Management (volunteer)
Grant writers	Yes - Selectman and staff	First Selectman
Other	Yes	Scientists familiar with the hazards of the community; Many Yale Professors in Town

Table 4.4. Financial Resources

Financial Resources	Accessible or Eligible to Use?	Notes
Community Development Block Grants	Yes	Occasionally, not a regular source of funding
Capital Improvements Project Funding	Yes	
Authority to Levy Taxes for Specific Purposes	Yes	
User Fees for Water, Sewer, Gas or Electric Service	No	Septic fees
Incur Debt through General Obligation Bonds	Yes	
Incur Debt through Special Tax Bonds	Yes	
Incur Debt through Private Activity Bonds	Yes	
Withhold Public Expenditures in Hazard-Prone Areas	Yes (State)	
State Sponsored Grant Programs	Yes	
Development Impact Fees for Homebuyers or Developers	No	

Gaps in Capabilities

The town planning team identified the following gaps in the town's capabilities to address hazard threats:

- Killingworth is vulnerable to fire in part due to a lack of water supply for the use of fire suppression. The town needs dry hydrants – a bad drought would have a severe impact on water supply. New subdivisions are required to have a tank installed, but more could be done.
- Drones: The town would like to purchase a drone. They are useful for wildfire investigation and suppression, allowing responders to see footprint of fire. Killingworth has mutual aid partners with drones but could use their own. The zoning chairman has used a personal drone for zoning and wetlands complaints.

4.2.8. New Capabilities and Completed Actions

Since the last plan update in 2021 there have been many updated capabilities:

- Regional Housing Plan Requirement. Killingworth will opt into the RiverCOG regional plan currently under consideration. While the new housing plan requirement increases state authority to override local zoning to allow affordable housing projects, Killingworth feels its participation in the regional planning process will help with safeguards to ensure affordable housing is not built in hazard prone areas.
- The town acquired all-terrain firefighting equipment to access remote wildland fires
- Killingworth is at the lowest tier of the MS4 program but may move up to the next tier in the coming years.
- Emergency power has been installed at all municipal buildings located on Route 81 campus. A new EOC has been constructed adjacent to the Resident State Trooper office. The town has recently retrofitted the Transfer Station to allow it to run off a large generator (to be rented) in the event of a multi-day power outage.

5. Hazard Mitigation Action Plan

This section presents the progress made since the 2021 action plan and establishes new goals, objectives and actions identified for the 2026-2030 planning horizon.

5.1. Previous Mitigation Actions Disposition

During the process of developing the 2021 Killingworth Hazard Mitigation Plan, several hazard mitigation actions were identified to be pursued during the five-year planning horizon that followed. Table 5.1 presents the actions listed in that document, and the status of those actions.

Table 5.1. Status of Previous Mitigation Strategies and Actions.

Action	Description	Status	Notes
01	Explore and identify tools and technologies to spot and locate remote forest fires more quickly and accurately (for example, unmanned aerial vehicles [UAV, or drone], remote-operated camera systems, networks of sensors [such as "FireBug" or "LALI"], or cameras with thermal imaging)	Carry Forward	
02	Acquire all-terrain firefighting equipment to access remote wildland fires	Completed	
03	Develop a forest management plan that includes a study of access to potential remote wildland fires. Study should identify the best routes and prioritize roads for widening or other improvements to allow access.	Carry Forward	
04	Upgrade the Haddam-Killingworth Middle School generator to allow it to provide full power to the facility kitchen in addition to the rest of the building.	Carry Forward	
05	Review the disaster event response planning of local schools to ensure they are up to date.	Carry Forward	
06	Complete road and drainage repair projects to mitigate flooding on Emanuel Church Road	Carry Forward	Ongoing - should be completed by 2027

Action	Description	Status	Notes
07	Complete road and drainage repair projects to mitigate flooding on Bethke Road	Completed	
08	Complete road and drainage repair projects to mitigate flooding on Roast Meat Hill Road	Completed	
09	Conduct a hydraulic study of all culverts and bridges on public roads in Town to guide upgrading of undersized infrastructure	Carry Forward	
10	Implement mapping and monitoring of catch basins, storm water outfalls, and related infrastructure, and incorporate map files into the municipal GIS system	Carry Forward	
11	Explore options for selling wood scraps generated by tree and limb removal along powerlines to help fund tree maintenance and trimming efforts.	Deleted	
12	Review the University of Connecticut Stormwise Vegetation management Program (https://stormwise.uconn.edu) to determine whether it is appropriate for Killingworth and increase tree management budget from $75k.	Carry Forward	Killingworth takes tree management very seriously and may be meeting the intent of this program. Lots of maple and oak die-off have occurred.
13	Implement a public education initiative that includes handouts or pamphlets instructing homeowners on what to look for around their properties that may put their homes at risk, such as trees or branches over power lines, brush and debris close to the structure, the presence of dead trees, etc.	Carry Forward	
14	Work with Sun Communities to encourage renters living in trailers and mobile homes to install building tie-downs to mitigate potential damage due to high winds. This encouragement could be completed through public outreach and education.	Completed	
15	Use Town website and social media accounts to educate the public about	Carry Forward	

Action	Description	Status	Notes
	municipal hazard mitigation initiatives. Include maps of evacuation routes, storm surge areas, and shelters. Include options for mitigation of residential structures and business recovery and provide links to FEMA, NOAA, State OEM and RiverCOG websites for additional information.		
16	Develop a priority list for road reconstruction and elevation for roads which experience frequent flooding or are integral to evacuation. This includes bridges and culverts in need of upgrading or replacing. Work with CT DOT to encourage upgrades of State Roads and Bridges.	Carry Forward	
17	Implement an ordinance requiring newly installed generators to be kept a certain distance from buildings.	Carry Forward	

5.2. Updated Mitigation Goals, Objectives and Strategies

As noted in Section 3 of Volume 1, all the RiverCOG participating communities, including Killingworth, participated in setting regional goals and objectives. Killingworth has confirmed these goals and objectives valid for the Town's annex. The three goals and objectives are as follows:

Goal 1: Promote implementation of sound flood management and other natural hazard mitigation principles on a regional and local level. Note: Covers future development through policy, planning, regulation, emergency services, and environmental strategies.

- **Objective for Goal 1:** To promote the development, improvement and implementation of programs, policies, regulations and emergency services that result in the reduction of long-term risks to life and property.

Goal 2: Implementation of effective natural hazard mitigation projects at the regional and local level regional and local level. Note: Covers infrastructure and building related projects – the existing built environment.

- **Objective for Goal 2:** To enhance the ability of RiverCOG, other regional entities, and local communities to reduce or eliminate risks to life and property from natural hazards through cost-effective hazard mitigation projects, including avoidance.

Goal 3: Increase research, planning and outreach activities for the mitigation of natural hazards on a regional and local level. Note: Covers the people component of mitigation via outreach and education, and integration with other planning and continuous improvement through increased research.

- **Objective for Goal 3:** To increase general awareness of the region's natural hazards and encourage State agencies, local communities, and the public to be proactive in taking actions to reduce long-term risk to life and property.

The local planning team of Killingworth reviewed these goals and objectives during meetings in June of 2025 and acknowledged that they are still aligned with the priorities of the town.

5.2.1. Prioritization of Mitigation Strategies

In considering which projects, processes, and other measures to undertake in the upcoming plan period, municipal and regional officials evaluated the need to address problems and vulnerabilities in their communities against the communities' resources and capabilities. To prioritize mitigation strategies, a set of criteria commonly used by public administration officials and planners was applied to each proposed strategy. The method, called STAPLEE, is outlined in FEMA planning documents such as Developing the Mitigation Plan (FEMA 386-3) and Using Benefit-Cost Review in Mitigation Planning (FEMA 386-5). STAPLEE stands for the "Social, Technical, Administrative, Political, Legal, Economic, and Environmental" criteria for making planning decisions. Benefit-cost review was emphasized in the prioritization process. Criteria were divided into potential benefits (pros) and potential costs (cons) for each mitigation strategy. The following questions were asked about the proposed mitigation strategies:

Social:

- Benefits: Is the proposed strategy socially acceptable to the community?
- Costs: Are there any equity issues involved that would mean that one segment of the community could be treated unfairly? Will the action disrupt established neighborhoods, break up voting districts, or cause the relocation of lower-income people? Is the action compatible with present and future community values?

Technical:

- Benefits: Will the proposed strategy work? Will it reduce losses in the long term with minimal secondary impacts?
- Costs: Is the action technically feasible? Will it create more problems than it will solve? Does it solve the problem or only a symptom?

Administrative:

- Benefits: Does the project make it easier for the community to administrate future mitigation or emergency response actions?
- Costs: Does the community have the capability (staff, technical experts, and/or funding) to implement the action, or can it be readily obtained? Can the community perform the necessary maintenance? Can the project be accomplished in a timely manner?

Political:

- Benefits: Is the strategy politically beneficial? Is there public support both to implement and maintain the project? Is there a local champion willing to see the project to completion? Can the mitigation objectives be accomplished at the lowest cost to the community (grants, etc.)?
- Costs: Have political leaders participated in the planning process? Do project stakeholders support the project enough to ensure success? Have the stakeholders been offered the opportunity to participate in the planning process?

Legal:

- Benefits: Is there a technical, scientific, or legal basis for the mitigation action? Are the proper laws, ordinances, and resolutions in place to implement the action?
- Costs: Does the community have the authority to implement the proposed action? Are there any potential legal consequences? Will the community be liable for the actions or support of actions or for lack of action? Is the action likely to be challenged by stakeholders who may be negatively affected?

Economic:

- Benefits: Are there currently sources of funds that can be used to implement the action? What benefits will the action provide? Does the action contribute to community goals such as capital improvements or economic development?
- Costs: Does the cost seem reasonable for the size of the problem and the likely benefits? What burden will be placed on the tax base or local economy to implement this action? What proposed actions should be considered but be tabled for implementation until outside sources of funding are available?

Each proposed mitigation strategy presented in this plan was evaluated and quantitatively assigned a "benefit" score and a "cost" score for each of the seven STAPLEE criteria as outlined below:

- For potential benefits, a score of "1" was assigned if the project will have a beneficial effect for that criterion or a "0" if the project would have a negligible effect or if the questions were not applicable to the strategy.
- For potential costs, a score of "-1" was assigned if the project would have an unfavorable impact for that criterion or a "0" if the project would have a negligible impact or if the questions were not applicable to the strategy.
- Technical and Economic criteria were double weighted (multiplied by two) in the final sum of scores.
- The total benefit score and cost score for each mitigation strategy was summed to determine each strategy's final STAPLEE score.

Although a community may implement recommendations as prioritized by the STAPLEE method, an additional consideration is important for those recommendations that may be funded under the FEMA mitigation grant programs. To receive federal funding, the mitigation action must have a benefit-cost ratio

(BCR) that exceeds a value of 1.0. Calculation of the BCR is conducted using FEMA's Benefit Cost Analysis (BCA) toolkit. The calculation method may be complex and vary with the mitigation action of interest. Calculations are dependent on detailed information such as property value appraisals, design and construction costs for structural projects, and tabulations of previous damages or NFIP claims. The BCR scoring system used is outlined in Table 5.2.

Table 5.2. BCR Scoring System

Scoring	Benefits	Costs
Low: 0-1 points	Few would benefit; the impacts being addressed are not severe; benefits may be short term	Likely to be done by existing personnel with little impact on budget; not complicated to accomplish. Costs to implement is likely to be under $10,000.
Medium: 2-3 points	Benefits may be felt by many in the community; the action may solve a problem or otherwise benefit the community for several years	May need additional funding or studies; may require change in practices; costs to implement may be between $10,000 and $100,000
High: 4-5 points	Benefits would accrue to many in the community; benefits may accrue to the most vulnerable or those not able to recover on their own; benefits would be long term and may permanently protect from damages	Likely to cost over $100,000 and require obtaining funding outside of operating budget; complicated, lengthy process to implement

The STAPLEE method accounts for cost-benefit considerations both directly (through the "Economic" category) and indirectly (through general consideration of costs and benefits of actions). Additionally, the range of estimated costs of each strategy are included in the STAPLEE table. The assumed costs of projects and generalized presentation of the benefits accruing from them are not based on specific detailed cost estimates as that level of analysis is not appropriate for this type of planning effort. For some projects, such as routine or recurring operations that are established practices and conducted with municipal general operating funds and existing staff, the STAPLEE results can be the only explicit comparison of costs and benefits. For projects for which bonding and/or grant funding will be sought, more in-depth evaluations of costs and benefits will be required. As project scopes are detailed, benefits and costs can be identified with more precision, and the benefit-cost ratio which results from a full benefit-cost analysis may differ from the planning-level STAPLEE results presented here.

It should be noted that higher BCRs do not necessarily correspond to high priorities, nor do low BCRs or BCRs under 1.0 correspond to low-priority projects. An important project with a high priority to the community may have a lower BCR because of its complexity, assumed high expense, and other costs. Communities should not be discouraged or deterred from further consideration of projects that have low BCRs or BCRs less than 1.0 until additional, more specific evaluations of the costs and benefits have been undertaken.

5.2.2. 2021-2026 Prioritized Hazard Mitigation Actions

In addition to the regional mitigation actions endorsed by Killingworth and outlined in Section 3 of Volume 1 of the regional plan, the Town identified or carried over from the last update, ranked and evaluated the actions in Table 5.3. For each identified action, the goal and objective it addresses is noted. Additionally, a description, lead agency, indication of costs and potential funding sources an estimated timeline for completion is included. Also included are the hazards addressed by a specific action.

Figure 5.1 shows the locations of the projects listed in Table 5.3 with spatial elements that have been carried forward. Additionally, completed projects identified in Table 5.1 with spatial elements are also shown on the map. No new projects were present in Killingworth. Projects carried forward are identified by their activity number (from Table 5.3) while completed projects are identified by the description of the project completed.

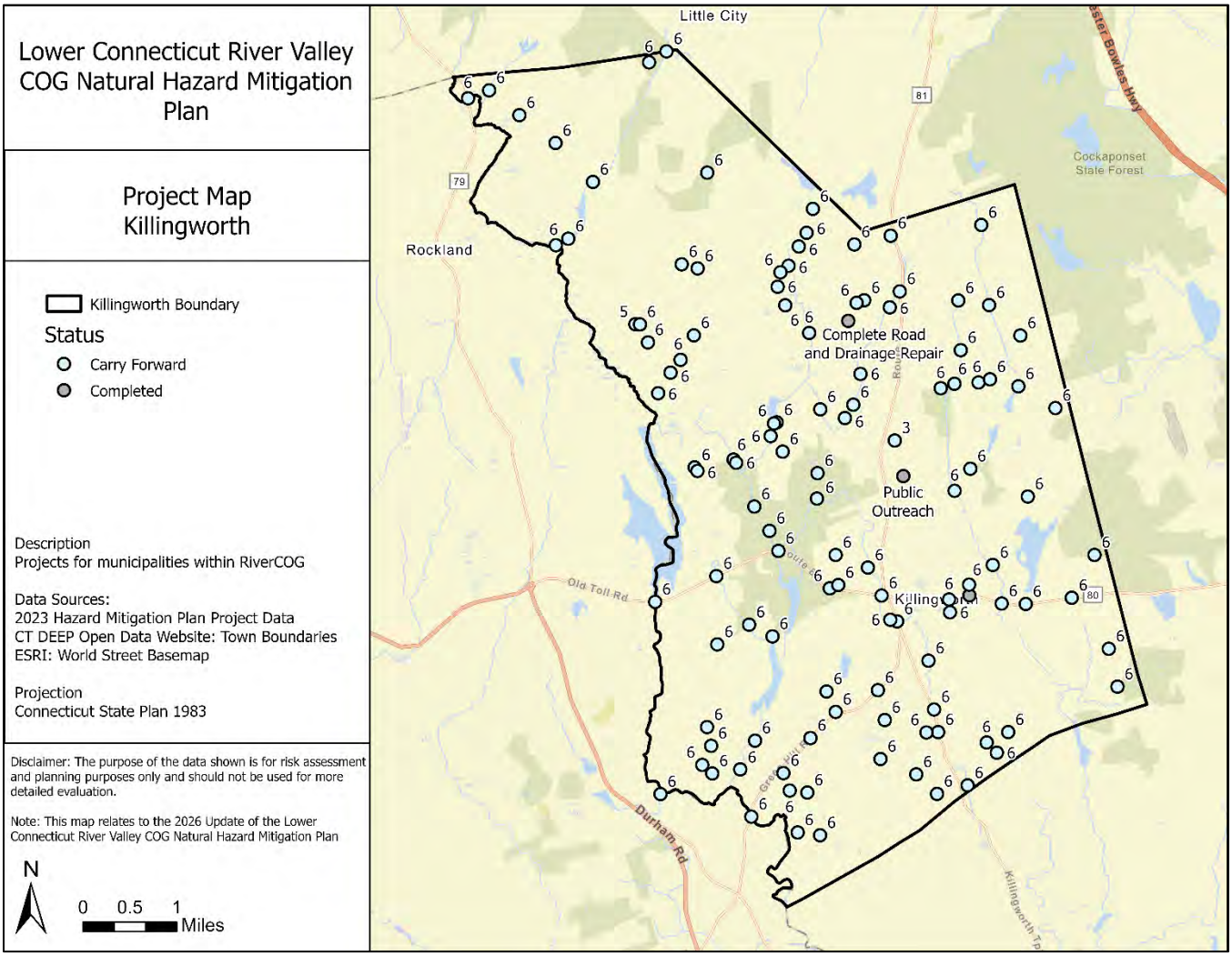


Figure 5.1. Carried Forward and Completed Projects in Killingworth

Table 5.3. Killingworth Hazard Mitigation Strategies and Prioritization

KEY: SW= Severe Weather, TW = Tornado/Wind, ET = Extreme Temperatures, WS=Winter Storm, F = Flood, IS = Invasive Species, WF = Wildfire, D = Drought, E = Earthquake, CC = Climate Change

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
1	3-1	Explore and identify tools and technologies to spot and locate remote forest fires more quickly and accurately (for example, unmanned aerial vehicles [UAV, or drone], remote-operated camera systems, networks of sensors [such as "FireBug" or "LALI"], or cameras with thermal imaging)	FD	$5,000 - $10,000	OB	2026 – 2027	TI, WF, D, CC	1	0	1	0	1	1	0	0	0	0	1	0	1	0	8/H

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
2 mod	1-1	Develop a forest management plan that includes a study of access to potential remote wildland fires. Study should identify the best routes and prioritize roads for widening or other improvements to allow access. Use the plan to increase the number of fire ponds and dry hydrants to balance increase wildfire risk.	ConCom, FD	$15,000 - $30,000	OB Grant	2027	TI, WF, D, CC	0	0	1	0	1	0	0	0	1	0	0	0	1	0	5/H

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria															Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost		
3 mod	2-1	Upgrade electrical service at the Haddam-Killingworth Middle School to allow additional generator power to provide full power to the facility kitchen in addition to the rest of the building. Since this is a regional shelter, investigate cost sharing with the towns served.	DPW, EMD, BOE	$75,000-$150,000	Grant HMA	2027-2028	SW, TW, ET, WS, F, E	1	0	1	0	1	1	1	0	0	0	1	0	0	0		7/M
4	1-1	Review the disaster event response planning of local schools to ensure they are up to date.	EMD, BOE	$1,000-$5,000	OB Staff Time	2026	SW, TW, ET, WS, F, WF, E	1	0	1	0	1	0	0	0	0	0	1	0	1	0		7/H
5	2-1	Complete road and drainage repair projects to mitigate flooding on Emanuel Church Road	DPW	$150,000 +	CIP Grant HMA	2028-2029	SW, F, CC	0	0	1	0	1	0	1	0	1	0	1	0	1	0		8/H

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
6	2-1	Conduct a hydraulic study of all culverts and bridges on public roads in Town to guide upgrading of undersized infrastructure	DPW, P&Z	$75,000-$150,000	OB Grant HMA	2027-2029	SW, F, CC	0	0	1	1	1	0	0	0	1	0	1	0	0	0	8/H
7	2-1	Implement mapping and monitoring of catch basins, storm water outfalls, and related infrastructure, and incorporate map files into the municipal GIS system	DPW	$10,000-$25,000	OB Grant HMA	2027	SW, F, CC	0	0	1	1	1	0	0	0	1	0	1	0	0	0	8/H
8	3-1	Review the University of Connecticut Stormwise Vegetation management Program (https://stormwise.uconn.edu) to determine whether it is appropriate for Killingworth.	DPW	$1,000-$5,000	OB Staff Time	2026	SW, TW, WS, TI, CC	1	0	1	0	1	0	1	0	0	0	0	0	0	0	5/M

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
9	3-1	Implement a public education initiative that includes handouts or pamphlets instructing homeowners on what to look for around their properties that may put their homes at risk, such as trees or branches over power lines, brush and debris close to the structure, the presence of dead trees, etc.	DPW, EMD	$5,000-$10,000	OB Staff Time	2026 – 2030 annually	SW, TW, WS, TI, CC	1	0	1	1	1	0	1	0	0	0	0	0	1	0	8/H
10	3-1	Work with Jensen's to encourage renters living in trailers and mobile homes to install building tie-downs to mitigate potential damage due to high winds. This encouragement could be completed through public outreach and education.	P&Z	$1,000-$5,000	OB Staff Time	2026-2030	SW, TW, WS, CC	1	0	1	1	1	0	1	0	0	0	0	0	1	0	8/H

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
11 mod	3-1	Use Town website and social media accounts to educate the public about municipal hazard mitigation initiatives. Include maps of evacuation routes, storm surge areas, and shelters. Include options for mitigation of residential structures and business recovery and provide links to FEMA, NOAA, State OEM and RiverCOG websites for additional information. Ensure that communications are timely and reiterated. Investigate the potential to combine the Fire Department website with the Town website for better public communication.	EMD	$2,000-$6,000	OB Staff Time	2026-2027	SW, TW, WS, F, CC	1	0	1	1	1	0	1	0	0	0	0	0	1	0	8/H

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
12	2-1	Develop a priority list for road reconstruction and elevation for roads which experience frequent flooding or are integral to evacuation. This includes bridges and culverts in need of upgrading or replacing. Work with CT DOT to encourage upgrades of State Roads and Bridges.	DPW	Low-Mod	OB Staff Time	2026-2027	SW, TW, WS, F, CC	1	0	1	0	1	0	1	0	1	0	0	0	0	0	6/M
13	2-1	Implement an ordinance requiring newly installed generators to be kept a certain distance from buildings.	P&Z	$1,000-$5,000	OB, Staff Time	2026	All	1	0	1	0	0	0	0	0	1	0		0	0	0	3/M

BOE	Board of Education	FD	Fire Department
ConCom	Conservation Commission	P&Z	Planning & Zoning
DPW	Department of Public Works		
EMD	Emergency Management Department		

LOWER CONNECTICUT RIVER VALLEY COUNCIL OF GOVERNMENTS
HAZARD MITIGATION PLAN 2026 UPDATE

TOWN OF LYME MUNICIPAL ANNEX

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1. Contact Information

1.1. Point of Contact

Table 1.1. Town of Lyme Contact Information

Information	Town of Lyme
Contact Name	Christy Zelek, First Selectwoman
Address	480 Hamburg Road Lyme, CT 06371
Telephone	860-434-7733
Email	selectman@townlyme.org

1.2. Local Planning Team

The following representatives listed in Table 1.2 participated in meetings and provided input, data, and council toward the development of Volume 1 and this Lyme, Connecticut Annex.

Table 1.2. Town of Lyme Planning Team

Name	Title
Christy Zelek	First Selectwoman (2026)
Josh Adans	Emergency Management Director
John Evan	Public Safety, Fire Chief
Don Gerber	Town Engineer
K. George Mooney	Pres. Lyme EMS
Steve Olstein	Chief of Service, Lyme EMS
Tom St. Louis	Third Selectman
Lars Anderson	Public Works
Chris Hatt	Public Works
Bob Collins	Public Works
Kyle Turner	Public Works
Peter John Signore	Public Works

1.3. Lower Connecticut River Valley Council of Governments

Table 1.3. RiverCOG Contact Information

Information	RiverCOG Information
Contact Name	Margot Burns – Senior Environmental Planner
Address	RiverCOG 145 Dennison Rd. Essex, CT 06426
Telephone	(860) 581-8554 x 702
Email	mburns@rivercog.org

2. Jurisdiction Profile

2.1. Town Profile

Lyme, Connecticut is a rural community of just over 2,400 people, occupying about 33 square miles on the east bank of the lower Connecticut River. The town is bordered on the west by the Connecticut River, to the east by the Town of East Lyme, the south by Old Lyme, and the north by Salem and East Haddam. The Town's long river valleys, steep topography and distance from major transportation routes have limited past development. Current land use regulations strongly support the goal of maintaining the rural character of Lyme. Almost 80 percent of the town's land area is undeveloped. Through an aggressive open space program, about 54% of the town's land area is committed to permanent open space. The State of Connecticut owns substantial acreage in Nehantic State Forest and Selden Neck State Park. The Nature Conservancy, the Lyme Land Conservation Trust, and the Town have active acquisition programs and hold conservation easements on other land.

Figure 2.1 shows the location and corporate boundaries of Lyme.

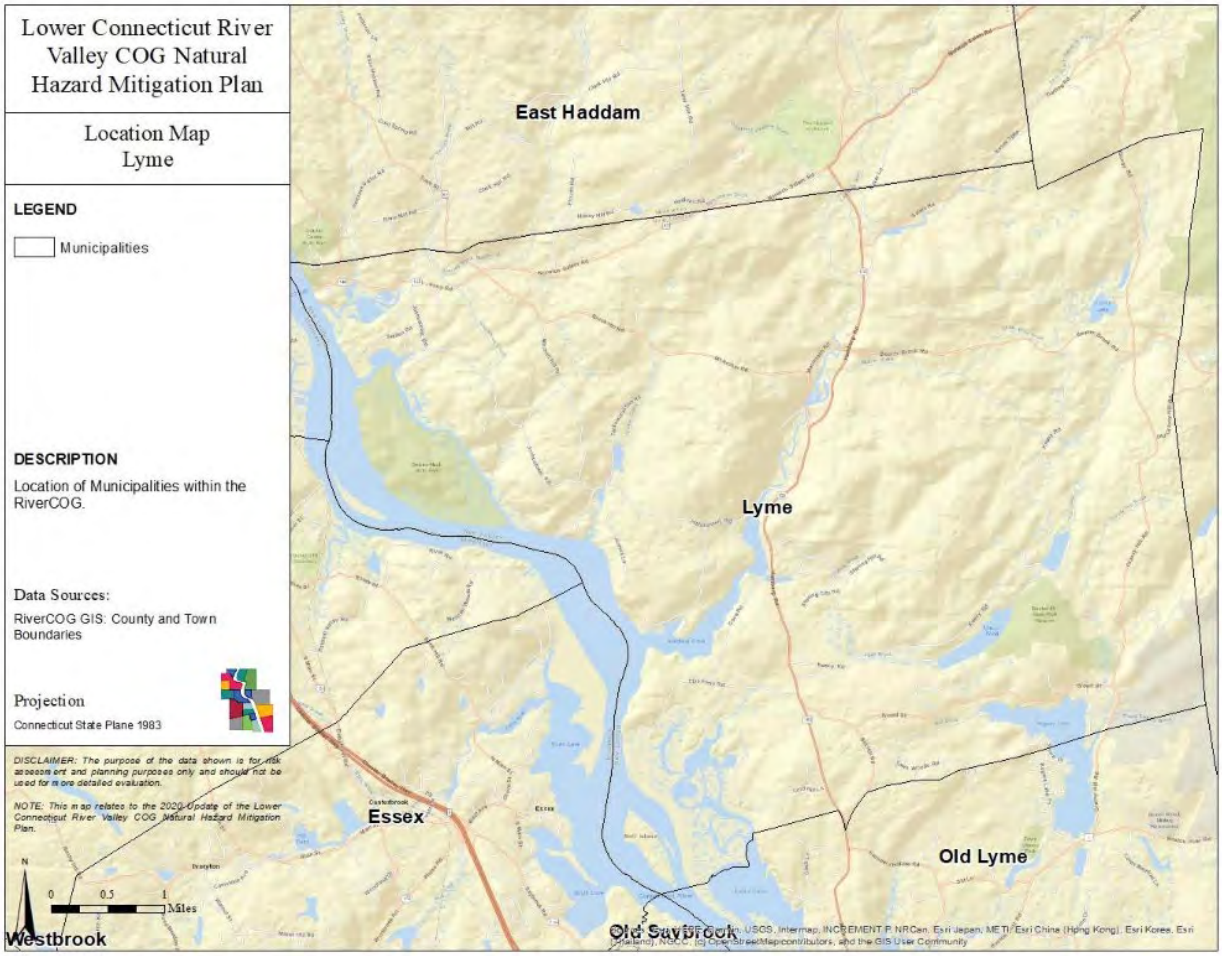


Figure 2.1. Lyme Location

Lyme's topography is diverse. Joshua Rock, on the Connecticut River shore in Lyme, marks the end of the only major east-west hills or ridges in the state. This unusual range is considered to be the Eastern Upland's most striking feature. Soil types in Lyme are varied. Charlton-Chatfield Complex and Canton and Charlton soils predominate with a substantial mix of Hollis-Chatfield Rock Outcrop Complex, Paxton and Montauk soils, and smaller amounts of Hinckley Gravelly Sandy Loam and Ninigret and Tisbury soils. Along the Connecticut River, areas of Pootatuck Fine Sandy Loam and Westbrook Mucky Peat can be found.

Lyme has two historic village concentrations. Hamburg, at the head of Hamburg Cove, where the Eightmile River enters the Connecticut River, is one of the two areas in Lyme that are zoned for commercial development. The other area is Hadlyme, at the head of Whalebone Cove, where Whalebone Creek meets the Connecticut River. Both villages are remnants of earlier times, when the Connecticut River was a major transportation artery to interior New England.

About 15 acres of commercially developed land are present in Lyme. Along the Eightmile River in Hamburg, Reynolds' marina and the Hamburg Cove Yacht Club provide docks and moorings for small boats in the Waterfront Business District.

About eight percent of the town's area is occupied by water bodies, which include the Connecticut River and its coves, and a portion of Rogers Lake, which straddles the town boundary with Old Lyme to the south. Other bodies of water in town include Norwich Pond, Uncas Pond within the Nehantic State Forest, and Cedar Pond. Figure 2.2 shows land cover in Lyme.

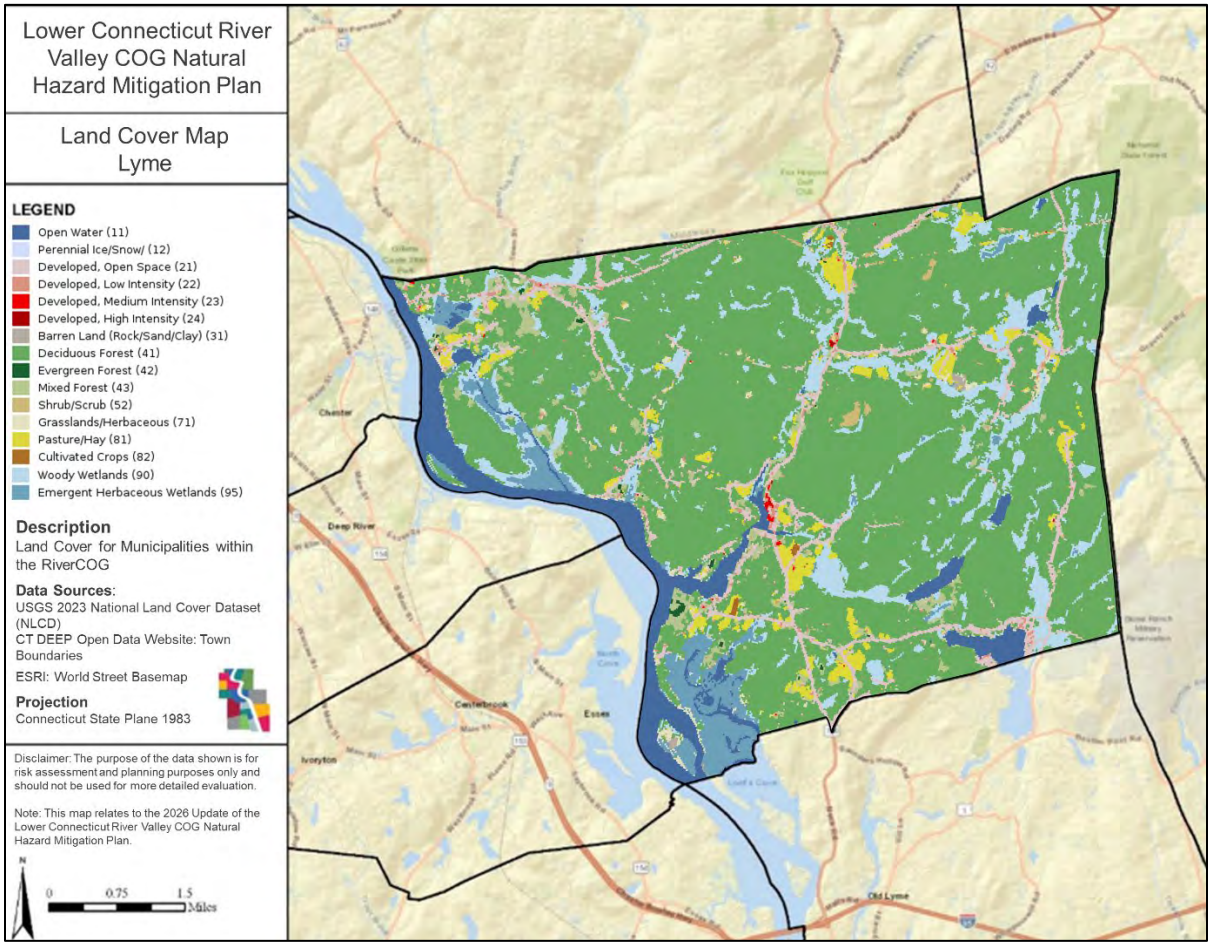


Figure 2.2. Lyme Land Cover

The town is bisected by the Eightmile River Valley which cuts down from the northeast to Hamburg Cove through high hills on either side. The town's principal collector road, Route 156, follows the east bank of the Eightmile down the valley before turning off in Hamburg. The Eightmile River has two principal tributaries - the East Branch Eightmile River and Beaver Brook. Other streams meander through town, eventually discharging to the Connecticut River, with the exception of a small area in eastern Lyme, which joins the Four Mile River flowing directly to Long Island Sound. DEEP records list twenty-five dams in Lyme, although some of those on the list have been removed.

The 2023 American Community Survey (ACS) reported a town population of 2,356 people which represents a 5.7% decrease from 2019.[1] Figure 2.3 provides a demographic profile for Lyme.[2]

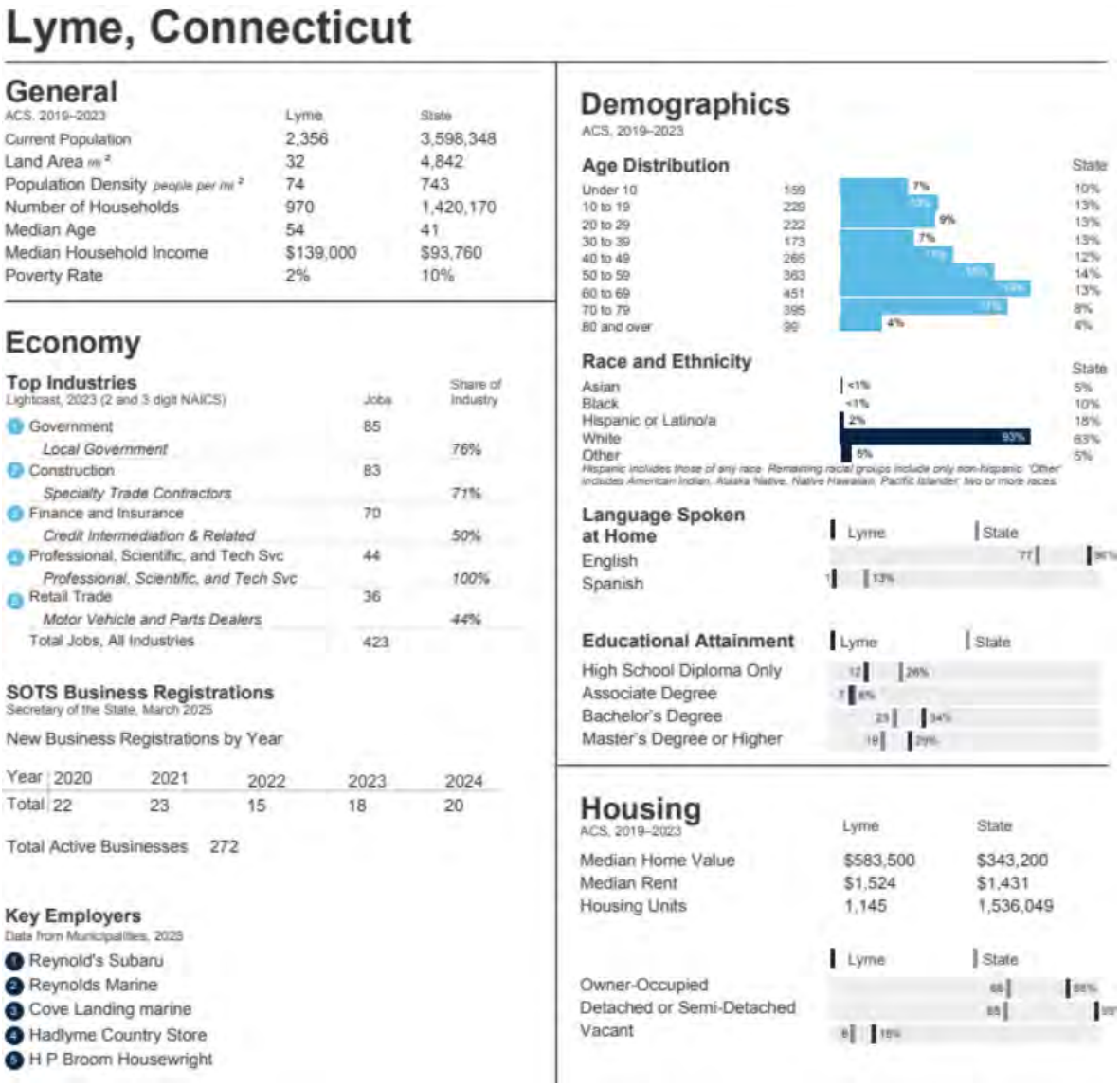


Figure 2.3. Town of Lyme Demographics

2.2 Climate

Average weather data in Lyme was sourced from the Weather Spark website (weatherspark.com).

Over the course of the year, the temperature typically varies from 21°F to 81°F and is rarely below 6°F or above 88°F. The warm season lasts for 3.4 months, from June 1 to September 15, with an

[1] https://s3-us-west-2.amazonaws.com/cerc-pdfs/2025/Lyme.pdf
[2] - Published on Town of Lyme, CT *(Source: Connecticut Data Collaborative)*

average daily high temperature above 72°F. The hottest day of the year is July 20, with an average high of 81°F and low of 64°F. The cold season lasts for 3.3 months, from December 2 to March 12, with an average daily high temperature below 45°F. The coldest day of the year is January 30, with an average low of 21°F and high of 36°F.

A wet day is one with at least 0.04 inches of liquid or liquid-equivalent precipitation. The chance of wet days in Lyme varies throughout the year. The wetter season lasts 9.0 months, from March 24 to December 24, with a greater than 28% chance of a given day being a wet day. The chance of a wet day peaks at 33% on May 30. The most rain falls during the 31 days centered around April 3, with an average total accumulation of 3.8 inches. The snowy period of the year lasts for 5.1 months, from November 8 to April 12, with a sliding 31-day liquid-equivalent snowfall of at least 0.1 inches. The most snow falls during the 31 days centered around January 27, with an average total liquid-equivalent accumulation of 1.0 inches.

The windier part of the year lasts for 6.0 months, from October 23 to April 22, with average wind speeds of more than 6.1 miles per hour. The windiest day of the year is February 23, with an average hourly wind speed of 7.7 miles per hour.

2.3 Government Style

Lyme has a Selectman-Town Meeting form of government. The First Selectman is the chief elected official and chairman of a three-member Board of Selectmen, who collectively serve as the executive branch.

2.4 Development Trends

Very little development is underway in Lyme. Municipal staff report that fewer than ten minor one and two lot subdivisions come before the Town for permitting each year. Nonresidential development is not occurring in Lyme as there is limited commercial property for development. No increases in vulnerabilty are anticipated due to new development.

2.5 Town-Specific Hazard Concerns

Municipal staff reported several specific hazard concern issues, which are listed below. The information below is intended to supplement the hazard specific analysis completed in Section 2, of Volume I of this plan.

A note: To preserve the reader's ability to align RiverCOG-Level and town-level hazard identification and risk analysis, the order of the following hazards aligns with the order of hazards in Volume I. Individual towns have ranked these hazards differently. This town-level ranking can be found in Section 3.3 Hazard Risk Ranking.

2.5.1 Severe Winter Weather

Winter storms typically will impact the entire town; however, effects can vary locally depending on weather conditions (e.g. snowfall in upland areas with rain along the shore) or coastal flooding from nor'easters.

There is a history of powerful winter storms that have affected Lyme and the region. Winter storms are very likely to occur in Lyme. However, since the 2021 plan, winters have been mild, and impacts have been limited. A recent 2026 snow event affirmed the Town's capability to function and respond at a high level during a snow event. Snow drifts are sometimes a problem along Grassy Hill Road.

Despite attention from the regional utility provider, the Town feels more support for utility recovery work is needed. The Town reports occurrences when damaged utility poles were not repaired in a timely manner, and the Town is unable to assist because they are dependent on Eversource to make repairs.

2.5.2 Flooding

Flooding - Riverine and Inland Flooding

Some areas within the Town of Lyme are more susceptible to flooding than others. With an extensive Connecticut River shoreline, Hamburg Cove, the Eightmile River, and various ponds and streams, certain development areas are at risk. Properties along the Connecticut River experience seasonal river flooding each spring as snow in Northern New England begins to melt, sending more than usual amounts of water downstream. For example, several years ago a rapid snowmelt event closed roads along the Connecticut River and Eightmile River; there was also a reported fatality as a result of the flooding event. Residential development along the Connecticut River is also limited in comparison to other river towns.

Erosion is a concern along the Connecticut River near Joshuatown Road. Undermining of the road by erosion would have a significant impact on emergency response and other transportation capabilities. Undermining of Mount Archer Road at the Eight Mile River is also a concern.

There are approximately 289 culverts within the Town of Lyme; of those, it is estimated that at least two-thirds of these culverts need attention or realignment. Many of these problematic culverts are located on or adjacent to private property, and the Town has had difficulty maintaining them. Most notably a culvert on Grassy Hill Road was lost years ago, causing $1 million in damages and required replacement of the culvert. The Day Hill/Beaver Brook crossing is also a challenging location and of concern to the town and flooding at Day Hill Road is a concern, particularly where it crosses Whalebone Creek.

Beaver dams are a problem throughout Lyme because the rural character of the Town supports beaver activity. Flooding has occurred at Grassy Hill Road due to beaver-related impacts on drainage. Despite the challenge created by beaver activities, the Town reports that it has the capabilities to manage these challenges.

The Town has expressed concern about Route 156 and Keeney Road becoming impassible, leading to access issues for emergency response. The Route 156 bridge being washed out or heavily flooded is a deep concern for the Town. The Town also has expressed concern for several other bridges. Birch Mill Bridge had five feet of flooding during Hurricane Gloria. It was replaced in 2024 but is still a challenge during recent flooding events. The bridge to the ferry also floods often and is a concern.

Overall flooding is the greatest concern for Lyme. While the town reports that most flood recede relatively quickly, there are several locations that lose access throughout town.

Flooding - Coastal Flood

Much of the flooding experienced along the Connecticut River is tidally influenced and therefore may be considered coastal. For the purpose of this annex, flooding along the Connecticut River will be considered coastal whereas flooding along the middle and upper Eightmile River and other streams will be considered riverine.

The infrastructure at Hadlyme Ferry is at risk from the combination of flooding and ice. Ice jams from the Connecticut River were a significant problem in the winter of 2017-2018, and Town reports that the bridge is still an ongoing flood concern due to its very low-lying construction. The ferry is operated from April 1 through November 30 by the CT Department of Transportation. The site is a Historic Landmark on the National Historic Register, part of the Hadlyme Ferry Historic District.

Sea Level Rise

Sea level rise will have long-term consequences to tidal water surface elevations of the Connecticut River, lower Eightmile River, and associated wetland systems. In the long term, changes to flood water surface elevations could be noticed. Over the five-year timeframe for this plan, changes are not likely to be noticeable. Researchers[3] in Connecticut believe that Connecticut River communities should plan for about half of the vertical sea level rise projected for Long Island Sound. In other words, the State-mandated planning threshold of 20 inches by 2050 could translate to ten inches of vertical flooding added to tidal flooding along the Connecticut River by 2050. Nevertheless, over the five-year timeframe for this plan, changes in horizontal flood extents associated with this vertical increment are not likely to be noticeable.

2.5.3 Dam Breach

The CT DEEP database lists 25 dams located in Lyme. There are no DEEP registered significant or high hazard dams in Lyme. A complete list of all DEEP known dams is included in Appendix B.

Figure 2.4 shows the location of all dams within Lyme. Moderate, Significant and high hazard-class dams are presented in Table 2.1. A full list of dams is provided in Appendix B.

[3] Robert Thorson, UConn, via presentation at the UConn Law School in April 2026

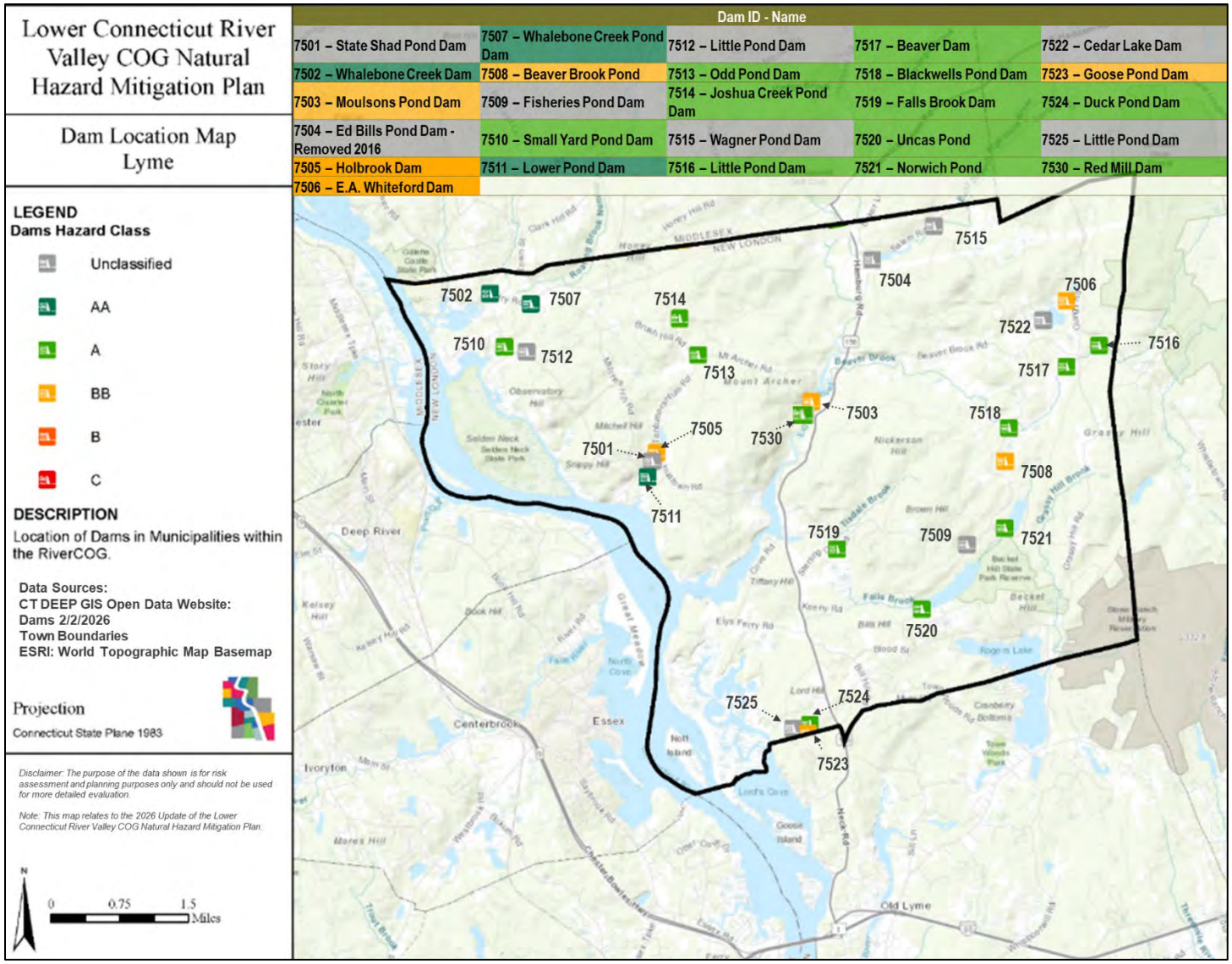


Figure 2.4. Location of Dams, Lyme, CT

Table 2.1. Moderate, Significant and High Hazard Dams, Lyme, CT

CT Dam #	Dam Name	Hazard Class	Owner
7503	MOULSONS POND DAM	BB - Moderate	Rathbun Dam LLC
7504	ED BILLS POND DAM	BB - Moderate	Raymond Farms LLC – Removed in 2016
7505	UPPER POND DAM (AKA HOLBROOK)	BB - Moderate	Jim Miller*
7506	E.A. WHITEFORD DAM	BB - Moderate	STUART C. INGERSOLL, ET AL
7508	BEAVER BROOK POND	BB - Moderate	Connecticut DEEP
***As reported by the Town of Lyme in January 2026**			

The risk of dam collapse in Lyme is present. Old dams, some dating to the 1700s, can become over-burdened during flooding events and heavy rainstorms. The dams, if not maintained properly, could collapse under the stress of overtopping and impounding more water than normal. A dam break could cause significant flooding downstream of the dam and potentially cause other dams to break in succession. A dam break would release a significant amount of water at high velocity with significant pressure. This wall of water could cause other dams to breach. A dam break could cause flooding outside of normal flood hazard areas, meaning residents and businesses might be especially unprepared for dam breaks.

During the June 1982 flood, three dam failures resulted in the washout of a portion of Tantumurantum Road causing $160,000 in damage.

The Town reported that the Salem Road dam has recently been removed; however, as a result, water levels in surrounding water bodies have dropped impacting water availability for firefighting capacity. For example, there was recently a structure fire on Grassy Hill Road and the pond was too low for use. Because of this reason, and others, the town is dependent on tanker trucks and mutual aid.

2.5.4 Thunderstorms and Severe Weather

High wind, such as from microbursts, is a concern in northern parts of the Town near the Connecticut River. Overall, residents throughout Lyme are equally susceptible to the chance of a tornado occurrence. Tornados, though rare, do occur and cause a considerable amount of damage to the area touched by them. Microbursts are nearly impossible to predict and are dangerous. Research has determined that microbursts are much more common and occur much more frequently than had previously been thought. Despite attention from the regional utility provider, the Town feels more support for utility recovery work is needed. The Town reports occurrences when damaged utility poles were not repaired in a timely manner, and the Town is unable to assist because they are dependent on Eversource to make repairs.

2.5.5 Hurricanes and Tropical Storms

Hurricanes and tropical storms will affect the entire town; however, affects will vary depending on proximity to the shore. Strong winds and rain will affect the entire town while storm surges and coastal flooding will affect coastal areas. Hurricane Surge Inundation with Storm Categories depicts the extent of worst-case coastal flooding that could occur in Lyme from category 1 through category 4 hurricanes. Flooding from hurricanes and tropical storms would be the worst along streams, where runoff during and after heavy rainfall would result in rising water levels.

In the event of a hurricane or tropical storm, the primary risks in Lyme are from high wind, storm surges and coastal flooding and inland flooding on small streams and rivers from heavy rain.

2.5.6 Tornado

Although relatively rare, the threat of tornado could cause significant damages to life and property in the Town of Lyme. Overall, residents throughout Lyme are equally susceptible to the chance of a tornado occurrence. However, a strong tornado would likely cause more damage in the more densely developed Lyme Center area where the school and municipal facilities are located. The remainder of the Town tends to be less developed and rural and therefore may not sustain as much property damage, however access to properties and power outages are always a concern due to dense tree canopy throughout town.

2.5.7 Earthquakes

The entire town could be affected by an earthquake in this region; however, impacts could vary locally. While there is no record of damage in Lyme from an earthquake, earthquakes have occurred in the region and have been felt locally. In Lyme and the surrounding region, recorded impacts have been limited to shaking to the extent that things were knocked off shelves, and people were alarmed. Structural damage has been limited to building components such as chimneys and buildings in poor repair.

2.5.8 Drought and Wildland Fires

Lyme is one of the most heavily forested, and least densely populated towns in the region, making it susceptible to wildfire under extreme circumstances. Homes in Lyme tend to be nestled into the forest, making them susceptible to large wildfires. Different areas throughout town are susceptible to different types of fires. Inland areas where thick forest cover is abundant are more susceptible to fires feeding on ground ladder fuels. Areas closer to the densely developed shoreline where more roads are present are more susceptible to fires feeding on surface fuels. Overall, Connecticut does not have a history of fire feeding on the canopy of trees. Most fires remain on the ground. Since the 2021 plan, there has been a 50-acre wildfire that occurred in May of 2025. No structures were impacted. There have been other smaller wildland fires, however the Town reports that some have been considered suspicious, which presents an additional challenge. Emergency responders have noted that residents sometimes ignore or disregard the severity of State instructions regarding fire hazards during dry periods.

The Town is generally concerned about forest roads being inadequate for some firefighting vehicles; roads are often not even sufficiently wide for a gator vehicle. Access problems could impair response to wildfires in more remote, wooded areas. Severe droughts and large wildfires are not likely to occur in Lyme. It was noted by the Town that logging roads could help improve access capabilities to forested areas, While any dry period brings with it the possibility of brush fires, large wildfires have yet to be experienced in Lyme. While summer months tend to be the most likely period when the area could experience drought, autumn months often bring wet weather, ending the drought and reducing the risk of fire.

The population in Lyme relies on ground water for domestic water supply. Under extreme and prolonged drought conditions, these water sources could be affected. Additionally, the Town has reported a loss of water supply as a result of a dam removal on Salem Road, as well as other ponds in town not having sufficient water levels where the fire department can draft. For example, the fire department reported challenges addressing a structure fire on Grassy Hill Road because a pond was too low for use. The town is heavily dependent on tanker trucks and mutual aid because of this. The Town would like to explore options for increasing water sources and availability including dredging ponds, constructing cisterns, or working with private property owners on water access easements.

2.5.9 Extreme Temperature

Lyme falls in the humid continental climate zone, the same as much of interior Connecticut. All areas of Lyme are equally susceptible to extreme heat. Depending on wind direction, areas directly along the Connecticut River shoreline may stay slightly cooler because of cooler water temperatures having a cooling effect on the surrounding air. Heat waves are a regular summer season event in Connecticut, including Lyme. In many areas, severe thunderstorms associated with the heat cause lengthy power outages, forcing people to cope with the heat as they lose the ability to have air conditioning. Extreme heat and heat waves are very likely to occur during the summer months in Lyme. Elderly and very young populations, especially those living in homes with no air conditioning, are most likely to be adversely impacted by extreme heat. Dehydration, heat stroke, and other negative health effects are likely during high temperature events. Physical infrastructure can also be impacted negatively by extreme heat. Heat always brings with it the potential for strong thunderstorms which could knock out power due to downed trees. Asphalt, especially in places where there is not a substantial base, can buckle or crack significantly under heat. Drought conditions can also become exacerbated by extended periods of significantly high temperatures. The town of Lyme has the ability to designate a cooling center if the need arises.

2.5.10 Terrestrial Invasive Species

Invasive species are an emerging challenge for the Town of Lyme. Terrestrial invasive species include those typically found in Connecticut. While the Town did not identify any significant challenges that exceed those identified Statewide, the planning team noted that townwide Tree of heaven proliferation has worsened.

2.5.11 Aquatic Invasive Species

While there are no specific instances of impacts from aquatic invasives, the Town is monitoring the Hydrilla levels in local waterbodies. The fire department also has concerns regarding the Hydrilla given that increased densities could reduce, or eliminate entirely, the capability of drafting from a waterbody as the vegetation would clog pump screens.

2.5.12 Tree Diseases and Pests

Since the 2021 plan update, the Town has removed trees that have been damaged or killed as a result of other hazards, and have also removed trees damaged by disease and pestilence such as the emerald ash borer. Emerald Ash Borer and Gypsy Moth, are having a significant impact on the Town's tree stock; this may have implications for the risks from high wind, snow, and wildfire.

2.5.13 Other Hazards

Energy Reliability

Despite attention from the regional utility provider, the Town feels more support for utility recovery work is needed. The Town reports occurrences when damaged utility poles were not repaired in a timely manner, and the Town is unable to assist because they are dependent on Eversource to make repairs.

3. Hazard Risk

3.1 Historical Events

Table 3.1 lists the Federal Disaster declarations for New London County, for which Lyme requested assistance.

Table 3.1. Lyme Natural Hazard Events

Type of Event	Date	Preliminary Damage Assessment
Hurricane Event (DR-4023)	09/02/2011	$51,480
Hurricane Event (DR-4087)	10/30/2012	$20,394
Winter Weather Event (DR-4106)	03/21/2013	$31,217
Winter Weather Event (DR-1958)	03/03/2011	$16,544

3.2 Recent Events

The following is a summary of recent events experienced in Lyme since the 2021 plan update.

Total Public Assistance (PA) reimbursements to the community (1998-2025) were as follows:

- Flood Events: $0 ($0 annually)
- Hurricane (Wind) Events: $71,874 ($2,662 annually)
- Winter (Snow) Storm Events: $47,761 ($1,769 annually)

Table 3.2 and Table 3.4 list PA reimbursements in Lyme.

Table 3.2. Hurricane Wind Event PA Reimbursements, Lyme, CT

Disaster No,	4023	4087
Incident Dates	Aug-Sep 2011 (T.S. Irene)	Oct-Nov 2012 (Super Storm Sandy)
Declaration	9/2/2011	10/30/2012
Entity	FEMA PA Reimbursement	FEMA PA Reimbursement
State	$	$
Municipal	$	$
Nonprofit	$	$
Total	$51,480	$20,394
Annualized	$1,907	$755

Table 3.3. Winter Storm PA Reimbursements, Lyme, CT

Disaster #	1958	4106
Incident Dates	Jan 2011	Feb 2013
Declaration	03/03/2011	3/21/13
Entity	FEMA PA Reimbursement	FEMA PA Reimbursement
State	$	$
Municipal	$	$
Nonprofit	$	$
Total	$16,544	$31,217
Annualized	**$613**	**$1,156**

3.3 Hazard Risk Ranking

Lyme participated in the regional hazard ranking conducted by the Hazard Mitigation Planning Team. The probability of each hazard is determined by assigning a level, from unlikely to highly likely, based on the likelihood of occurrence from historical data. The total impact value includes the affected area, primary impact, and secondary impact levels of each hazard. Level of Community Concern reflects the perceived risk of each hazard as indicated by respondents to question 6 of the community survey. This question asks, "How concerned are you about each of the following hazards impacting your home, business, community, or organization?" and received 157 responses.

Each of these five criteria are assigned weights, as well as point values for each of their responses. Each level's score is reflected in the matrix. The total score for each hazard is the probability score multiplied by its importance factor times the sum of the impact level scores multiplied by their importance factors. Based on this total score, the hazards are separated into three categories based on the hazard level they pose to the communities: Significant, Moderate, Limited. Table 3.5 provides a summary of the categories used to rank the hazards and their weighted values for the Composite Hazard Risk Index.

Table 3.4. Hazard Ranking Parameters

Criteria	Weight	1 Point	2 Points	3 Points	4 Points
Hazard Probability	2.0	**Unlikely** Less than 1% probability in next 100 years or has a recurrence interval of greater than every 100 years.	**Somewhat Likely** Between 1 and 10% probability in next year or has a recurrence interval of 11 to 100 years.	**Likely** Between 10 and 100% probability in next year or has a recurrence interval of 10 years or less	**Highly Likely** Near 100% probability in next year or happens every year.
Impact – Affected Area	0.8	**Isolated** Less than 1% of area affected	**Small** Between 1 and 10% of area affected	**Medium** Between 10 and 50% of area affected	**Large** Between 50 and 100% of area affected
Impact – Primary Impact	0.7	**Negligible** 1 to 10% of people or property	**Limited** 10% to 25% of people or property	**Critical** 25 to 50% of people or property	**Catastrophic** >50% of people or property
Impact – Secondary Impact	0.5	**Negligible** No loss of function, downtime, and/or evacuations	**Limited** Minimal loss of function, downtime, and/or evacuations	**Moderate** Some loss of function, downtime, and/or evacuations	**High** Major loss of function, downtime, and/or evacuations

Criteria	Weight	1 Point	2 Points	3 Points	4 Points
Level of Community Concern	1.0	**Low Concern**	**Moderate Concern**	**High Concern**	-

The hazard risk ranking generated from this exercise, along with consideration of available data, was used to prioritize the level of effort assigned to further analysis of each hazard in the vulnerability analysis and lost estimation sections. All the participating communities agreed upon the results of the hazard ranking for the overall region. Based on the results of the exercise, the hazards were ranked as follows in Table 3.5. Hazard Ranking Parameters. Lyme endorsed the ranking as accurate for the Town.

Table 3.5. Summary of Potential Hazard Impacts.

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
Winter Storms (Snow, Ice, Wind, including Nor'easter**s**)	Historic analysis for probability and annualized damages	Highly Likely - 4	Large - 4	Negligible - 1	Moderate - 3	Moderate Concern - 2	15.4	Significant
Flood – Riverine and Inland Flooding (Riverine, Drainage, Coastal Surge, Sea Level Rise - includes flooding from Nor'easter**s**)	Hazus, SLR Overlay, FS Model Overlay, Historic data and damages for additional probability	Likely - 3	Medium - 3	Limited - 2	Moderate - 3	High Concern - 3	14.3	Significant
Flood – Coastal Flood (Riverine, Drainage, Coastal Surge, Sea Level Rise - includes flooding from Nor'easter**s**)	Hazus, SLR Overlay, FS Model Overlay, Historic data and damages for additional probability	Likely - 3	Medium - 3	Limited - 2	Moderate - 3	High Concern - 3	14.3	Significant
Flooding from Dam Failure	Dam Inundation areas, Historic analysis for probability and annualized damages	Unlikely - 1	Small - 2	Limited - 2	Moderate - 3	Moderate Concern - 2	8.5	Limited
Severe Weather (thunderstorms,	Historic analysis for probability and	Highly Likely - 4	Small - 2	Negligible - 1	Limited - 2	Moderate Concern - 2	13.3	Moderate

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
downbursts, hail, lightning)	annualized damages							
Extreme Heat and Cold	Qualitative based on historic	Likely - 3	Large - 4	Negligible - 1	Limited - 2	High Concern - 3	13.9	Moderate
Hurricanes	Hazus for wind	Likely - 3	Large - 4	Critical - 3	Moderate - 3	High Concern - 3	15.8	Significant
Tornadoes	Historic analysis for probability and annualized damages - pulling in surrounding counties	Likely - 3	Isolated - 1	Catastrophic - 4	Limited - 2	Moderate Concern - 2	12.6	Moderate
Earthquakes	Hazus, 3 scenarios	Somewhat Likely - 2	Small - 2	Catastrophic - 4	High - 4	Low Concern - 1	11.4	Limited
Drought	Historic analysis for probability and annualized damages - some qualitative	Likely - 3	Medium - 3	Negligible - 1	Limited - 2	High Concern - 3	13.1	Moderate
Wildfire	Historic analysis for probability and annualized damages	Likely - 3	Small - 2	Critical - 3	Moderate - 3	Moderate Concern - 2	13.2	Moderate
Aquatic Invasive Species	Semi-quantitative, supplemented by state and municipal	Highly Likely - 4	Large - 4	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
	figures, recommend survey							
Terrestrial Invasive Species	Semi-quantitative, supplemented by state and municipal figures, recommend survey	Highly Likely - 4	Large - 4	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant
Tree Infestation	Semi-quantitative, supplemented by state and municipal figures, recommend survey	Highly Likely - 4	Large - 4	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant

3.3.1 National Flood Insurance Program (NFIP) Participation

The Town of Lyme has been participating in the NFIP for 47 years. Lyme formally entered the regular phase of the program on January 3, 1979. In Lyme, the Zoning Enforcement Officer serves as the floodplain manager and is responsible for the day-to-day enforcement of their NFIP regulations.

Substantial improvements and substantial damages occur infrequently in town. All new construction and substantial improvements located within the 100-year floodplain must conform to minimum elevation requirements and construction standards so as to minimize flood damage. Substantial improvements are defined as any combination of improvements, the cost of which equals or exceeds 50% of the market value before improvement started. The floodplain manager (zoning enforcement officer) is responsible for administering the substantial improvement and substantial damage provisions codified in the floodplain management regulations. This is typically done in close coordination with the building official. In the event of a major disaster, resulting in a number of substantially damaged buildings that would overwhelm town staff, the town would reach out to the state NFIP coordinator's office for assistance in training additional staff.

Repetitive Loss Property Detail

Since the beginning of the NFIP in 1979, four properties, all residential and located in Flood Zones along inland streams, have been listed as RLPs. One RLP has been mitigated.

FEMA reimburses communities for hazard losses through programs including Public Assistance (PA) and the National Flood Insurance Program (NFIP). Combining PA and private flood insurance payments can give an estimate for total losses to a community.

Overall, the National Flood Insurance Program (NFIP) has 28 policies in force in the Town of Lyme, with coverage to date totaling $9,291,000. The NFIP has paid claims totaling $695,985 in Lyme. Lyme has 9 repetitive loss (RL) property claims to date for 4 RL properties.

4. Capability Assessment

This section discusses capabilities and operational procedures that Lyme undertakes that contribute to or have the potential to contribute to hazard mitigation. It also notes deficiencies in those capabilities that could be addressed to strengthen resilience.

4.1 Critical Facilities

Public and private utility facilities are vital to maintaining or restoring normal services to areas of town before, during, and after a natural disaster.

Lyme does not provide public sanitary sewer service or public water; residents and businesses rely on private wells and septic systems. Electricity is provided by Eversource. There is no natural gas system in Lyme. Public and private utility facilities are subject to the same loss of power, potable

water, communications, and accessibility as the community they serve. There are no gas stations in the Town of Lyme.

Transportation corridors are limited to small town-maintained roads and Route 156 which runs in a north-south orientation. Routes 82 and 148 run along the northern border of Lyme for a short stretch. The Chester-Hadlyme Ferry connects Route 148 to the Town of Chester seasonally. 9 Town Transit offers dial-a-ride service to anyone as needed throughout Lyme. There are no limited-access highways or railroads within Lyme.

Figure 4.1 shows the location of critical facilities in Lyme which are identified at the regional level.

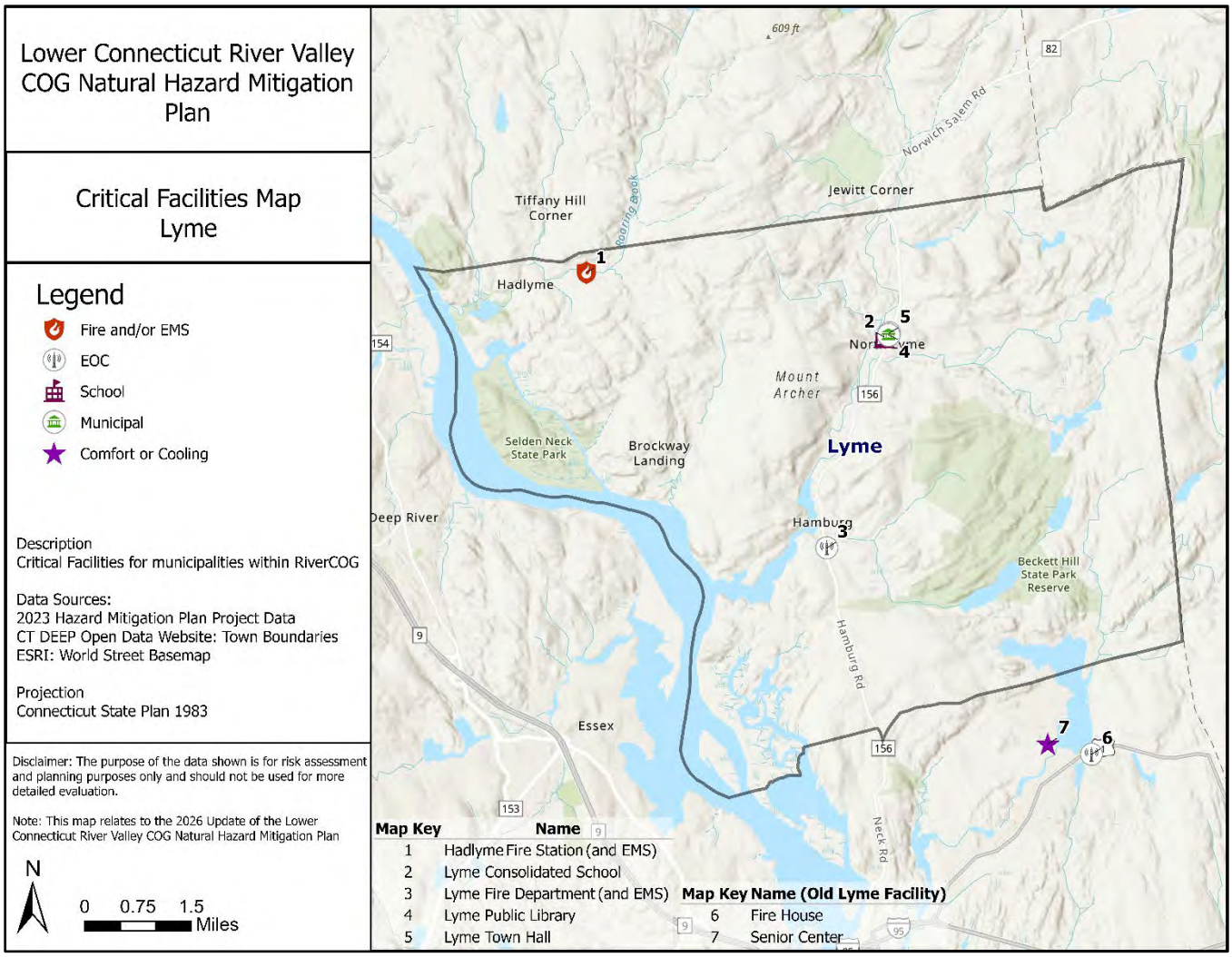


Figure 4.1. Location of Critical Facilities in Lyme

Table 4.1 lists critical facilities identified by the Town.

Table 4.1. Critical Facilities

Facility	Type	Address	Flood Zone	Generator	Notes
Lyme Town Hall	EOC	480 Hamburg Road	None	Yes	
Hadlyme Fire Station (and EMS)	Emergency Response	Norwich-Salem Road	None	Yes	Lyme Ambulance Association
Lyme Fire Department (and EMS)	Emergency Response Backup Shelter	213 Hamburg Road	Adjacent to AE / Floodway (buildings are not in)	Yes	
Lyme Public Works Facility	Municipal	213 Hamburg Road	Adjacent to AE / Floodway (buildings are not in)	Yes	
East Lyme Middle School*	Shelter	31 Society Road, East Lyme	None		Regional Shelter No Pets
Lyme Consolidated School	Municipal	478 Hamburg Road	Adjacent to AE / Floodway (buildings are not in)	Yes	
Lyme Public Library	Municipal	482 Hamburg Road	Adjacent to AE / Floodway (buildings are not in)	No	Standy power is desired and is a new action in this plan
The Lymes' Senior Center*	Community Center Comfort Station	26 Town Woods Road, Old Lyme	None		

**East Lyme Middle School and The Lymes' Senior Center are not located in Lyme*

During the 2026 NHMP Update Process, Lyme identified the following changes to critical facilities since 2021:

- **Shelters:** The senior center has a new kitchen and acts as a cooling and warming center, as well as a shelter. The primary shelter in Old Lyme can feed residents.
- **Back-up Power:**
  - All critical facilities, including Town Hall, Emergency Operations Center, Department of Public Works facilities have backup power, with the exception of the library.
  - Gas and diesel tanks at DPW are concrete, limiting floating impacts during flooding.
    - The EOC is highly regarded as an advanced and sophisticated facility as a result of being within the Millstone emergency radius.
- **Cooperation:** Great cooperation between emergency services and well tied in with Salem, East Haddam, and Old Lyme. The three also share a Fire Marshal.

4.2 Municipal Capabilities

The Town of Lyme has a variety of natural hazard mitigation capabilities, including local regulations and ordinances, operational protocols, and emergency response capabilities. Following is a list of some highlighted capabilities identified by municipal staff.

4.2.1 Regulations and Ordinances

The Town of Lyme's POCD and zoning regulations limit new development.

Lyme implements the State Building Code and a local flood code that minimizes loss of life and property damage due to natural hazards. The area Flood Insurance Rate Map (FIRM) was effective August 5, 2013. Lyme regulates development in flood zones through its Flood Plain District ordinances. These ordinances are in line with NFIP requirements, the municipal staff report being stringent with requirements when building near water. NFIP requirements apply to all new construction and substantial improvement; substantial improvement is defined as any combination of improvements occurring over any five-year period that cumulatively cost 50% or more than the value of the building before improvements began.

Land use regulations also require new roads to be designed to allow emergency access and egress. Subdivision regulations are likewise reported to be sufficient with regards to minimizing hazard exposure. Underground utilities are required in new developments or redevelopments on a case-by-case basis.

Lyme uses best management practices (BMPs) as described in the Connecticut DEEP Storm water Management Guidelines on a site-by-site basis as advised by a professional engineer. All new development is required to minimize or eliminate runoff during precipitation events.

State regulation of privately-owned dams has strengthened in recent years.

The Open Burn program is run through a permitting process and the Town can suspend approvals at any time if conditions warrant.

4.2.2 Operations and Procedures

Lyme is following best practices for woodland/forest maintenance. Lyme monitors and tracks flooding and storm damage complaints within Town. Flooding complaints are routed to the First Selectman. Storm management and response information and data is managed using the WebEOC online platform. Stormwater infrastructure has been inventoried and all catch basins are cleaned annually.

Lyme prioritizes open space acquisition and conservation and has over 12,000 acres of preserved space. An Open Space Reserve Fund, municipal Open Space Committee, an Open Space Coordinator, and the Lyme Land Conservation Trust, aid this effort. Large tracts of open land have been acquired since adoption of the previous HMP, and such acquisitions are continuing. In December of 2018, Lyme acquired the 250-acre Johnston Preserve, to be maintained as open recreational space by the town's Open Space Committee. Also, in 2018, 9 acres of land on the north bank of the Eightmile River, between the river and Salem Road, were donated to the Lyme Land Trust to be maintained as open space. Lyme is generally supportive of property acquisitions when property owners approach the Town for assistance.

Lyme has a Tree Warden on staff; currently, the Public Works Director serves as Tree Warden. Tree maintenance is included as an annual budget item. The Town communicates with Eversource about tree maintenance; Eversource focuses its attention along utilities.

4.2.3 Other Capabilities

Table 4.2, Table 4.3, and Table 4.4 list legal, regulatory, technical, administrative and financial capabilities that support hazard mitigation.

Table 4.2. Planning and Regulatory Capability

Planning or Regulatory Tool	Is this tool currently relevant to your community?
Hazard Mitigation Plan	Yes
Threat and Hazard Identification and Risk Assessment (THIRA)	No
Comprehensive Land Use Plan	Yes – Part of POCD update – this is occurring right now and should be adopted in Dec 2025.
Floodplain Management Plan/Flood Mitigation Plan	No
Open Space Management Plan (Parks & Rec/Greenway Plan)	Yes
Stormwater Management Plan/Ordinance	No
Natural Resource Protection Plan	No
Flood Response Plan	No
Emergency Operations Plan	Yes
Emergency Management Accreditation Program (EMAP Accreditation)	No
Continuity of Operations Plan	No
Evacuation Plan	Yes
Disaster Recovery Plan	No - No formal document
Capital Improvements Plan	Yes - Budget includes Bridges
Economic Development Plan	No
Historic Preservation Plan	No
Flood Damage Prevention Ordinance	Yes
Zoning Ordinance	Yes
Subdivision Ordinance	Yes
Post-Disaster Redevelopment/ Reconstruction Plan/Ordinance	No
Building Code	Yes
Fire Code	Yes
National Flood Insurance Program (NFIP)	Yes
NFIP Community Rating System (CRS Program)	No

Table 4.3. Administrative and Technical Capability

Staff/Personnel Resources	Available?	Department/Agency/Position
Planners with knowledge of land development/land management practices	Yes	ZEO, Chair is active in the town, though no formal planner.
Engineers or professionals trained in construction practices related to buildings and/or infrastructure	Yes	Town engineer
Planners or engineers with an understanding of natural and/or human-caused hazards	Yes	Town engineer
Emergency Manager	Yes	Yes Additionally, Lyme employs a Constable
Floodplain Manager	Yes	ZEO
Land Surveyors	Yes	Contracted out
Scientists familiar with the hazards of the community	No	No
Staff with education or expertise to assess the community's vulnerability to hazards	Yes	EMD
Personnel skilled in GIS and/or Hazus	Yes	Contracted out
Resource development staff or grant writers	Yes	First Selectman
Other	Yes	Five DPW employees

Table 4.4. Financial Resources

Financial Resources	Accessible or Eligible to Use?
Capital Improvement Programming	Yes
Community Development Block Grants (CDBG)	No
Special Purpose Taxes (or taxing districts)	No
Gas/Electric Utility Fees	No
Water/Sewer Fees	No
Other	Yes - Added a part time finance director position.

4.2.4 Emergency Response Capabilities

The Town has been using WebEOC for several years and is well-versed in its operation. The platform reportedly helps with reporting and reimbursement in addition to hazard preparation and response. This platform's capabilities include requesting assistance and supplies (such as potable water) from neighboring communities.

Lyme has access to two dry hydrants, as well as other firefighting water resources. The Town has numerous firetrucks and considers itself to have strong wildfire-fighting capacity. The Fire Department regularly evaluates its equipment and infrastructure and identifies needs for improvements. The state of Connecticut and the National Guard help with firefighting in wooded areas, as there is a significant amount of state-owned and managed forest land. The Lyme Fire Department works closely with these entities.

The Town's shelter is in East Lyme. The Lyme FD can be used if necessary. The Senior Center for Lyme and Old Lyme can be used as a comfort station. The Town does not accommodate pet sheltering. Lyme is planning on replacing the Hadlyme Fire Station and renovating the Hamburg Station in the coming years.

The Town of Lyme annually reviews its procedure to evacuate individuals without means of transport. The regional public transit system, "9-Town Transit," provides capacity to transport residents without vehicles.

4.2.5 Capital Improvements

The Town has a Capital Improvement Program (CIP) and annually sets aside funds for infrastructure improvements to reduce loss of life and property during natural hazard events.

The Town does not universally attempt to upsize bridges and culverts during upgrades or replacements because doing so might change the rural character of the town in certain situations. Nevertheless, the Town has not historically experienced significant damage due to flooding, and municipal officials report that the rural character of the town means people tend not to live in close proximity to bridges, so the Town is not concerned about direct damage to residents due to undersized bridges, generally. Additionally, the town possesses redundancies in road access and is therefore not concerned about roads becoming impassable at bridges.

The Town is actively replacing bridges as needed, such as Bridge No. 04726 on Macintosh Road. This bridge crosses the Eightmile River, and it is entirely within the SFHA and cannot be made sufficiently high or long to avoid the two approaches being in areas of flood risk. The Town will continue to note opportunities for flood mitigation when other bridges are replaced.

4.2.6 Plan Integration with Other Planning Mechanisms

The town of Lyme uses the mitigation plan to inform its 5-year capital improvement plan and associated annual budgets. Lyme staff reported that the plan has not been formally incorporated into other planning documents. There is new legislation (P.A. 25-33) that now requires cities and towns to incorporate climate vulnerability (specifically including flooding) and resilience strategies into Plans of Conservation and Development (POCDs). Lyme plans to comply with that new requirement during the next POCD Update.

Further, communities are now required to develop and maintain affordable housing plans. The mitigation plan will help inform siting criteria within that plan.

4.2.7 Outreach, Education, Communication, and Warnings

Lyme reports that public outreach and education around natural hazards and municipal efforts to mitigate those hazards is conducted.

The Town uses Everbridge/Bryx, social media, and a notification email system to communicate with the public about hazards and emergencies. The Town also participates in the emergency communications and response procedures of the Millstone Nuclear Power Plant in Waterford as well as State run tabletop exercises regarding other disasters.

The Town relies on a 75' wooden communication tower for signal for municipal and emergency communications, and is concerned regarding its viability during a severe wind event. The Town plans to update its communication system in the upcoming years. Lyme also relies on the Valley Shore communication system for emergency response. The Town has reported that repeater capability is often disrupted during high wind events because the Valley Shore microwave link is affected by the wind. The Town was recently successful in working with AT&T in installing a microsite at the Town Hall. This site boosts FirstNet (ATT& broadband for first responders) and general AT&T communication capabilities.

Since the last plan update in 2021 there have been many updated capabilities:

- An AT&T microsite was installed at the Town Hall which works with the FirstNet network and increases townwide communication.
- The Senior Center was upgraded, aiding sheltering/comfort capabilities.
- The Lyme EOC now uses the online platform called Web EOC. Lyme has also digitized many of its municipal records and backed-up electronic records; the fire department and emergency management are entirely electronic.

5. Hazard Mitigation Action Plan

This section presents the progress made since the 2021 action plan and establishes new goals, objectives and actions identified for the 2026-2030 planning horizon.

5.1 Previous Mitigation Actions Disposition

During the process of developing the 2021 Lyme Hazard Mitigation Plan, several hazard mitigation actions were identified to be pursued during the five-year planning horizon that followed. Table 5.1 presents the actions listed in that document, and the status of those actions.

Table 5.1. Status of Previous Mitigation Strategies and Actions.

Action	Description	Status	Notes
01	Add a freeboard requirement to the Town's flood ordinance, in line with state requirements.	**Carry Forward**	No additional freeboard in zoning regs within the Town Code. The State Building Code requires one foot freeboard, and the Town Code should be consistent.
02	Use Town website and social media accounts to educate the public about municipal hazard mitigation initiatives. Include maps of evacuation routes, storm surge areas, and shelters. Include options for mitigation of residential structures and business recovery and provide links to FEMA, NOAA, State OEM and RiverCOG websites for additional information.	**Carry Forward**	Ongoing efforts; more work is desired.
03	Develop a written annual schedule for natural hazard public education and outreach efforts through the Town website, social media outlets, mailers, in-person outlets, neighborhood associations, and other media, to ensure consistent and long-term public education programs. Education should include information on sheltering locations, private property owner mitigation action options, techniques for homeowner self-inspection, hazard insurance, and geographic distributions of natural hazard risk zones in Town.	**Carry Forward**	No formal schedule, though there was concern regarding information distribution to short term rentals. Transient populations may not be aware of hazards or resources/procedures in the wake of an event.
04	Perform a public outreach and education initiative to inform people of emergency shelter locations and access routes, and what to do with pets when in need of emergency sheltering. Initiative will include, at a minimum, annual postings on the Town website and social media accounts, as well as instructions prior to or during disaster events. Mailers and pamphlets placed in public hubs (such as the Town Hall or Library) may also be used.	**Carry Forward**	Ongoing efforts through website and social media, though nothing formal. Residents tend to be a little more aware due to being within Millstone emergency radius.
05	Continue to invest in resources needed to visit schools and educate children about the risks of floods, hurricanes, and other natural hazards and how to prepare.	**Carry Forward with Revision**	Town has been working on this and is very active and continues to integrate where possible. Revise action to reflect the increasing need for resources that go into efforts.

Action	Description	Status	Notes
06	Review forest roads, trails, and logging roads to identify those presenting firefighting access issues because they are undersized or otherwise present obstacles, and pursue better trail and forest management to allow for better access.	**Carry Forward with Revision**	Fire department does a good job of this, though the Town remains concerned with State forests presenting wildfire risks. State park had one specific location that was presenting an issue; this has since been mitigated. Carry forward and revise to reflect need for trail maintenance to allow access.
07	Expand the electronic inventory of fire access roads and trails to support fire access plans which direct Fire Department response in the event of a wildfire. The inventory should address limited accessibility of some forest roads and identify which equipment, if any, are able to utilize limited-accessibility roads.	**Carry Forward with Revision**	No formal plan, but an informal plan that all members are aware of. Town is moving to a new system which includes a variety of programs and capabilities including firemapper and weather tracking. Revise action to reflect this capability, but also specific need to feed this system, particularly with forest trails and access roads that may not be digitized. For example, and old access road was not digitally available but found on older paper maps.
08	Identify a preferred process for maintaining culverts located on or adjacent to private property that affect public rights of way. This may include developing agreements with private property owners to access culverts for maintenance, establishing requirements for private property owners to maintain culverts on their property, implementing an “adopt a culvert” program to promote culvert maintenance by private property owners, and distributing educational material to help private property owners avoid activities that may exacerbate culvert blockages and deterioration.	**Carry Forward**	Town continues to work through culvert projects, though nothing formal with privately owned. Several crossing replaced recently including Birch Mill Bridge and Macintosh Road bridge. Salem Road bridge will be addressed in the coming years. Culverts are not always being upsized, but better aligned with streams in some places. Overall, this work is ongoing, and needs to be carried forward. One issue is private property owners are filling in drainage systems/streams increasing flood challenges and reducing culvert capacity. Town works through this on an as-needed basis.

Action	Description	Status	Notes
09	Include an express criterion in the Town's open space acquisition process that encourages acquisition and preservation of areas within or adjacent to flood risk zones.	**Carry Forward**	Ongoing; the Town is always working toward open space.
10	Acquire and install an emergency generator at the Town Library	**Carry Forward**	Backup power not yet present for library. The library would not become primary shelter and would act as secondary if/when installed. Library has been tagged as a location of use during drills that the town has participated in and conducted. This site should have a generator as it could be used in the event of emergencies.
11	Complete conversion of all paper records maintained by the municipality to an electronic format, consistent with any State recommendations, to ensure their survival. Establish protocols for practices going forward. Establish protected back-up of records and the ability to access them remotely, should municipal facilities be compromised during or following a disaster.	**Carry Forward with Revision**	All EM/FD records are electronic. Revise to reflect this and the need to ensure that as documents are converted there is a need to maintain document security and integrity.
12	Conduct a direct outreach campaign to owners of Repetitive Loss and Severe Repetitive Loss properties informing them of mitigation options including elevation, relocation, and acquisition. Include information about funding and technical assistance from municipal, state, and federal sources.	**Carry Forward**	No action. Town, like many others, is hesitant to get involved with mitigation options due to potential liability concerns.
13	Designate a municipal staff member to liaison with CT DOT, and communicate with CT DOT about roadways of concern, upgrade schedules, and municipal needs – especially with regards to flood mitigation and emergency vehicle accessibility.	**Completed**	Communication is still fluid with state roads present more challenges than private, particularly 156 and 148. This is the LTA role - John Evans fulfills this for the Town. Communication is good. consider complete and can remove.
14	Work with Eversource to accelerate utility repair work following storm events; specifically identify potential pathways to allow municipal officials to assist with repair work if Eversource cannot respond in a timely manner	**Carry Forward with Revision**	Trees and outages are still a concern, though most residents understand how to cope with an outage. Eversource has a new municipal portal which reportedly

Action	Description	Status	Notes
			has many issues. Revise to reflect portal.
15	Install automated stream gauges on streams in or upstream of Lyme to help warn residents ahead of developing floods	**Deleted**	Not done; this would be a challenge. CIRCA is reportedly working on enhanced flood warning systems. Furthermore, the NWS warning products are becoming more sophisticated.

5.2 Updated Mitigation Goals, Objectives and Strategies

As noted in Section 3 of Volume 1, all the RiverCOG participating communities, including Lyme, participated in setting regional goals and objectives. Lyme has confirmed these goals and objectives valid for the Town's annex. The three goals and objectives are as follows:

Goal 1: Promote implementation of sound flood management and other natural hazard mitigation principles on a regional and local level. Note: Covers future development through policy, planning, regulation, emergency services, and environmental strategies.

- **Objective for Goal 1:** To promote the development, improvement and implementation of programs, policies, regulations and emergency services that result in the reduction of long-term risks to life and property.

Goal 2: Implementation of effective natural hazard mitigation projects at the regional and local level. Note: Covers infrastructure and building related projects – the existing built environment.

- **Objective for Goal 2:** To enhance the ability of RiverCOG, other regional entities, and local communities to reduce or eliminate risks to life and property from natural hazards through cost-effective hazard mitigation projects, including avoidance.

Goal 3: Increase research, planning and outreach activities for the mitigation of natural hazards on a regional and local level. Note: Covers the human component of mitigation via outreach and education, and integration with other planning and continuous improvement through increase research.

- **Objective for Goal 3:** To increase general awareness of the region's natural hazards and encourage State agencies, local communities, and the public to be proactive in taking actions to reduce long-term risks to life and property.

During the 2026 Update process, Lyme noted that education and outreach should be emphasized in the 2026 edition of the NHMP.

5.2.1 Prioritization of Mitigation Strategies

In considering which projects, processes, and other measures to undertake in the upcoming plan period, municipal and regional officials evaluated the need to address problems and vulnerabilities in their communities against the communities' resources and capabilities. To prioritize mitigation strategies, a set of criteria commonly used by public administration officials and planners was applied to each proposed strategy. The method, called STAPLEE, is outlined in FEMA planning documents such as Developing the Mitigation Plan (FEMA 386-3) and Using Benefit-Cost Review in Mitigation Planning (FEMA 386-5). STAPLEE stands for the "Social, Technical, Administrative, Political, Legal, Economic, and Environmental" criteria for making planning decisions. Benefit-cost review was emphasized in the prioritization process. Criteria were divided into potential benefits (pros) and potential costs (cons) for each mitigation strategy. The following questions were asked about the proposed mitigation strategies:

Social:

- Benefits: Is the proposed strategy socially acceptable to the community?
- Costs: Are there any equity issues involved that would mean that one segment of the community could be treated unfairly? Will the action disrupt established neighborhoods, break up voting districts, or cause the relocation of lower-income people? Is the action compatible with present and future community values?

Technical:

- Benefits: Will the proposed strategy work. Will it reduce losses in the long term with minimal secondary impacts?
- Costs: Is the action technically feasible? Will it create more problems than it will solve? Does it solve the problem or only a symptom?

Administrative:

- Benefits: Does the project make it easier for the community to administrate future mitigation or emergency response actions?
- Costs: Does the community have the capability (staff, technical experts, and/or funding) to implement the action, or can it be readily obtained? Can the community perform the necessary maintenance? Can the project be accomplished in a timely manner?

Political:

- Benefits: Is the strategy politically beneficial? Is there public support both to implement and maintain the project? Is there a local champion willing to see the project to completion? Can the mitigation objectives be accomplished at the lowest cost to the community (grants, etc.)?

- Costs: Have political leaders participated in the planning process? Do project stakeholders support the project enough to ensure success? Have the stakeholders been offered the opportunity to participate in the planning process?

Legal:

- Benefits: Is there a technical, scientific, or legal basis for the mitigation action? Are the proper laws, ordinances, and resolutions in place to implement the action?
- Costs: Does the community have the authority to implement the proposed action? Are there any potential legal consequences? Will the community be liable for the actions or support of actions or for lack of action? Is the action likely to be challenged by stakeholders who may be negatively affected?

Economic:

- Benefits: Are there currently sources of funds that can be used to implement the action? What benefits will the action provide? Does the action contribute to community goals such as capital improvements or economic development?

Costs: Does the cost seem reasonable for the size of the problem and the likely benefits? What burden will be placed on the tax base or local economy to implement this action? What proposed actions should be considered but be tabled for implementation until outside sources of funding are available?

Each proposed mitigation strategy presented in this plan was evaluated and quantitatively assigned a "benefit" score and a "cost" score for each of the seven STAPLEE criteria as outlined below:

- For potential benefits, a score of "1" was assigned if the project will have a beneficial effect for that criterion or a "0" if the project would have a negligible effect or if the questions were not applicable to the strategy.
- For potential costs, a score of "-1" was assigned if the project would have an unfavorable impact for that criterion or a "0" if the project would have a negligible impact or if the questions were not applicable to the strategy.
- Technical and Economic criteria were double weighted (multiplied by two) in the final sum of scores.
- The total benefit score and cost score for each mitigation strategy was summed to determine each strategy's final STAPLEE score.

Although a community may implement recommendations as prioritized by the STAPLEE method, an additional consideration is important for those recommendations that may be funded under the FEMA mitigation grant programs. To receive federal funding, the mitigation action must have a benefit-cost ratio (BCR) that exceeds a value of 1.0. Calculation of the BCR is conducted using FEMA's Benefit Cost Analysis (BCA) toolkit. The calculation method may be complex and vary with the mitigation action of interest. Calculations are dependent on detailed information such as property value appraisals, design and construction costs for structural projects, and tabulations of previous damages or NFIP claims. The BCR scoring system used is outlined in Table 5.2.

Table 5.2. BCR Scoring System

Scoring	Benefits	Costs
Low: 0-1 points	Few would benefit; the impacts being addressed are not severe; benefits may be short term	Likely to be done by existing personnel with little impact on budget; not complicated to accomplish. Costs to implement are likely to be under $10,000.
Medium: 2-3 points	Benefits may be felt by many in the community; the action may solve a problem or otherwise benefit the community for several years	May need additional funding or studies; may require change in practices; costs to implement may be between $10,000 and $100,000
High: 4-5 points	Benefits would accrue to many in the community; benefits may accrue to the most vulnerable or those not able to recover on their own; benefits would be long term and may permanently protect from damages	Likely to cost over $100,000 and require obtaining funding outside of operating budget; complicated, lengthy process to implement

The STAPLEE method accounts for cost-benefit considerations both directly (through the "Economic" category) and indirectly (through general consideration of costs and benefits of actions). Additionally, the range of estimated costs of each strategy are included in the STAPLEE table. The assumed costs of projects and generalized presentation of the benefits accruing from them are not based on specific detailed cost estimates as that level of analysis is not appropriate for this type of planning effort. For some projects, such as routine or recurring operations that are established practices and conducted with municipal general operating funds and existing staff, the STAPLEE results can be the only explicit comparison of costs and benefits. For projects for which bonding and/or grant funding will be sought, more in-depth evaluations of costs and benefits will be required. As project scopes are detailed, benefits and costs can be identified with more precision, and the benefit-cost ratio which results from a full benefit-cost analysis may differ from the planning-level STAPLEE results presented here.

It should be noted that higher BCRs do not necessarily correspond to high priorities, nor do low BCRs or BCRs under 1.0 correspond to low-priority projects. An important project with a high priority to the community may have a lower BCR because of its complexity, assumed high expense, and other costs. Communities should not be discouraged or deterred from further consideration of projects that have low BCRs or BCRs less than 1.0 until additional, more specific evaluations of the costs and benefits have been undertaken.

5.2.2 2021-2026 Prioritized Hazard Mitigation Actions

In addition to the regional mitigation actions endorsed by Lyme and outlined in Section 3 of Volume 1 of the regional plan, the Town identified or carried over from the last update, ranked and evaluated the actions in Table 5.3. For each identified action, the goal and objective it addresses is noted. Additionally, a description, hazards addressed, lead agency, indication of costs and potential funding sources, as well as an estimated timeline for completion is included.

Figure 5.1 shows the locations of the projects listed in Table 5.3 with spatial elements that have been carried forward or are new additions. No completed projects have a spatial element that could be shown

on this map. Projects carried forward and new projects are identified by their activity number (from Table 5.3).

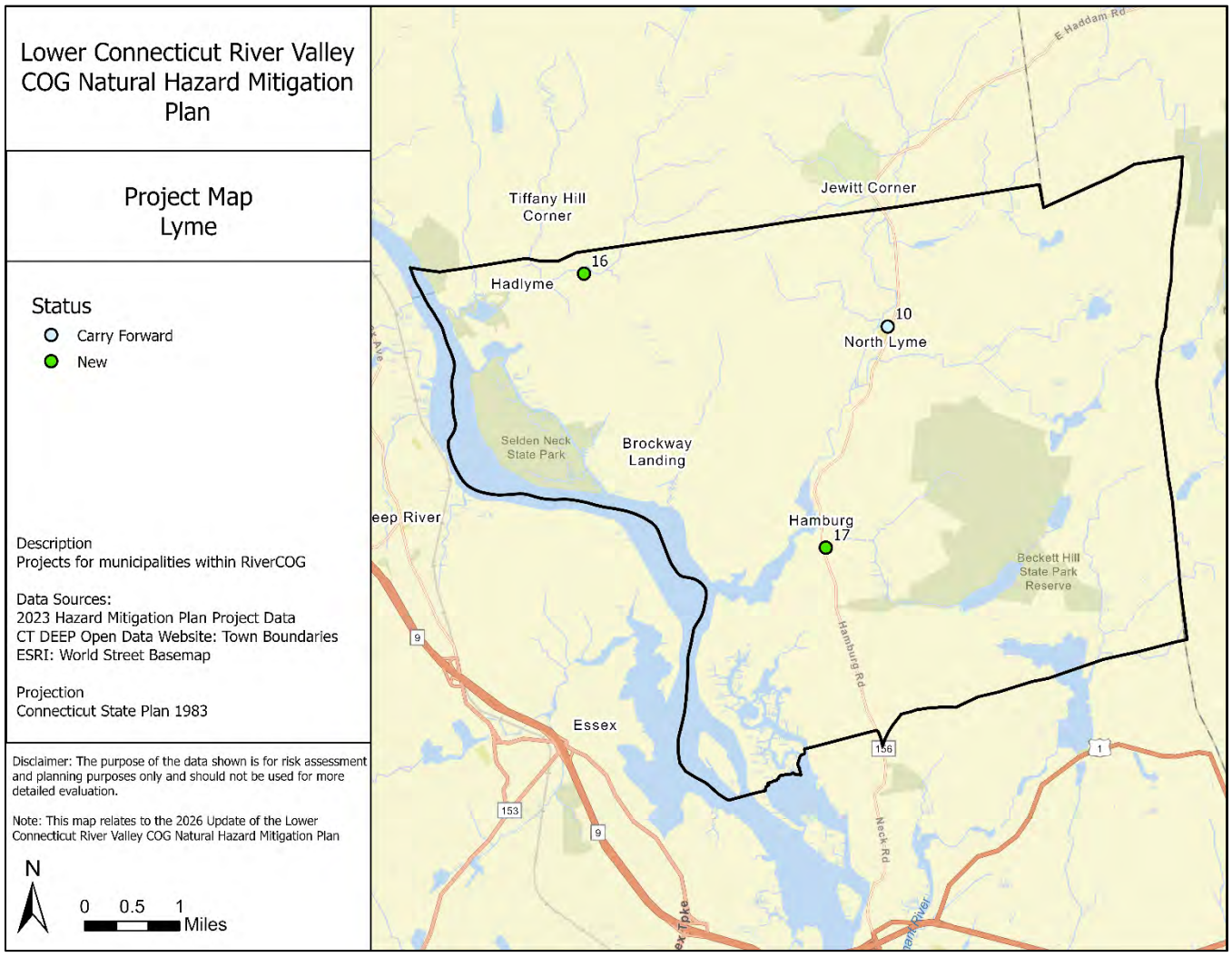


Figure 5.1. Carried Forward and New Projects in Lyme

Table 5.3. Lyme Hazard Mitigation Strategies and Prioritization

KEY: SW= Severe Weather, TW = Tornado/Wind, ET = Extreme Temperatures, WS=Winter Storm, F = Flood, TI = Tree Damage and Invasive Species, WF = Wildfire, D = Drought, E = Earthquake, CC = Climate Change

Activity #	Goal/ Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	Total STAPLEE Score/ Priority
01	1 - 1	**Add a freeboard** requirement to the Town's flood ordinance, in line with the State model flood requirements and State Building Code	P&Z	$1,000-$5,000	OB	2027-2029	F, CC	1	0	1	0	1	0	0	0	1	0	0	0	1	0	6 – High
02	3 - 1	**Use Town website and social media** accounts to educate the public about municipal hazard mitigation initiatives. Include maps of evacuation routes, storm surge areas, and shelters. Include options for mitigation of residential structures and business recovery and provide links to FEMA, NOAA, State OEM and RiverCOG websites for additional information.	Select Board	$1,000-$5,000	OB	2026-2027	SW, TW, ET, WS, F, TI, WF, D, E, CC	1	0	1	0	1	-1	1	0	0	0	0	0	1	0	5 – High

Activity #	Goal/ Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	Total STAPLEE Score/ Priority
03	3 - 1	**Develop a written annual schedule for natural hazard public education and outreach efforts** through the Town website, social media outlets, mailers, in-person outlets, neighborhood associations, and other media, to ensure consistent and long-term public education programs. Education should include information on sheltering locations, private property owner mitigation action options, techniques for homeowner self-inspection, hazard insurance, and geographic distributions of natural hazard risk zones in Town.	EMD/FD	$5,000-$20,000	OB	2026-2027	SW, TW, ET, WS, F, TI, WF, D, E, CC	1	0	0	0	1	-1	0	0	0	0	0	0	1	0	2 – Low

Activity #	Goal/ Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	Total STAPLEE Score/ Priority
04	3 - 1	**Perform a public outreach and education initiative** to inform people of emergency shelter locations and access routes, and what to do with pets when in need of emergency sheltering. Initiative will include, at a minimum, annual postings on the Town website and social media accounts, as well as instructions prior to or during disaster events. Mailers and pamphlets placed in public hubs (such as the Town Hall or Library) may also be used.	EMD/FD	$10,000-$20,000	OB	2027-2029	SW, TW, ET, WS, F, TI, WF, D, E, CC	1	0	1	0	1	-1	0	0	0	0	0	0	1	0	4 – Med
05	3 - 1	**Visit schools and educate children** about the risks of floods, hurricanes, and other natural hazards and how to prepare.	BOE	$5,000-$20,000	OB	2027-2028	SW, TW, WS, F, WF, D, E, CC	1	0	0	0	0	-1	0	0	0	0	0	0	0	0	0 – Low

Activity #	Goal/ Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	Total STAPLEE Score/ Priority
06	2 - 1	**Identify forest roads that are presenting firefighting access challenges** because they are undersized or otherwise present obstacles.	FD	$5,000-$20,000	OB, STEAP	2026-2028	ET, WF, D, CC	1	0	1	0	1	-1	1	0	0	0	0	0	1	0	5 – High
07	1 - 1	**Develop a fire access plan** to direct Fire Department response in the event of a wildfire. The plan should address limited accessibility of some forest roads and identify which equipment, if any, are able to utilize limited-accessibility roads.	FD	$5,000-$20,000	OB, STEAP	2028-2030	ET, WF, D, CC	1	0	1	0	1	-1	1	0	0	0	0	0	1	0	5 – High

Activity #	Goal/ Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	Total STAPLEE Score/ Priority
08	2 - 1	**Identify a preferred process for maintaining culverts located on or adjacent to private property that affect public rights of way.** This may include developing agreements with private property owners to access culverts for maintenance, establishing requirements for private property owners to maintain culverts on their property, implementing an "adopt a culvert" program to promote culvert maintenance by private property owners, and distributing educational material to help private property owners avoid activities that may exacerbate culvert blockages and deterioration.	Select Board / DPW	$1,000-$5,000	OB, CIP	2026-2029	SW, F, CC	1	0	1	0	1	-1	0	0	1	0	0	0	1	0	5 – High

Activity #	Goal/ Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	Total STAPLEE Score/ Priority
09	1 - 1	**Include an express criterion in the Town's open space acquisition process** that encourages acquisition and preservation of areas within or adjacent to flood risk zones.	Open Space Coordinator	$1,000-$5,000	OB	2026-2029	F, CC	1	0	1	0	1	0	0	0	0	0	0	0	1	0	5 – High
10	2 - 1	**Acquire and install an emergency generator at the Town Library** as this facility has been identified as a potential respite site during extreme temperature events, and sheltering location during a Millstone event or other emergency (i.e., active shooter)	EMD / Facilities	$10,000-$25,000	FEMA HMA	2028-2030	SW, TW, WS, TI, CC	1	0	1	0	1	0	1	0	0	0	0	0	0	0	5 – High

Activity #	Goal/ Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	Total STAPLEE Score/ Priority
11	1 - 1	**Complete conversion of all paper records maintained by the Town** to an electronic format, consistent with any State recommendations, to ensure their survival. Establish protocols for practices going forward. Establish protected back-up of records and the ability to access them remotely, should municipal facilities be compromised during or following a disaster.	Select Board	$5,000-$10,000	OB	2029-2030	SW, TW, WS, F, WS, E	1	0	1	0	1	0	0	0	0	0	0	0	0	0	4 – Med

Activity #	Goal/ Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	Total STAPLEE Score/ Priority
12	3 - 1	**Conduct a direct outreach campaign to owners of Repetitive Loss and Severe Repetitive Loss properties** informing them of mitigation options including elevation, relocation, and acquisition. Include information about funding and technical assistance from municipal, state, and federal sources.	Select Board	$5,000-$10,000	OB	2027-2028	SW, F, CC	1	0	1	0	0	0	0	0	0	0	0	0	1	0	4 – Med
13	2 - 1	**Work with Eversource to improve "muni hub", and overall improve communication to accelerate utility repair work following storm events**; specifically identify potential pathways to allow municipal officials to assist with repair work if Eversource cannot respond in a timely manner	Select Board / DPW	$1,000-$5,000	OB	2028-2029	SW, TW, WS, TI, CC	1	0	1	0	1	0	0	0	0	0	0	0	0	0	4 – Med

Activity #	Goal/ Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	Total STAPLEE Score/ Priority
14		**Explore options for addressing and increasing water availability for firefighting capacity throughout Town.** Options to discuss may include, but are not limited to, cisterns, pond dredging, or private property easements to access water.	FD, Select Board	$100,000+	OB, STEAP, CIP	2027-2028	WF, D	1	0	1	0	1	-1	1	0	1	0	0	0	1	0	6 – High
15		**Evaluate the need and feasibility of relocating a communication tower to municipally owned property** on Mt. Archer, and continue conversations with the State regarding funding support for this venture.	EMD	$20,000 - $50,000	OB, STEAP, CIP	2027-2028	All	1	0	1	0	1	0	1	0	0	0	0	0	0	0	5 – High
16		**Replace Hadlyme Fire Station**	Select Board, FD	>1M	OB, CIP, STEAP, FEMA HMA	2029-2031	All	1	0	1	0	1	-1	1	0	0	0	1	-1	0	0	4 – High
17		**Complete renovations to the Hamburg Fire Station**	Select Board, FD	>1M	OB, CIP, STEAP, FEMA HMA	2029-2030	All	1	0	1	0	1	-1	1	0	0	0	1	-1	0	0	4 – High

LOWER CONNECTICUT RIVER VALLEY COUNCIL OF GOVERNMENTS
HAZARD MITIGATION PLAN 2026 UPDATE

TOWN OF MIDDLEFIELD MUNICIPAL ANNEX

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1. Contact Information

1.1. Point of Contact

Table 1.1. Town of Middlefield Contact Information

Information	Town of Middlefield
Contact Name	Robert Yamartino, First Selectman
Address	393 Jackson Hill Road Middlefield, CT 06455
Telephone	860-349-7114
Email	ryamartino@Middlefieldct.org

1.2. Local Planning Team

The following representatives listed in Table 1.2 participated in meetings and provided input, data, and council toward the development of Volume 1 and this Middlefield, Connecticut Annex.

Table 1.2. Town of Middlefield Planning Team

Name	Title
Robert Yamartino	First Selectman
Robert Poturnicki	Emergency Management Director
Robin Newton	Town Planner

1.3. Lower Connecticut River Valley Council of Governments

Table 1.3. RiverCOG Contact Information

Information	RiverCOG Information
Contact Name	Margot Burns – Senior Environmental Planner
Address	RiverCOG 145 Dennison Rd. Essex, CT 06426
Telephone	(860) 581-8554 x 702
Email	mburns@rivercog.org

2. Jurisdiction Profile

2.1. Town Profile

Middlefield is a rural community centrally located and bordered by Middletown, Meriden, and Durham. The form of government includes a Board of Selectmen consisting of a First Selectman, who is the chief executive official, and two other members. The Board of Selectmen and the Town Meeting are the legislative bodies of the town and may enact ordinances consistent with the General Statutes of the State of Connecticut and specific provisions of the Town Charter. Together with Durham, the towns form Regional School District 13, offering both a Contemporary and Integrated Day education programs for students in both communities. Figure 2.1 shows the location and corporate boundaries of Middlefield.

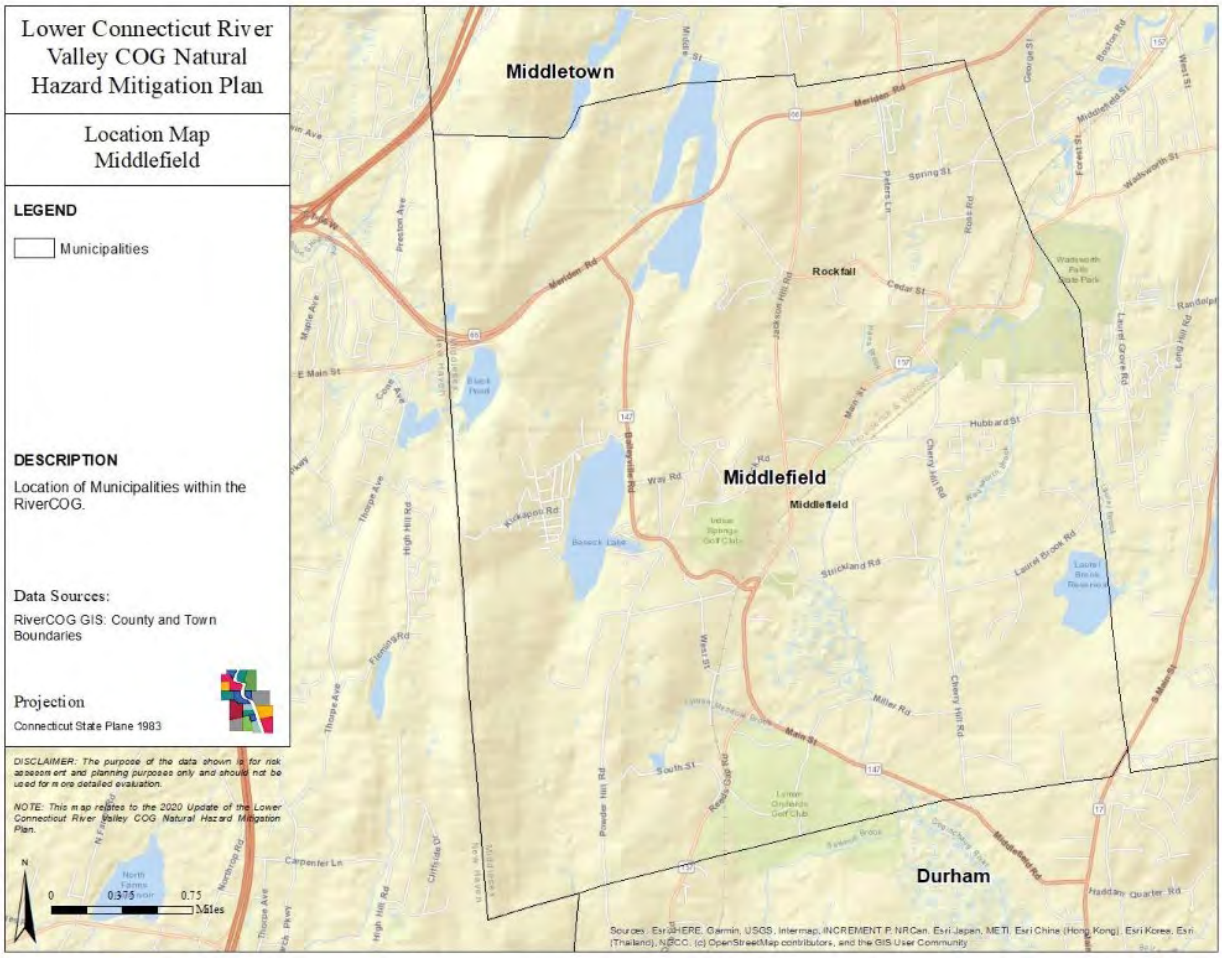


Figure 2.1. Middlefield Location

The Town has a total area of 13.3 square miles or 8,448 acres. The topography of the western half of the Town is characterized by Beseck Mountain, with elevations approaching 800' above sea level. There are several lakes which comprise of 413 acres of the town's 8,448.

The west side of Middlefield is flanked by the Metacomet Ridge, a mountainous trap rock ridgeline that stretches from Long Island Sound to nearly the Vermont border. Notable mountains of the Metacomet Ridge in Middlefield include Higby Mountain and Beseck Mountain. The 50-mile Mattabasset Trail traverses the ridge.

The town of Middlefield was incorporated in 1866. Middlefield is in Middlesex County, and is so named because it is halfway between Middletown and Durham, and Middletown and Meriden. As a small community, Middlefield has an abundance of history that goes back to the late 17th century and many first settlers of Connecticut. The Old North Burying Ground was established for those living west of Middletown and the first burial was in 1738. Middlefield became a town in 1866 by an act of the Connecticut Legislature. The town was previously part of the City of Middletown. Figure 2.2 shows land cover in Middlefield.

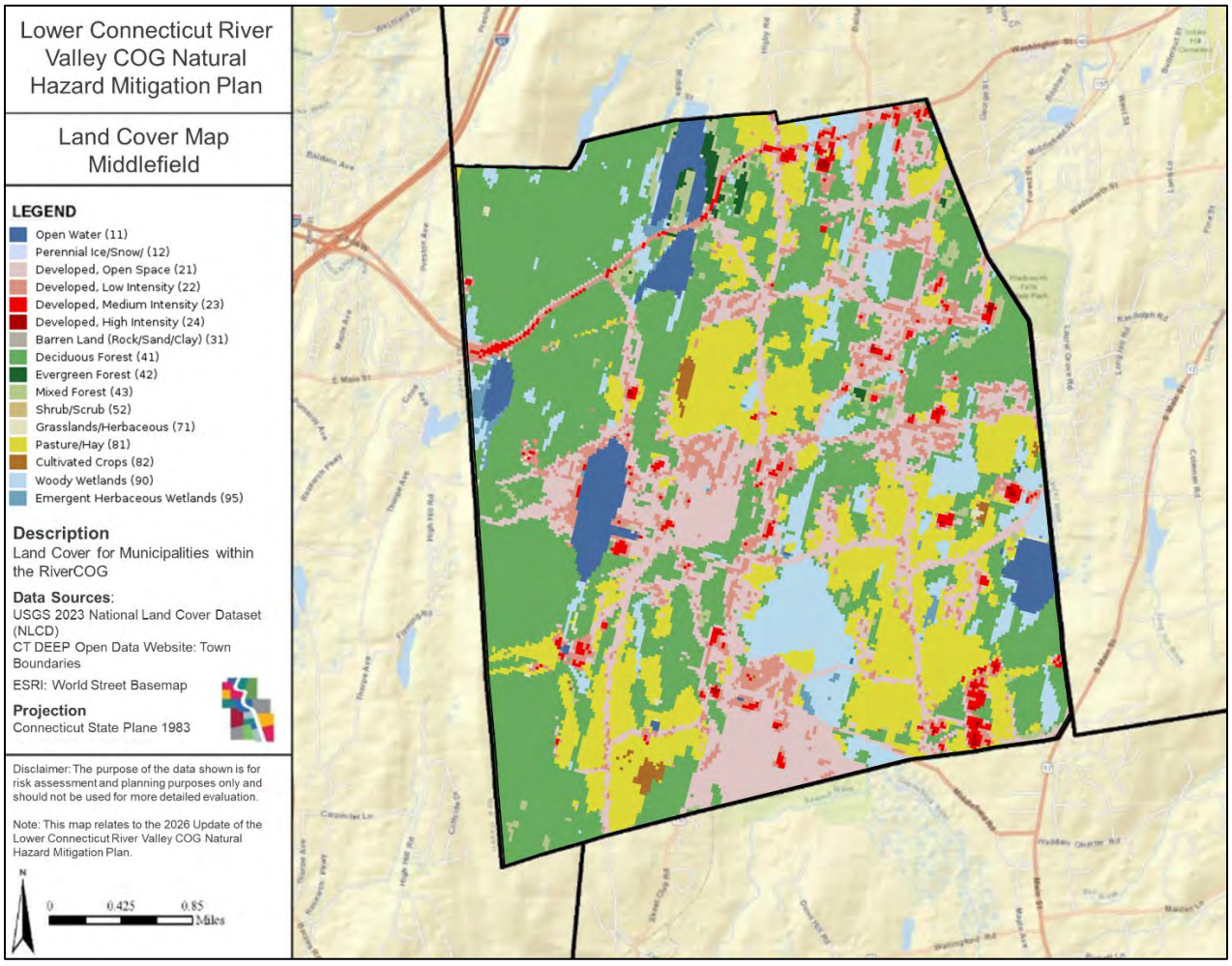


Figure 2.2. Middlefield Land Cover

The 2023 American Community Survey (ACS) reported a town population of 4,236, a 3.3% decrease from 2019.[1] Figure 2.3 provides a demographic profile for Middlefield.[2]

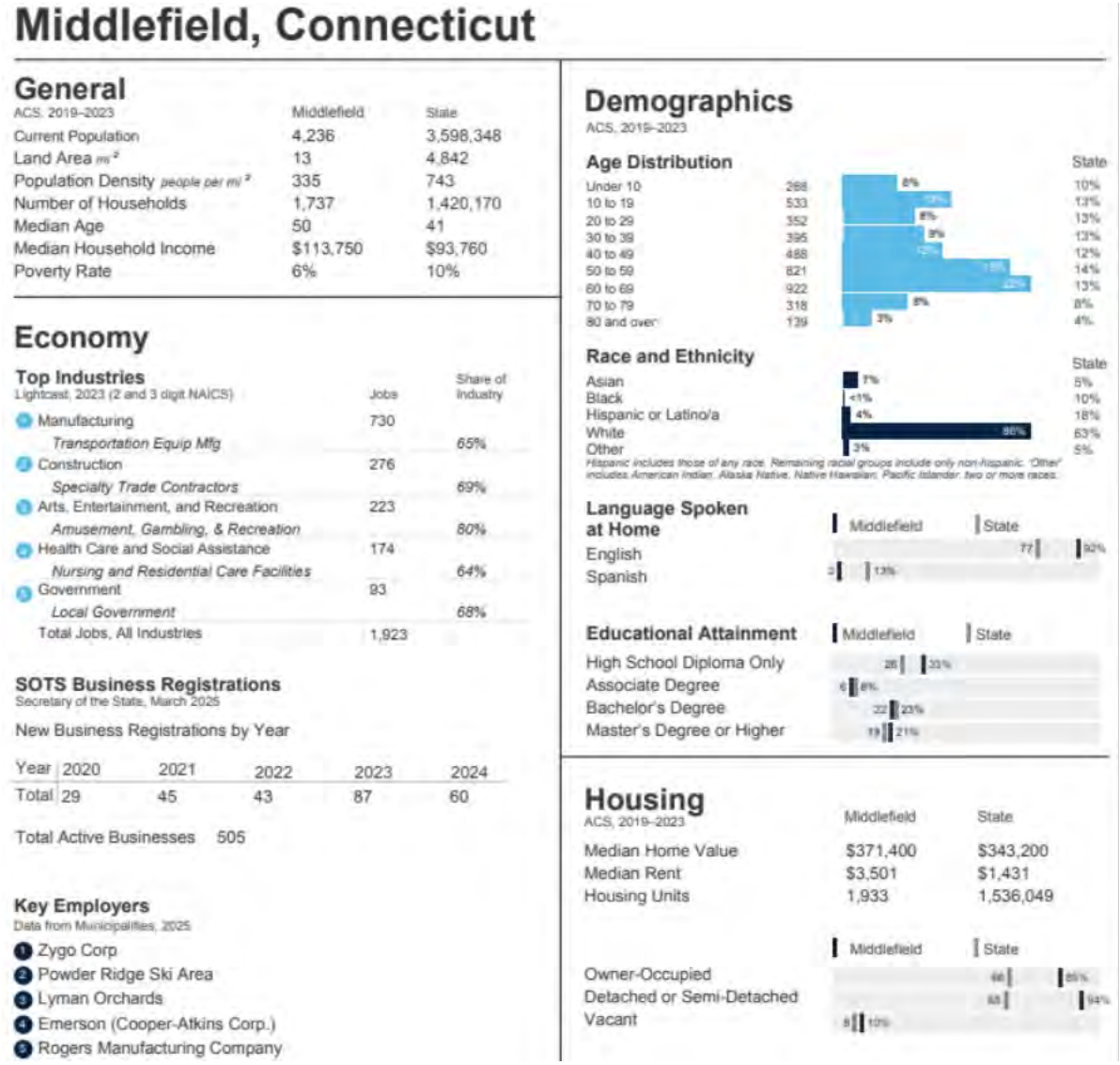


Figure 2.3. Town of Middlefield Demographics

2.2. Climate

Average weather data in Middlefield was sourced from the Weather Spark website (weatherspark.com).

[1] https://s3-us-west-2.amazonaws.com/cerc-pdfs/2025/Middlefield.pdf
[2] - Published on Town of Middlefield, CT *(Source: Connecticut Data Collaborative)*

In Middlefield, the summers are warm and humid, the winters are very cold, and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from 21°F to 83°F and is rarely below 7°F or above 91°F.

The warm season lasts for 3.5 months, from May 31 to September 15, with an average daily high temperature above 74°F. The hottest day of the year is July 20, with an average high of 83°F and low of 66°F. The cold season lasts for 3.3 months, from December 1 to March 12, with an average daily high temperature below 46°F. The coldest day of the year is January 30, with an average low of 21°F and high of 36°F.

The wetter season lasts 4.7 months, from March 26 to August 17, with a greater than 28% chance of a given day being a wet day. The chance of a wet day peaks at 34% on May 30. The drier season lasts 7.3 months, from August 17 to March 26. The smallest chance of a wet day is 22% on January 29. Middlefield experiences some seasonal variation in monthly rainfall. Rain falls throughout the year in Middlefield. The greatest quantity of rain falls during the 31 days centered around October 3, with an average total accumulation of 3.8 inches. The least rain falls around January 24, with an average total accumulation of 2.0 inches.

Middlefield experiences some seasonal variation in monthly liquid-equivalent snowfall. The snowy period of the year lasts for 5.0 months, from November 10 to April 9, with a sliding 31-day liquid-equivalent snowfall of at least 0.1 inches. The most snow falls during the 31 days centered around January 26, with an average total liquid-equivalent accumulation of 0.9 inches. The snowless period of the year lasts for 7.0 months, from April 9 to November 10. The least snow falls around July 20, with an average total liquid-equivalent accumulation of 0.0 inches.

The average hourly wind speed in Middlefield experiences significant seasonal variation over the course of the year. The windier part of the year lasts for 5.8 months, from October 28 to April 22, with average wind speeds of more than 5.5 miles per hour. The windiest day of the year is February 26, with an average hourly wind speed of 7.1 miles per hour. The calmer time of year lasts for 6.2 months, from April 22 to October 28. The calmest day of the year is July 31, with an average hourly wind speed of 4.0 miles per hour.

2.3. Government Style

Middlefield enjoys a New England style form of Government. In the purest sense the people exercise their power and wishes through assorted Town Meetings throughout the year and via a three-person Board of Selectmen who are elected every two years.

The office of the Board of Selectmen evolved from the 1600's to its present form and function which is to "superintend the concerns of the Town". Statement of purpose raises a vast assortment of powers and duties that the Board deals with. The First Selectman position is noted as being the Chief Executive Officer.

2.4. Development Trends

Middlefield is a rural community, and development is typically characterized by very nominal subdivisions and redevelopments. Since the last plan update, Middlefield has experienced some changes in development, including:

- A new EOC was constructed in 2025-2026.
- A new gasoline service station is being developed in the northern part of the town on Route 66.
- The Town handles small 3-4 home subdivisions now and then.
- The Victory Church is looking to expand, and plans to extend the water main along Route 66 from Middletown to their expansion. The Town is likely to approve this extension. However, new development along Route 66 could be spurred by the water main.

The new EOC and gas station locations are not in special flood hazard areas. These types of land uses play a role during disasters and are generally considered to help reduce vulnerabilities. The small subdivisions noted are constructed to stormwater and NFIP requirements and take into consideration fire suppression and water supply. While any new development can add vulnerabilities, modern planning and development standards provide mitigation. Expansion of Victory Church and the associated water main expansion may attract additional development in the future. The town will follow all rules and regulations to address potential new risks as they arise in development proposals.

2.5. Town-Specific Hazard Concerns

Municipal staff reported several specific hazard concern issues, which are listed below. In terms of hazards most impactful to the town, severe storms and flood-related events are the top hazards. Agricultural risk from drought and disease is a bigger issue in Middlefield than many other towns in the region, since agriculture is more prevalent. Invasive species has emerged as a key concern, as well.

The information below is intended to supplement the hazard specific analysis completed in Section 2, of Volume I of this plan. Not all hazards analyzed in Volume I are included in this annex.

A note: To preserve the reader's ability to align RiverCOG-Level and town-level hazard identification and risk analysis, the order of the following hazards aligns with the order of hazards in Volume I. Individual towns have ranked these hazards differently. This town-level ranking can be found in Section 3.3 Hazard Risk Ranking.

2.5.1. Severe Winter Weather

Winter storms are one of the most significant hazards for the Town of Middlefield. Wind and snowstorms do occur regularly, and the winter storm of early 2026 caused significant disruptions. Roof collapse is a concern during snow events, although collapses have not occurred

in 2011. A major ice storm can cause trees and tree limbs to fall and result in major road closures and power outages. There is a need for additional people to operate snow removal equipment during big events.

2.5.2. Flooding

Flash floods are one of the most dangerous flooding conditions in Middlefield as is evidenced by its history of flooding. It is the most significant natural hazard with the potential to harm people and impede emergency access. The streams passing through Middlefield cross under low-lying roads. Excessive water coming off Meriden Mountain, with high velocity, adds to the flooding problem.

Lake Road is the sole access to hundreds of residential properties located west of Beseck Lake. The road crosses a stream near its west end. This stream has overtopped the road many times during flood events. During these flooding events, the road must be closed, isolating the lake community. In particular, the flood of August 2024 in southwest Connecticut was also significant in Middlefield, and Lake Road flooded as it does almost every year. The closure on Lake Road lasted for several hours, and parts were closed for an entire day. During this time, residents on the west side of the lake were isolated. Although the road has not washed out, washout risks are present. Addressing risks to Lake Road is one of the primary natural hazard and resilience-related focuses for the Town of Middlefield over the next five years.

An additional area of concern for Middlefield is the Coginchaug River. The river flows in a northerly direction through Durham, Middlefield, and Middletown, where it discharges to the Mattabesset River before it enters the Connecticut River. The Coginchaug River often floods due to the vegetation/trees obstructing the channel and floodplain. Flooding from the Coginchaug River continues to impact Miller Road and a couple other roads. Perhaps the most critical resilience issue facing Middlefield is the flooding that has resulted from impeded flows of the Coginchaug River. Historically, the silt and wooden debris that has accumulated in its channel and culverts was removed periodically, to ensure that flows were sustained; however, this work has not been performed in many years. The result is that the land adjacent to the river which had not normally flooded, now experiences significant flooding. A major resilience goal of the towns of Durham and Middlefield is to have these accumulations of silt and wooden debris removed from the river's channel to alleviate flooding.

2.5.3. Dam Breach

Dams, due to both the risk of their failure and their inability to operate effectively during flood conditions due to poor maintenance, are of high concern to the Town. Dam breach and associated inundation of streams passing through Middlefield and low-lying roads are of great concern during significant rain events. Flash flooding could also put dams at risk of failure which would cause some economic loss due to repair costs and debris to clean up.

Figure 2.4 shows the location of all dams within Middlefield. Moderate, Significant, and High hazard-class dams are presented in Table 2.1. A full list of dams is provided in Appendix B.

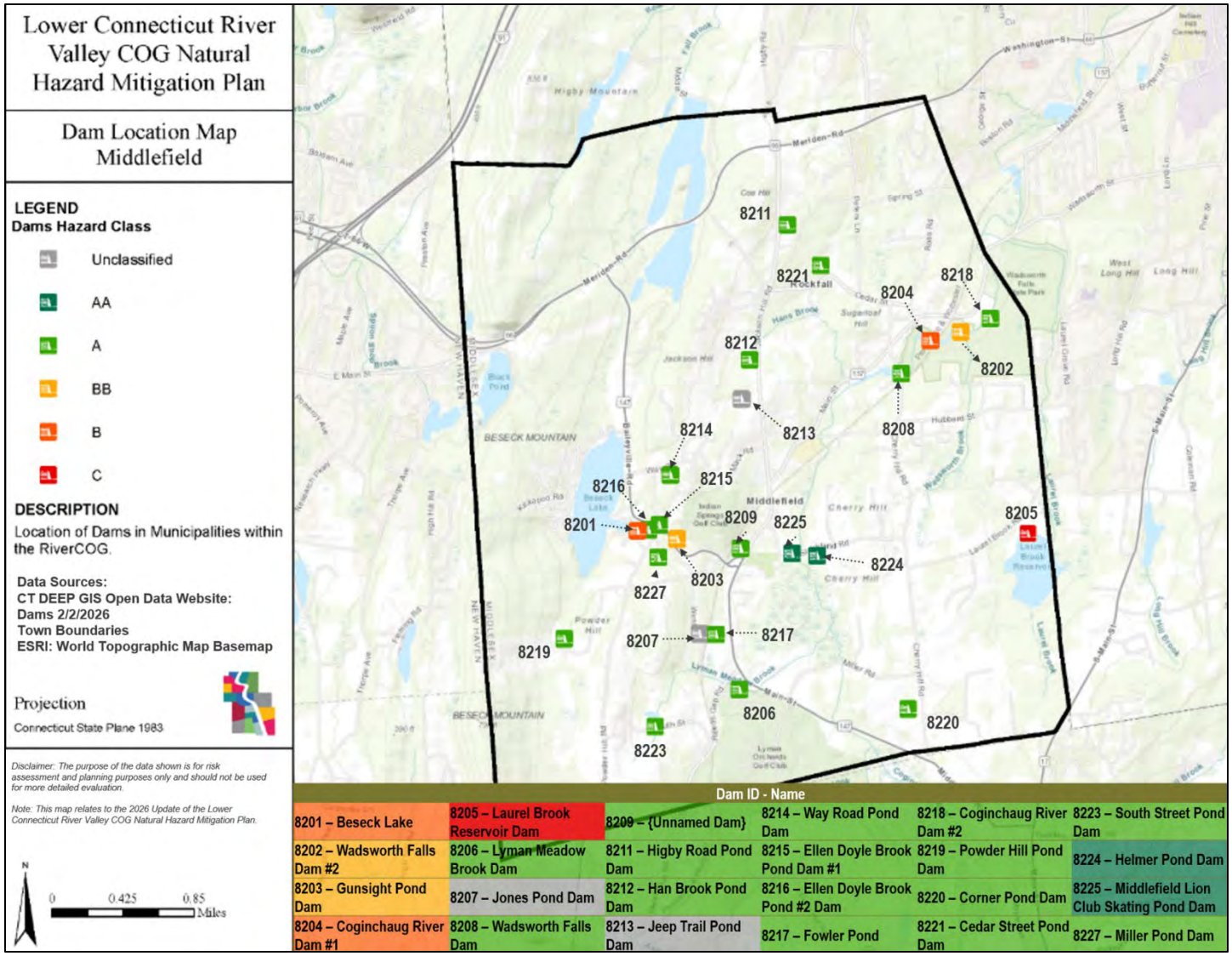


Figure 2.4. Location of Dams, Middlefield, CT

Table 2.1. Moderate, Significant and High Hazard Dams, Middlefield, CT

CT Dam #	Dam Name	Hazard Class	Owner
8202	WADSWORTH FALLS DAM #2	BB - Moderate	CT DEEP
8203	GUNSIGHT POND DAM	BB - Moderate	Lyman Products, Inc.
8201	BESECK LAKE DAM	B - Significant	CT DEEP
8204	COGINCHAUG RIVER DAM #1	B - Significant	Richard & Nancy Boyton
8205	LAUREL BROOK RES. DAM	C - High	City of Middletown

The subject plan update seeks approval under Element G of the Local Plan Review Tool, for potential HHPD eligibility. One high hazard dam is located in Middlefield: the Laurel Brook Reservoir Dam. This dam was introduced and described in the multi-jurisdiction document. The Emergency Action Plan (EAP) was obtained and reviewed to understand the people, critical facilities, and community assets in the dam failure inundation area.

- Laurel Brook Reservoir Dam: The City of Middletown owns this dam. An EAP was prepared and accepted by DEEP. Laurel Brook begins at the outlet of the spillway and eventually discharges into the Coginchaug River. The inundation area skirts the Middlefield/Middletown municipal boundary and includes the following:
    - Laurel Brook:
        - Industrial buildings on Laurel Brook Road, Brookside Drive, and Anderson Road.
        - Residential and commercial properties on Rockfall Road.
        - Red Road neighborhood in Middletown.
    - Route 157 – residential properties and one industrial property in Middletown.
    - Coginchaug River:
        - Commercial and residential in Forest Street / Middlefield Street area of Middlefield and Middletown.
        - Butternut Street residential area in Middletown.
        - Route 157 and Route 66 (Washington Street) residential, commercial, and industrial, including CVS and Palmer Field in Middletown.
        - Residential along Columbus Drive and Mazotta Place in Middletown.
        - Catherine Street area (residential and commercial) in Middletown.
        - The inundation area ends at the large swamp associated with the lower Coginchaug River, which is affected by backwater tidal conditions from the Connecticut River.

  In general, numerous structures were anticipated to be affected. The EAP states that too many properties would be affected to list them individually and instead provides address ranges on affected streets.

2.5.4. Thunderstorms and Severe Weather

Although Middlefield does not experience severe weather at a frequency greater than the region, some of its challenges are more pronounced due to its rural patterns of development and resulting infrastructure. The Beseck Lake community is served by a sanitary sewer system that relies on many individual pumps. The current estimate is 177 pump chambers. Only some properties own standby power (generators), so a prolonged outage can lead to significant concerns about sanitary sewage removal. Power outages are therefore a significant concern in Middlefield.

2.5.5. Hurricanes and Tropical Storms

Hurricanes pose the most catastrophic damage potential of any natural disaster phenomenon. Along with hurricanes comes strong winds which result in power outages and fallen trees and debris that blocks roads, down utility lines, damage property, and put lives at risk. Tree maintenance/removal is needed in town to mitigate debris and fallen trees in town. The narrative above about the lake community sewer system is applicable here, as well.

2.5.6. Tornado

Although relatively rare in Connecticut, the threat of tornado could cause significant damages to life and property in the Town of Middlefield. Overall, residents throughout Middlefield are equally susceptible to the chance of a tornado occurrence. One concern among Town leadership is a relative lack of sheltering facilities in the community that could be available during and after a tornado. The regional shelter is in the adjacent Town of Durham. The Middlefield Community Center lacks the resources to be used as a full-scale shelter. However, the completion of the middle school expansion within the planning horizon of this plan (2026-2031) should provide enhanced sheltering capabilities.

2.5.7. Earthquakes

The entire Town could be affected by an earthquake in this region; however, impacts could vary locally. In Middlefield and the surrounding region, recorded impacts have been limited to shaking to the extent that things were knocked off shelves and people were alarmed. Structural damage has been limited to building components such as chimneys and buildings in poor repair; but failing structures have caused property damage in nearby towns. Anything higher than a “minor” earthquake is very unlikely in Middlefield; however, the potential does exist. Most construction in Middlefield is wood-framed. Vulnerability is considered low.

2.5.8. Drought and Wildfire

Middlefield is small enough that a drought would most likely be town wide. Flash droughts have been occurring with some regularity. When they do occur, the most at-risk populations are those residents with shallow wells. Droughts can also exacerbate wildfire conditions. The threat of wildfires for people living near wild land areas or using recreational facilities in wilderness areas is real. Dry conditions at various times of the year increase the potential for wildfires. There is more agriculture

in Middlefield than in most other towns in the RiverCOG region. According to the Plan of Conservation and Development: "Agriculture played an important role in the settlement and history of the town of Middlefield. It remains a strong element of the town's character and continues to enhance the quality of life for our residents. From the planting of grain, hay, and orchards in the mid-1700's to the large dairy and poultry farms in the mid1900's, to the present-day dairy farms, orchards, Christmas trees and hay, the town's name is synonymous with agriculture. This identity is exemplified through the participation of Middlefield business, residences, and civic organizations in the annual agricultural fair in Durham."

Drought and wildfires were challenges in the fall of 2024. The wildfire on Lamentation Mountain was nearby and indirectly impacted Middlefield. More recently, the Town experienced brush fires along the entire length of the railroad in Spring of 2025 due to a train that was causing sparks.

The local planning team has noted that the wildfire vulnerabilities were probably not as apparent in 2020-2021 during the last update but should be recognized now. For example, the Buckeye pipeline traverses the town. Furthermore, an explosives manufacturer in Middlefield cannot be exposed to wildfires. A significant amount of debris and dead wood is present in forests, and the Town lacks good access into these areas. Grants for roadmaking would be beneficial.

Table 2.2. Agricultural Properties of 30 Acres or More

Property Owner	Crop	Acreage
Connwood Foresters Inc.	Christmas Trees	30
Zygo	Hay	31
CT Light & Power	Hay	41
Tim Dumas	Christmas Trees	36
890 Main St. LLC	Hay and Row Crops	103
Triangle A Ranch, LLC	Beef and Equestrian	146
Town of Middlefield	Hay	157
Lyman Farms Inc.	Orchard & Fruit	460
TOTAL ACREAGE	--	1,004

2.5.9. Extreme Temperature

Extreme cold spells do occur periodically, typically between the months of December and March. Although cold temperatures are normal during the winter months, occasionally temperatures can drop below freezing for extended periods, sometimes as low as 0°F. Low-income housing residents and the elderly in homes without enough heat sources are particularly vulnerable. Town officials have planned and continue to update the accommodations of shelters in their municipalities. One classification of shelters is warming centers, to be used by those that either have insufficient heat sources or for times of power outages.

Extreme heat and heat waves are a possibility during the summer months, particularly between June and August. A heat wave in Connecticut is defined as a period where the high temperature reaches at least 90ºF for three consecutive days. The elderly in homes without air conditioning are vulnerable. Town officials have identified cooling centers such as the community center.

2.5.10. Terrestrial Invasive Species

Invasive species are a concern for the Town. The Town reportedly spends $80,000 per year addressing invasive species on State land. In 2024, the Town began funding the Conservation Commission for nuisance and invasive brush removal. The Coe Hill property has been one location benefiting from these efforts. The Town would like to plant chestnut trees in the next five to ten years. Other target areas include properties off Strickland Road and various Town-owned open spaces.

2.5.11. Aquatic Invasive Species

Invasive species are a concern for the Town. The Beseck Lake environment committee treats the lake for hydrilla. Expenditures are reportedly $80,000 to $100,000 per year. Treatment for invasives leads to complications related to availability of the State boat launch.

2.5.12. Tree Diseases and Pests

Invasive species are a concern for the Town. Invasive vegetation, pests, and beech disease are a concern. Town leadership is concerned about the potential for a newly discovered species to cause the level of destruction caused by the Emerald ash borer.

3. Hazard Risk

3.1. Historical Events

Table 3.1 lists the Federal Disaster declarations for Middlesex County, for which Middlefield requested assistance. There have been not Presidential disaster declarations since the adoption of the 2021 plan update.

Table 3.1. Middlefield Natural Hazard Events

Type of Event	Date	Preliminary Damage Assessment
Snow Event (DR-3176)	03/11/2003	$20,697.62
Snow Event (DR-3200)	02/17/2005	$25,893.01
Wind - Hurricane Event (DR-4023)	02/09/2011	$49,856.72
Snow Event (DR-4046)	11/17/2011	$99,720.31

Type of Event	Date	Preliminary Damage Assessment
Wind – Hurricane Event (DR-4046)	11/17/2011	$36,425.91
Wind - Hurricane Event (DR-4087)	10/30/2012	$18,172.56
Severe Storm - Snow Event (DR-4106)	03/21/2013	$34,423.87
Tropical Storm Isaias (DR-4580)	1/12/2021	$94,323.20

3.2. Recent Events

The following is a summary of recent events experienced in Middlefield since the 2021 plan update.

The Local Planning Team noted the following recent events:

- Droughts and wildfires were significant challenges in fall 2024. The wildfire on Lamentation Mountain was nearby.
- More recently, the Town experienced brush fires along the entire length of the railroad in spring 2025 due to a train that was causing sparks.
- The flood of August 2024 in southwest Connecticut was also significant in Middlefield. The closure of Lake Road due to this flooding in August 2024 lasted for several hours or an entire day. During this time, residents on the west side of the lake were isolated.
- Invasive species is a concern: vegetation, pests, and beech disease. The Beseck Lake environment committee treats the lake for hydrilla. The Town reportedly spends $80,000 to $100,000 per year addressing invasive species on State land.
- Invasive and nuisance vegetation has been removed from the Coe Hill area in the past few years.

Public assistance is often provided by FEMA after Presidentially declared disasters. Funding is typically for extraordinary expenses incurred by the community such as public safety and public works overtime, certain equipment and contracted resources and debris cleanup.

Table 3.2 and Table 3.3 list PA reimbursements in Middlefield.

Table 3.2. PA Reimbursements, Middlefield, CT

Disaster #	4023	4087	4046	4580
Incident Dates	Aug-Sept 2011	Oct-Nov 2012	Oct 2011	Jan 2021
Declaration	09/02/2011	10/30/2012	11/17/2011	1/12/2021
Entity	FEMA PA Reimbursement	FEMA PA Reimbursement	FEMA PA Reimbursement	FEMA PA Reimbursement

Disaster #	4023	4087	4046	4580
State	$	$	$	$
Municipal	$	$	$	$
Nonprofit	$0	$0	$0	$0
Total	$49,857	$18,173	$36,426	$94,323
Annualized	$1,847	$673	$1,349	$3,493

Table 3.3. Winter Storm PA Reimbursements, Middlefield, CT

Disaster #	3176	3200	4046	4106
Incident Dates	Feb 2003	Jan 2005	Oct 2011	Feb 2013
Declaration	3/11/03	2/17/05	11/17/2011	3/21/13
Entity	FEMA PA Reimbursement	FEMA PA Reimbursement	FEMA PA Reimbursement	FEMA PA Reimbursement
State	$	$	$	$
Municipal	$	$	$	$
Nonprofit	$0	$0	$0	$0
Total	**$20,698**	**$25,893**	**$99,720**	**$34,424**
Annualized	**$767**	**$959**	**$3,693**	**$1,275**

3.3. Hazard Risk Ranking

Middlefield participated in the regional hazard ranking conducted by the Hazard Mitigation Planning Team. shows the scoring for the various ranking parameters that were used. The probability of each hazard is determined by assigning a level, from unlikely to highly likely, based on the likelihood of occurrence from historical data. The total impact value includes the affected area, primary impact, and secondary impact levels of each hazard. Level of Community Concern reflects the perceived risk of each hazard as indicated by respondents to question 6 of the community survey. This question asks, “How concerned are you about each of the following hazards impacting your home, business, community, or organization?” and received 157 responses.

Each of these five criteria are assigned weights, as well as point values for each of their responses. Each level's score is reflected in the matrix. The total score for each hazard is the probability score multiplied by its importance factor times the sum of the impact level scores multiplied by their importance factors. Based on this total score, the hazards are separated into three categories based on the hazard level they pose to the communities: Significant, Moderate, Limited. Table 3.5. Hazard

Ranking Parameters provides a summary of the categories used to rank the hazards and their weighted values for the Composite Hazard Risk Index.

Table 3.4. Hazard Ranking Parameters

Criteria	Weight	1 Point	2 Points	3 Points	4 Points
Hazard Probability	2.0	**Unlikely** Less than 1% probability in next 100 years or has a recurrence interval of greater than every 100 years.	**Somewhat Likely** Between 1 and 10% probability in next year or has a recurrence interval of 11 to 100 years.	**Likely** Between 10 and 100% probability in next year or has a recurrence interval of 10 years or less	**Highly Likely** Near 100% probability in next year or happens every year.
Impact – Affected Area	0.8	**Isolated** Less than 1% of area affected	**Small** Between 1 and 10% of area affected	**Medium** Between 10 and 50% of area affected	**Large** Between 50 and 100% of area affected
Impact – Primary Impact	0.7	**Negligible** 1 to 10% of people or property	**Limited** 10% to 25% of people or property	**Critical** 25 to 50% of people or property	**Catastrophic** >50% of people or property
Impact – Secondary Impact	0.5	**Negligible** No loss of function, downtime, and/or evacuations	**Limited** Minimal loss of function, downtime, and/or evacuations	**Moderate** Some loss of function, downtime, and/or evacuations	**High** Major loss of function, downtime, and/or evacuations
Level of Community Concern	1.0	**Low Concern**	**Moderate Concern**	**High Concern**	-

The hazard risk ranking generated from this exercise, along with consideration of available data, was used to prioritize the level of effort assigned to further analysis of each hazard in the vulnerability analysis and lost estimation sections. All the participating communities agreed upon the results of the hazard ranking for the overall region. Based on the results of the exercise, the hazards were ranked as follows in Table 3.5. Hazard Ranking Parameters. Middlefield endorsed the ranking as accurate for the Town.

Table 3.5. Summary of Potential Hazard Impacts.

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
Aquatic Invasive Species	Semi-quantitative, supplemented by state and municipal figures, recommend survey	**Highly Likely - 4**	**Large - 4**	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant
Terrestrial Invasive Species	Semi-quantitative, supplemented by state and municipal figures, recommend survey	**Highly Likely - 4**	**Large - 4**	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant
Tree Infestation	Semi-quantitative, supplemented by state and municipal figures, recommend survey	**Highly Likely - 4**	**Large - 4**	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant
Hurricanes	Hazus for wind	Likely - 3	**Large - 4**	Critical - 3	Moderate - 3	High Concern - 3	15.8	Significant
Winter Storms (Snow, Ice, Wind, including Nor'easters)	Historic analysis for probability and annualized damages	**Highly Likely - 4**	**Large - 4**	Negligible - 1	Moderate - 3	Moderate Concern - 2	15.4	Significant

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
Flood – Riverine and Inland Flooding (Riverine, Flash, Drainage)	Hazus, SLR Overlay, FS Model Overlay, Historic data and damages for additional probability	Likely - 3	Medium - 3	Limited - 2	Moderate - 3	High Concern - 3	14.3	Significant
Extreme Heat and Cold	Qualitative based on historic	Likely - 3	**Large - 4**	Negligible - 1	Limited - 2	High Concern - 3	13.9	Moderate
Severe Weather (thunderstorms, downbursts, hail, lightning)	Historic analysis for probability and annualized damages	**Highly Likely - 4**	Small - 2	Negligible - 1	Limited - 2	Moderate Concern - 2	13.3	Moderate
Wildfire	Historic analysis for probability and annualized damages	Likely - 3	Small - 2	Critical - 3	Moderate - 3	Moderate Concern - 2	13.2	Moderate
Drought	Historic analysis for probability and annualized damages - some qualitative	Likely - 3	Medium - 3	Negligible - 1	Limited - 2	High Concern - 3	13.1	Moderate

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
Tornadoes	Historic analysis for probability and annualized damages - pulling in surrounding counties	Likely - 3	Isolated - 1	**Catastrophic - 4**	Limited - 2	Moderate Concern - 2	12.6	Moderate
Earthquakes	Hazus, 3 scenarios	Somewhat Likely - 2	Small - 2	**Catastrophic - 4**	**High - 4**	Low Concern - 1	11.4	Limited
Flooding from Dam Failure	Dam Inundation areas, Historic analysis for probability and annualized damages	Unlikely - 1	Small - 2	Limited - 2	Moderate - 3	Moderate Concern - 2	8.5	Limited

3.3.1. National Flood Insurance Program (NFIP) Participation

FEMA reimburses communities for hazard losses through programs including Public Assistance (PA) and the National Flood Insurance Program (NFIP). Combining PA and flood insurance payments can give an estimate for total losses to a community.

Overall, the National Flood Insurance Program (NFIP) has paid claims in Middlefield to date totaling $1,217.00. There are five policies in effect providing $506,800.00 in coverage.

Substantial improvements and substantial damages occur infrequently in town. All new construction and substantial improvements located within the 100-year floodplain must conform to minimum elevation requirements and construction standards so as to minimize flood damage. Substantial improvements are defined as any combination of improvements, the cost of which equals or exceeds 50% of the market value before improvement started. The floodplain manager (zoning enforcement officer) is responsible for administering the substantial improvement and substantial damage provisions codified in the floodplain management regulations. This is typically done in close coordination with the building official. In the event of a major disaster, resulting in a number of substantially damaged buildings that would overwhelm town staff, the town would reach out to the state NFIP coordinator's office for assistance in training additional staff.

Repetitive Loss Property Detail

Middlefield has no Repetitive Loss or Severe Repetitive Loss Properties.

4. Capability Assessment

This section discusses capabilities and operational procedures that Middlefield undertakes that contribute to or have the potential to contribute to hazard mitigation. It also notes deficiencies in those capabilities that could be addressed to strengthen resilience.

4.1. Critical Facilities

Public and private utility facilities are vital to maintaining or restoring normal services to areas of town before, during, and after a natural disaster.

Figure 4.1 shows the location of critical facilities in Middlefield which are identified at the regional level.

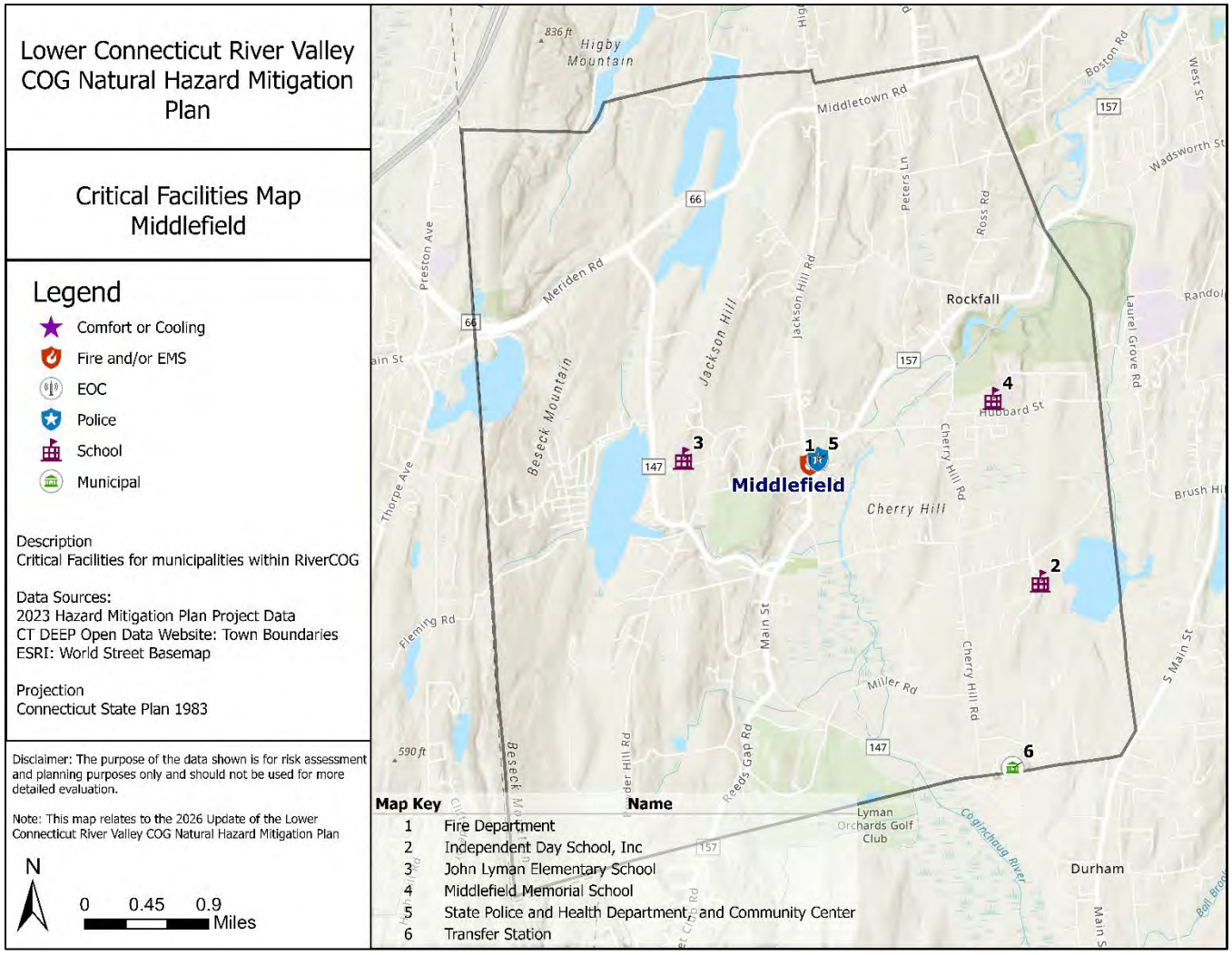


Figure 4.1. Location of Critical Facilities in Middlefield

Table 4.1 lists critical facilities identified by the Town.

Table 4.1. Critical Facilities

Facility	Type	Address	Flood Zone	Generator	Notes
Town Hall	Municipal	393 Jackson Hill Road	No		
Public Works	Municipal	393 Jackson Hill Road	No		
Transfer Station	Municipal	CHERRY HILL ROAD	No	X	
Fire Department, EOC, State Police, and potential for ambulance facility	EMS	406 Jackson Hill Road	No	X	The EOC was renovated and expanded in 2026. Some conference rooms will be available; therefore,

Facility	Type	Address	Flood Zone	Generator	Notes
					future cooling and warming is possible
John Lyman Elementary School	Municipal	106 WAY ROAD	No		Lyman School has closed, but the facility will likely be repurposed to remain a critical facility.
Middlefield Memorial School	Municipal	124 HUBBARD STREET	No	X	This school is being expanded. This will be a new shelter by 2027. Warming, cooling, and charging may be possible under some circumstances
Community Center and some municipal offices	Municipal	405 MAIN STREET	No	X	This is the cooling, warming, and charging center.
Independent Day School, Inc	Private	115 LAUREL BROOK ROAD	No		

**Regional shelter in neighboring Durham, not included on map.*

The following changes in critical facilities since the last plan or items deemed notable by the local planning team are below:

- A new EOC was referred to referendum in June 2025. One specific challenge is that fire trucks could not fit into the garage bays; this will be addressed. As a result of this referendum and the funding available, the EOC was renovated and expanded in 2026. Some conference rooms will become available; therefore, future cooling and warming center uses are possible.
- The Town participates in the regional shelter (Coginchaug HS).
- The current local shelter (Community Center) does not have showers. When upgraded, they would like to add showers to enhance sheltering ability. The community center is also the warming and cooling center.
- Memorial Middle School (Middlefield) is being expanded while Lyman School (Middlefield) and Brewster School (Durham) are being closed. Lyman School will be repurposed and shall remain as a critical facility that may be available to Middlefield residents. Memorial Middle School will likely be a new shelter in Middlefield by 2027-2028. Warming, cooling, and charging may be possible under some circumstances.

4.2. Municipal Capabilities

The Town of Middlefield has a variety of natural hazard mitigation capabilities, including local regulations and ordinances, operational protocols, and emergency response capabilities. Following is a list of some highlighted capabilities identified by municipal staff.

4.2.1. Regulations and Ordinances

The Town of Middlefield participates in the National Flood Insurance Program (NFIP) and has an approved floodplain management ordinance.

The Town of Middlefield uses the State Building Code for code compliance to ensure safe structures which withstand 110 mph wind speed and appropriate snow load.

The town of Middlefield has stormwater management regulations that address increased run off from new developments.

Middlefield follows its Plan of Conservation and Development for planning the management of infrastructure and open space and commercial and industrial development. There have been no significant changes to regulatory policy for new development, due primarily to the lack of development.

4.2.2. Operations and Procedures

Middlefield follows their Emergency Operations Plan in case of any emergencies within the town. Changes to sheltering are underway as noted previously. Specifically, residents use the regional shelter in nearby Durham and will likely have access to a local shelter when the Memorial Middle School project is complete in 2027-2028. Middlefield will also soon have access to expanded EOC capabilities, as the EOC construction will be completed in 2026.

Table 4.2, Table 4.3, and Table 4.4 list legal, regulatory, technical, administrative and financial capabilities that support hazard mitigation.

Table 4.2.a. Codes, Ordinances & Requirements

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Building Code	Yes	Yes	No	Yes	All municipalities enforce the State Building Code
Zoning Code	Yes	No	No	No	
Subdivisions	Yes	No	No	No	
Post Disaster Recovery	Yes	No	No	No	
Real Estate Disclosure	Yes	No	No	Yes	State requirement
Growth Management	No	No	No	No	
Site Plan Review	Yes	No	No	No	

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Special Purpose (flood management, critical areas)	Yes	Yes	No	Yes	State flood management statutes and regulations

Table 4.2.b. Planning Documents

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
General Plan	Yes	No	No	Yes	The POCD is current
Floodplain or Basin Plan	No	No	No	No	
Stormwater Plan	Yes	No	No	Yes	MS4 community
Capital Improvement Plan	Yes	No	No	No	
Habitat Conservation Plan	No	No	No	No	
Economic Development Plan	Yes	No	Yes	No	Regional Comprehensive Economic Development Strategy
Emergency Response Plan	Yes	No	No	Yes	LEOP templates provided by DEMHS
Shoreline Management Plan	No	No	No	No	Not applicable
Post Disaster Recovery Plan	Yes	No	No	Yes	LEOP templated provided by DEMHS

Table 4.2. Administrative and Technical Capability

Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	The Town retains consultants for on-call support
Engineers or professionals trained in building or infrastructure construction practices	Yes	Public Works
Planners or engineers with an understanding of natural hazards	Yes	The Town retains consultants for on-call support, and relies on RiverCOG
Staff with training in benefit/cost analysis	No	
Floodplain manager	Yes	Building and Land Use Department
Surveyors	No	
Personnel skilled or trained in GIS applications	Yes	RiverCOG & Main Street GIS, LLC

Staff/Personnel Resources	Available?	Department/Agency/Position
Emergency manager	Yes	Emergency Management
Grant writers	Yes	RiverCOG, Municipal Staff

Table 4.3. Financial Resources

Financial Resources	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	Yes
Withhold Public Expenditures in Hazard-Prone Areas	Yes (State)
State Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	No

4.2.3. Capital Improvements

The Capital Improvement Plan addresses *municipal improvements* including rights-of-way, land, housing, or utilities for public purposes. Mitigation actions from this NHMP should be included in the CIP. Larger items such as bridge and culvert replacements are typically included in the annual CIP. The CIP should be reviewed often so that it can include new mitigation action items each time the NHMP is updated. This is a good way for the town to prioritize mitigation items and use the Capital Improvement Program (CIP) to set aside funds for infrastructure improvements to reduce loss of life and property during natural hazard (NH) events.

4.2.4. Plan Integration with Other Planning Mechanisms

The town of Middlefield uses the mitigation plan to inform its 5-year capital improvement plan and associated annual budgets. Middlefield staff reported that the plan has not been formally incorporated into other planning documents. There is new legislation (P.A. 25-33) that now requires cities and towns to incorporate climate vulnerability (specifically including flooding) and resilience strategies into Plans of Conservation and Development (POCDs). Middlefield plans to comply with that new requirement during the next POCD Update. Further, communities are now required to develop and maintain affordable housing plans. The mitigation plan will help inform siting criteria within that plan.

4.2.5. Outreach, Education, Communication, and Warnings

Municipal responsibility to the public:

- People in vulnerable areas should monitor Hazard Warnings.
- People with structures in vulnerable areas; specifically, in floodplains should have a flood evacuation plan and participate in the National Flood Insurance Program. They should flood proof their buildings
- Middlefield will post storm info on its websites including proper preparations and warnings. DPH and DEMHS seasonally post info on their websites.
- Middlefield uses the mass notification system Everbridge to manage communications with the public during disasters.

4.2.6. New Capabilities and Completed Actions

Other capabilities noted by the Local Planning Team include those previously describe in the sections about hazards. The Town reportedly spends $80,000 per year addressing invasive species on State land. In 2024, the Town began funding the Conservation Commission for nuisance and invasive brush removal. The Coe Hill property has been one location benefiting from these efforts. The Town would like to plant chestnut trees in the next five to ten years. Other target areas include properties off Strickland Road and various Town-owned open spaces. Furthermore, the Beseck Lake environment committee treats the lake for hydrilla. Expenditures are reportedly $80,000 to $100,000 per year.

5. Hazard Mitigation Action Plan

This section presents the progress made since the 2021 action plan and establishes new goals, objectives and actions identified for the 2026-2030 planning horizon.

5.1. Previous Mitigation Actions Disposition

During the process of developing the 2021 Middlefield Hazard Mitigation Plan, several hazard mitigation actions were identified to be pursued during the five-year planning horizon that followed. Table 5.1 presents the actions listed in that document, and the status of those actions.

Table 5.1. Status of Previous Mitigation Strategies and Actions.

Action	Description	Status	Notes
01	**Formalize Debris Management Plan.** Update and formalize Debris Management Plan for tree debris only, to recognize Powder Ridge Ski Area or the Strickland Farm as possible sites. Also include potential sites for hazardous debris, required for DEMHS approval	Complete	The Strickland property is available and this action is complete.

Action	Description	Status	Notes
02	**Culvert Repair and Drainage Studies**. Undersized culvert, low road/roadway floods, only access road to hundreds of homes on west side of Lake Beseck, tributary to Lake Beseck. Conduct a drainage study, and replace it with larger culverts, raise road.	Carry Forward with Revision	The Lakeshore Drive culvert was replaced and is done. Lake Road remains a concern, as it flooded in August 2024 (and floods almost every year). Carry forward for progress and ensure safe access to and from the neighborhood west of Beseck.
03	**Culvert Repair/Replacement.** Coordinate with CT DOT to address undersized culvert, low road/roadway floods. For Ellen Doyle Brook, conduct a drainage study, and replace it with larger culverts.	Carry Forward with Revision	DOT has completed some work on State roads. The crossing at Strickland Road can be merged with a new action for the Coginchaug River.
04	**Town-wide Culvert Study**. Complete scheduled town-wide culvert survey to identify undersized culverts and other requiring replacement to reduce flood damages and hazardous conditions.	Complete	The study is complete. Add a new action for implementation.
05	**Back-up Power.** Provide technical assistance to gas station and deli toward identifying funding to install back up power generation.	Deleted	Small, non-chain gasoline service stations are no longer present in Middlefield.
06	**Update Town Code to Include back-up power for gas stations**. Codify requirement that newly permitted / constructed gas stations must have backup power generation.	Deleted	One potential new gas station may be developed on Route 66. The need for this action is infrequent and it can be dropped.
07	**Drought Management Plan.** Develop a drought management plan to address water conservation and the risk of drought and disease on commercial agriculture in Middlefield. Should reference updated State of CT Water Plan	Deleted	The large water users in Middlefield are Lyman Golf Course and Lyman Orchards; these must reduce water usage in accordance with their water diversion permits when the State issues drought-related cutbacks. This action can be dropped, as the State Drought Response Plan is sufficient.

5.2. Updated Mitigation Goals, Objectives, and Strategies

As noted in Section 3 of Volume 1, all the RiverCOG participating communities, including Middlefield, participated in setting regional goals and objectives. Middlefield has confirmed these goals and objectives valid for the Town's annex. The three goals and objectives are as follows:

Goal 1: Promote implementation of sound flood management and other natural hazard mitigation principals on a regional and local level. Note: Covers future development through policy, planning, regulation, emergency services, and environmental strategies.

- **Objective for Goal 1:** To promote the development, improvement and implementation of programs, policies, regulations, and emergency services that result in the reduction of long-term risks to life and property.

Goal 2: Implementation of effective natural hazard mitigation projects at the regional and local level regional and local level. Note: Covers infrastructure and building related projects – the existing built environment.

- **Objective for Goal 2:** To enhance the ability of RiverCOG, other regional entities, and local communities to reduce or eliminate risks to life and property from natural hazards through cost-effective hazard mitigation projects, including avoidance.

Goal 3: Increase research, planning and outreach activities for the mitigation of natural hazards on a regional and local level. Note: Covers the human component of mitigation via outreach and education, and integration with other planning and continuous improvement through increase research.

- **Objective for Goal 3:** To increase general awareness of the region's natural hazards and encourage State agencies, local communities, and the public to be proactive in taking actions to reduce long-term risk to life and property.

The local planning team of Middlefield reviewed these goals and objectives during meetings in June of 2025 and acknowledged that they are still aligned with the priorities of the town. During the update process from 2025 through 2026, Middlefield identified two new goals specific to the town:

Goal 4: Increase resiliency of the Beseck community, ranging from improvements to the sole access (Lake Road) to ensure that it does not flood or wash out; to improvements related to the sewer system to ensure that outages do not occur.

Goal 5: Petition CT DEEP to remove excessive accumulations of silt and woody debris from the channel of the Coginchaug River.

5.2.1. Prioritization of Mitigation Strategies

In considering which projects, processes, and other measures to undertake in the upcoming plan period, municipal and regional officials evaluated the need to address problems and vulnerabilities in their communities against the communities' resources and capabilities. To prioritize mitigation strategies, a set of criteria commonly used by public administration officials and planners was applied to each proposed strategy. The method, called STAPLEE, is outlined in FEMA planning documents such as Developing the Mitigation Plan (FEMA 386-3) and Using Benefit-Cost Review in Mitigation Planning (FEMA 386-5). STAPLEE stands for the "Social, Technical, Administrative, Political, Legal, Economic, and Environmental" criteria for making planning decisions. Benefit-cost review was emphasized in the prioritization process. Criteria were divided into potential benefits (pros) and potential costs (cons) for each mitigation strategy. The following questions were asked about the proposed mitigation strategies:

Social:

- Benefits: Is the proposed strategy socially acceptable to the community?
- Costs: Are there any equity issues involved that would mean that one segment of the community could be treated unfairly? Will the action disrupt established neighborhoods, break up voting districts, or cause the relocation of lower-income people? Is the action compatible with present and future community values?

Technical:

- Benefits: Will the proposed strategy work? Will it reduce losses in the long term with minimal secondary impacts?
- Costs: Is the action technically feasible? Will it create more problems than it will solve? Does it solve the problem or only a symptom?

Administrative:

- Benefits: Does the project make it easier for the community to administrate future mitigation or emergency response actions?
- Costs: Does the community have the capability (staff, technical experts, and/or funding) to implement the action, or can it be readily obtained? Can the community perform the necessary maintenance? Can the project be accomplished in a timely manner?

Political:

- Benefits: Is the strategy politically beneficial? Is there public support both to implement and maintain the project? Is there a local champion willing to see the project to completion? Can the mitigation objectives be accomplished at the lowest cost to the community (grants, etc.)?
- Costs: Have political leaders participated in the planning process? Do project stakeholders support the project enough to ensure success? Have the stakeholders been offered the opportunity to participate in the planning process?

Legal:

- Benefits: Is there a technical, scientific, or legal basis for the mitigation action? Are the proper laws, ordinances, and resolutions in place to implement the action?
- Costs: Does the community have the authority to implement the proposed action? Are there any potential legal consequences? Will the community be liable for the actions or support of actions or for lack of action? Is the action likely to be challenged by stakeholders who may be negatively affected?

Economic:

- Benefits: Are there currently sources of funds that can be used to implement the action? What benefits will the action provide? Does the action contribute to community goals such as capital improvements or economic development?

Costs: Does the cost seem reasonable for the size of the problem and the likely benefits? What burden will be placed on the tax base or local economy to implement this action? What proposed actions should be considered but be tabled for implementation until outside sources of funding are available?

Each proposed mitigation strategy presented in this plan was evaluated and quantitatively assigned a "benefit" score and a "cost" score for each of the seven STAPLEE criteria as outlined below:

- For potential benefits, a score of "1" was assigned if the project will have a beneficial effect for that criterion or a "0" if the project would have a negligible effect or if the questions were not applicable to the strategy.
- For potential costs, a score of "-1" was assigned if the project would have an unfavorable impact for that criterion or a "0" if the project would have a negligible impact or if the questions were not applicable to the strategy.
- Technical and Economic criteria were double weighted (multiplied by two) in the final sum of scores.
- The total benefit score and cost score for each mitigation strategy was summed to determine each strategy's final STAPLEE score.

Although a community may implement recommendations as prioritized by the STAPLEE method, an additional consideration is important for those recommendations that may be funded under the FEMA mitigation grant programs. To receive federal funding, the mitigation action must have a benefit-cost ratio (BCR) that exceeds a value of 1.0. Calculation of the BCR is conducted using FEMA's Benefit Cost Analysis (BCA) toolkit. The calculation method may be complex and vary with the mitigation action of interest. Calculations are dependent on detailed information such as property value appraisals, design and construction costs for structural projects, and tabulations of previous damages or NFIP claims. The BCR scoring system used is outlined in Table 5.2.

Table 5.2. BCR Scoring System

Scoring	Benefits	Costs
Low: 0-1 points	Few would benefit; the impacts being addressed are not severe; benefits may be short term	Likely to be done by existing personnel with little impact on budget; not complicated to accomplish. Costs to implement is likely to be under $10,000.
Medium: 2-3 points	Benefits may be felt by many in the community; the action may solve a problem or otherwise benefit the community for several years	May need additional funding or studies; may require change in practices; costs to implement may be between $10,000 and $100,000
High: 4-5 points	Benefits would accrue to many in the community; benefits may accrue to the most vulnerable or those not able to recover on their own; benefits would be long term and may permanently protect from damages	Likely to cost over $100,000 and require obtaining funding outside of operating budget; complicated, lengthy process to implement

The STAPLEE method accounts for cost-benefit considerations both directly (through the "Economic" category) and indirectly (through general consideration of costs and benefits of actions). Additionally, the range of estimated costs of each strategy are included in the STAPLEE table. The assumed costs of projects and generalized presentation of the benefits accruing from them are not based on specific detailed cost estimates as that level of analysis is not appropriate for this type of planning effort. For some projects, such as routine or recurring operations that are established practices and conducted with municipal general operating funds and existing staff, the STAPLEE results can be the only explicit comparison of costs and benefits. For projects for which bonding and/or grant funding will be sought, more in-depth evaluations of costs and benefits will be required. As project scopes are detailed, benefits and costs can be identified with more precision, and the benefit-cost ratio which results from a full benefit-cost analysis may differ from the planning-level STAPLEE results presented here.

It should be noted that higher BCRs do not necessarily correspond to high priorities, nor do low BCRs or BCRs under 1.0 correspond to low-priority projects. An important project with a high priority to the community may have a lower BCR because of its complexity, assumed high expense, and other costs. Communities should not be discouraged or deterred from further consideration of projects that have low BCRs or BCRs less than 1.0 until additional, more specific evaluations of the costs and benefits have been undertaken.

5.2.2. 2021-2026 Prioritized Hazard Mitigation Actions

In addition to the regional mitigation actions endorsed by Middlefield and outlined in Section 3 of Volume 1 of the regional plan, the Town identified or carried over from the last update, ranked and evaluated the actions in Table 5.3. For each identified action, the goal and objective it addresses is noted. Additionally, a description, lead agency, indication of costs and potential funding sources and an estimated timeline for completion is included. Also included are the hazards addressed by a specific action.

Figure 5.1 shows the locations of the projects listed in Table 5.3 with spatial elements that have been carried forward or are new additions. Additionally, completed projects identified in Table 5.1 with spatial elements are also shown on the map. Projects carried forward and new projects are identified by their activity number (from Table 5.3) while all completed projects on the map in Middlefield are from the townwide culvert study and are not labeled to avoid repetition.

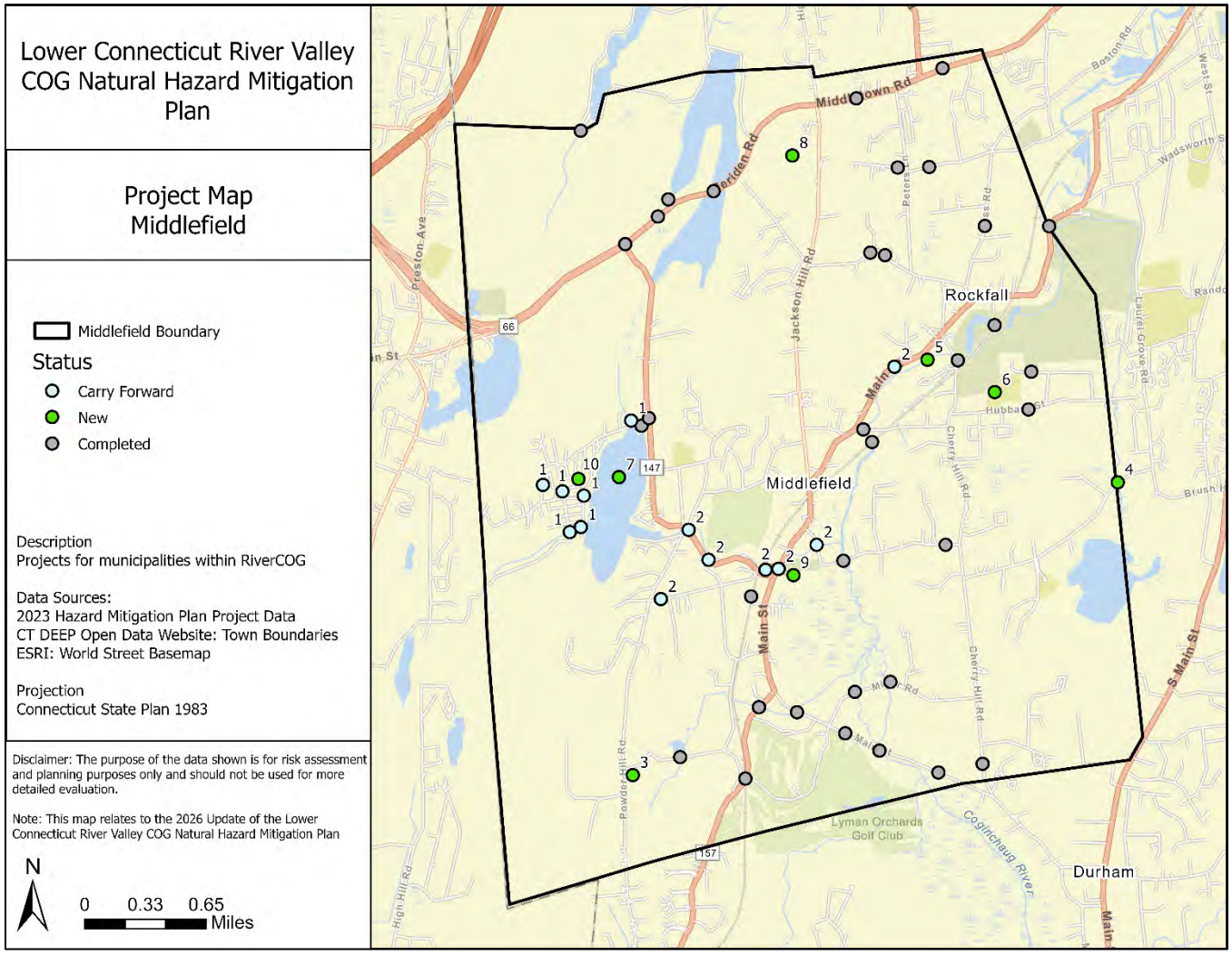


Figure 5.1. Carried Forward, New, and Completed Projects in Middlefield

Table 5.3. Middlefield Hazard Mitigation Strategies and Prioritization

KEY: SW= Severe Weather, TW = Tornado/Wind, ET = Extreme Temperatures, WS=Winter Storm, F = Flood, TI = Tree Damage and Invasive Species, WF = Wildfire, D = Drought, E = Earthquake, CC = Climate Change

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
1	4	**Lake Road/Lake Beseck Road Resilient Access Project.** Lake Road is a low roadway that floods at a stream crossing. The road is the sole access road to hundreds of homes on west side of Beseck Lake. Conduct a study that evaluates overtopping flood and washout risks; replace with larger culverts; and raise road if needed. Alternatively, work with CIRCA to develop scope of work for study and concept design in	BOS, PW	$100,000-$500,000 for study	CIRCA (study), STEAP, LOTCIP, FEMA HMA	2026-2030	F, CC	1	0	1	0	1	0	1	0	1	0	1	-1	1	0	7 – High

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
		this "Resilience opportunity area."																				
2	1, 2	**Townwide Culvert Study Implementation.** Implement the actions recommended in the town-wide culvert study.	PW	>$500,000 for all	LOTCIP, STEAP, CIP, OB	2027-2030	F, CC	1	0	1	0	1	0	1	0	1	0	1	-1	1	0	7 – High
3	2, 3	**Wildfire Management Plan.** Develop a Wildfire management plan to address the risk of wildfire on commercial agriculture in Middlefield.	BOS, EMD, FD	$10,000-$50,000	STEAP, OB	2029-2030	D, WF	1	0	1	0	1	-1	1	0	0	0	1	0	1	0	7 – High
4	3	**Dams.** Participate in a dam failure tabletop analysis for Laurel Brook Reservoir Dam (the Class C dam in	EMD, City of Middle-town	$0-$10,000	OB, City of Middle-town	2027-2029	F, CC	1	0	1	0	1	-1	1	0	1	0	0	0	1	0	6 – High

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
		Middlefield); include other dams if appropriate.																				
5	5	**Coginchaug River Corridor Flood Mitigation.** Work with DEEP and the Town of Durham to advance a floodplain and river corridor study that evaluates removal of silt and large debris from the Coginchaug River, with the goal of reducing water surface elevations during floods. Ensure that flood risks at Strickland Road (Ellen Doyle Brook) are incorporated.	BOS, PW	>$500,000 for study	DEEP, FEMA HMA, CIP, OB	2028-2031	F, CC	1	0	1	-1	1	-1	1	0	0	0	1	-1	0	0	2 – Score is Low for Town alone, but will be a key regional effort
6	1, 3	**Enhanced Sheltering.** Ensure that a local shelter is available for residents to utilize before, during,	BOS, EMD	$50,000-$100,000	CIP, FEMA HMA, State School Building Program	2027-2029	SW, F, E, ET, TW, WF	1	0	1	0	1	-1	1	0	0	0	0	0	0	0	4 – Med

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
		and after severe storms, floods, earthquakes, and during extreme temperature events. Ensure shelters have cooling equipment installed. This action may be accomplished when the Memorial Middle School expansion is complete.																				
7	1, 2	**Aquatic invasive species.** Pursue State funds for removal of aquatic invasive species from Beseck Lake.	BOS, CC, PW	$100,000-$500,000	DEEP, CIP, OB	2027-2030	TI	1	0	1	0	0	-1	1	0	0	0	1	0	1	0	6 – High
8	1, 2	**Native trees at Coe Hill.** Plant trees at Coe Hill property where	BOS, CC, PW	$50,000-$100,000	DEEP, CIP, OB	2027-2030	TI, D, WF, ET	1	0	1	0	0	-1	1	0	0	0	1	0	1	0	6 – High

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
		invasive species have been removed.																				
9	1, 2	**Townwide invasive species removal.** Pursue State funds for removal of invasive species on Town owned open spaces.	BOS, CC, PW	$100,000-$500,000	DEEP, CIP, OB	2027-2030	TI, WF	1	0	1	0	0	-1	1	0	0	0	1	0	1	0	6 – High
10	4	**Increase resilience of Beseck Lake community sewer system.** The individual pumping chambers require upgrades and standby power to remain operational during outages. This action supports either individual power resilience	WPCA	>$500,000	STEAP, CWSRF, CIP, OB	2028-2030	SW, TW, WS, F, E, CC	1	0	1	0	1	-1	0	0	0	0	1	-1	1	0	4 – Med

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
		or a shared solution.																				
11	2, 3	Conduct a survey of elementary schools and shelters to evaluate if bookshelves and other heavy stationary objects that could fall and cause injury during an earthquake are secured to walls or other structures. Where deficiencies are identified, develop a plan of recommended repairs and share it with school administrators.	EMD	$2,000	OB	2027	E	1	0	0	1	1	1	0	0	1	0	0	0	1	0	3/L

SS	Social Services	P&Z	Planning & Zoning
PH	Public Health	BOE	Board of Education
PW	Department of Public Works	CC	Conservation Commission
EM	Emergency Management Director	OB	Operating Budget
BOS	Board of Selectmen	HMA	FEMA Hazard Mitigation Assistance

LOWER CONNECTICUT RIVER VALLEY COUNCIL OF GOVERNMENTS
HAZARD MITIGATION PLAN 2026 UPDATE

CITY OF MIDDLETOWN MUNICIPAL ANNEX

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1. Contact Information

1.1. Point of Contact

Table 1.1. City of Middletown Contact Information

Information	Town of Middletown
Contact Name	Gene Nocera, Mayor
Address	245 deKoven Drive Middletown, CT 06457
Telephone	860-638-4801
Email	mayor@MiddletownCT.gov

1.2. Local Planning Team

The following representatives listed in Table 1.2 participated in meetings and provided input, data, and council toward the development of Volume 1 and this Middletown, Connecticut Annex.

Table 1.2. City of Middletown Planning Team

Name	Title
Gene Nocera	Mayor
Steven Kovach	Chief of Staff
Robert Russo	Acting Director of Public Works
Dean Lisitano	Building Official
Christine Marques	Director of Economic and Community Development
Marek Kozikowski*	Director of Land Use
Rob Kronenberger	Director of Emergency Management
David Albert	Fire Chief
Erik Costa	Police Chief
James Trzaski	South Fire Chief
Phil Coco	Fire Chief Westfield

**Local Coordinator*

1.3. Lower Connecticut River Valley Council of Governments

Table 1.3. RiverCOG Contact Information

Information	RiverCOG Information
Contact Name	Margot Burns – Senior Environmental Planner
Address	RiverCOG 145 Dennison Rd. Essex, CT 06426
Telephone	(860) 581-8554 x 702
Email	mburns@rivercog.org

2. Jurisdiction Profile

2.1. City Profile

Middletown is a city located in Middlesex County, Connecticut, along the Connecticut River, in the central part of the state, 16 miles (26 kilometers) south of Hartford. In 1650, it was incorporated as a town under its original Indian name, Mattabeseck. It received its present name in 1653. In 1784, the central settlement was incorporated as a city distinct from the town. In 1923, the City of Middletown was consolidated with the Town, making the city limits of the city quite extensive.

Originally a busy sailing port and then an industrial center, it is now largely residential with its downtown serving as a college town for Wesleyan University. Middletown was the county seat of Middlesex County from its creation in 1785 until the elimination of county government in 1960. As of the 2023 American Community Survey (ACS) the population of Middletown, Connecticut is 47,646. Middletown is considered the southernmost city in the Hartford-Springfield Knowledge Corridor Metropolitan Region, which features a population of 1.9 million, the second largest metropolitan area in New England.

Running alongside the Connecticut River, Route 9 bisects the city. According to the United States Census Bureau, the City has a total area of 42.3 square miles (109.6 km^2), of which, 40.9 square miles (105.9 km^2) of it is land and 1.4 square miles (3.7 km^2) of it is water. The total area is 3.36% water. Middletown shares borders with the neighboring towns of Cromwell, Portland, East Hampton, Haddam, Durham, Middlefield, Berlin, and Meriden. Figure 21 shows the location and corporate boundaries of Middletown.

Figure 2.1 shows the location and corporate boundaries of Middletown.

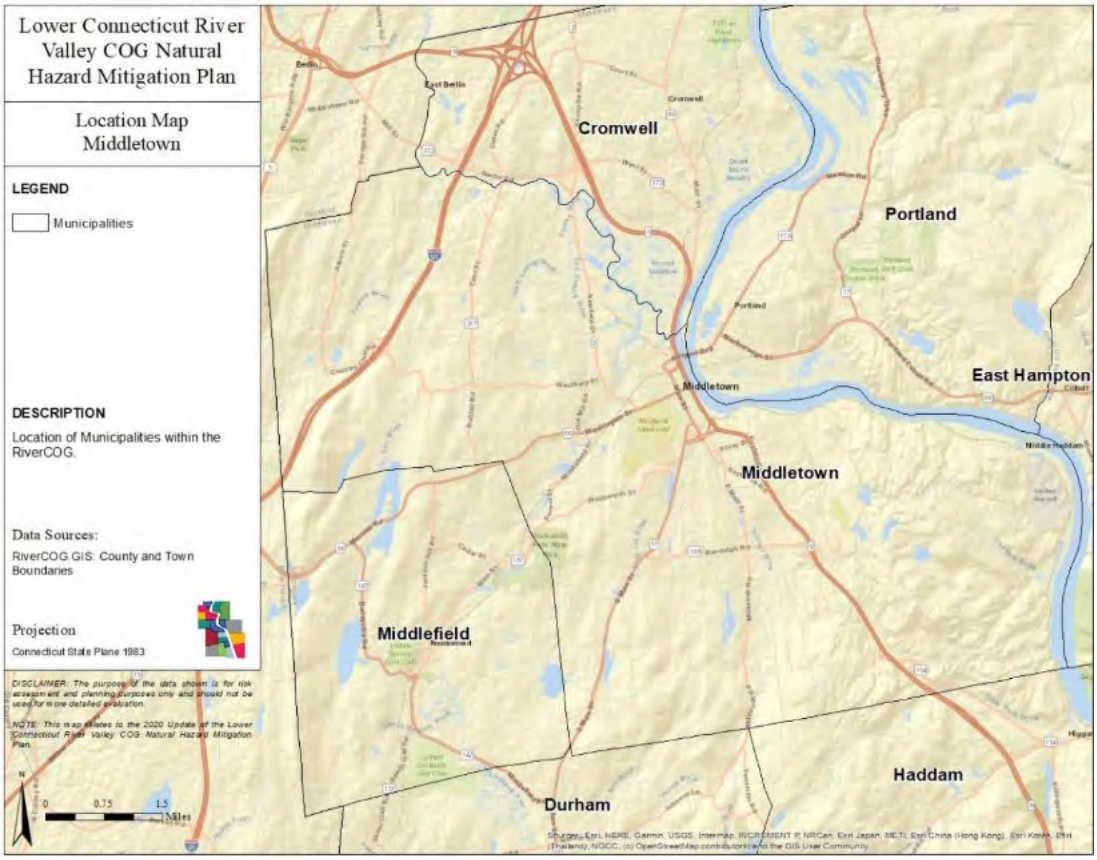


Figure 2.1. Middletown Location

The west side of Middletown is flanked by the Metacomet Ridge—a mountainous trap rock ridgeline that stretches from Long Island Sound to nearly the Vermont border. Notable mountains of the Metacomet Ridge in Middletown include Higby Mountain and the north side of Lamentation Mountain. The 50-mile (80 km) Mattabasett Trail traverses the ridge. The Nature Conservancy manages the summit and ledges of Higby Mountain.

Middletown has six times as much residential land as commercial and industrial land available for development. For every dollar Middletown receives from residential it spends $1.32 in services representing a net loss (due to school costs). For every dollar Middletown receives from commercial and industrial uses it spends $0.54 representing a net gain (due to the need for limited service).[1]

Middletown has proactively addressed the costly effects of urban sprawl by buying open space to preserve farmland and sensitive natural resources promoting development near existing infrastructure. The City has acquired over 2,500 acres of land for preservation of agricultural use and open space. Figure 2.2 shows land cover in Middletown.

[1] (Source: https://www.middletownct.gov/310/About-Us)

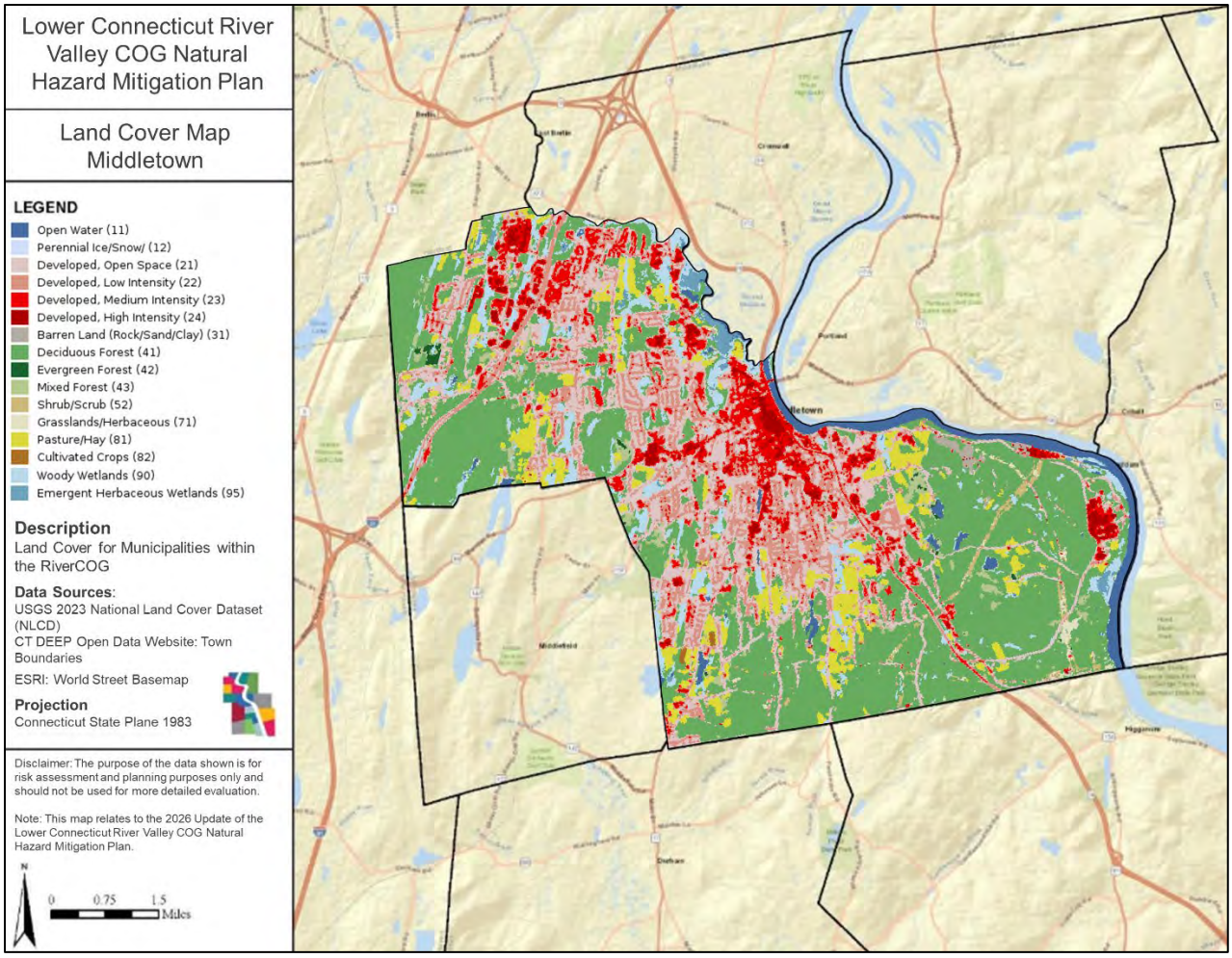


Figure 2.2. Middletown Land Cover

According to the 2023 ACS the population of Middletown, Connecticut is 47,646, a 2.4% increase from 2019.[2] As of the 2023 ACS, the population density was 1,162 people per square mile (407.5/km^2). There were 19,697 housing units at an average density of 481.6 per square mile (185.9/km^2). The racial makeup of the city was 80.0% White, 12.3% Black or African American, 5.3% Hispanic or Latino, and 2.7% Asian. Figure 2.3 provides a demographic profile for Middletown.[3]

[2] https://s3-us-west-2.amazonaws.com/cerc-pdfs/2025/Middletown.pdf
[3] - Published on City of Middletown, CT *(Source: Connecticut Data Collaborative)*

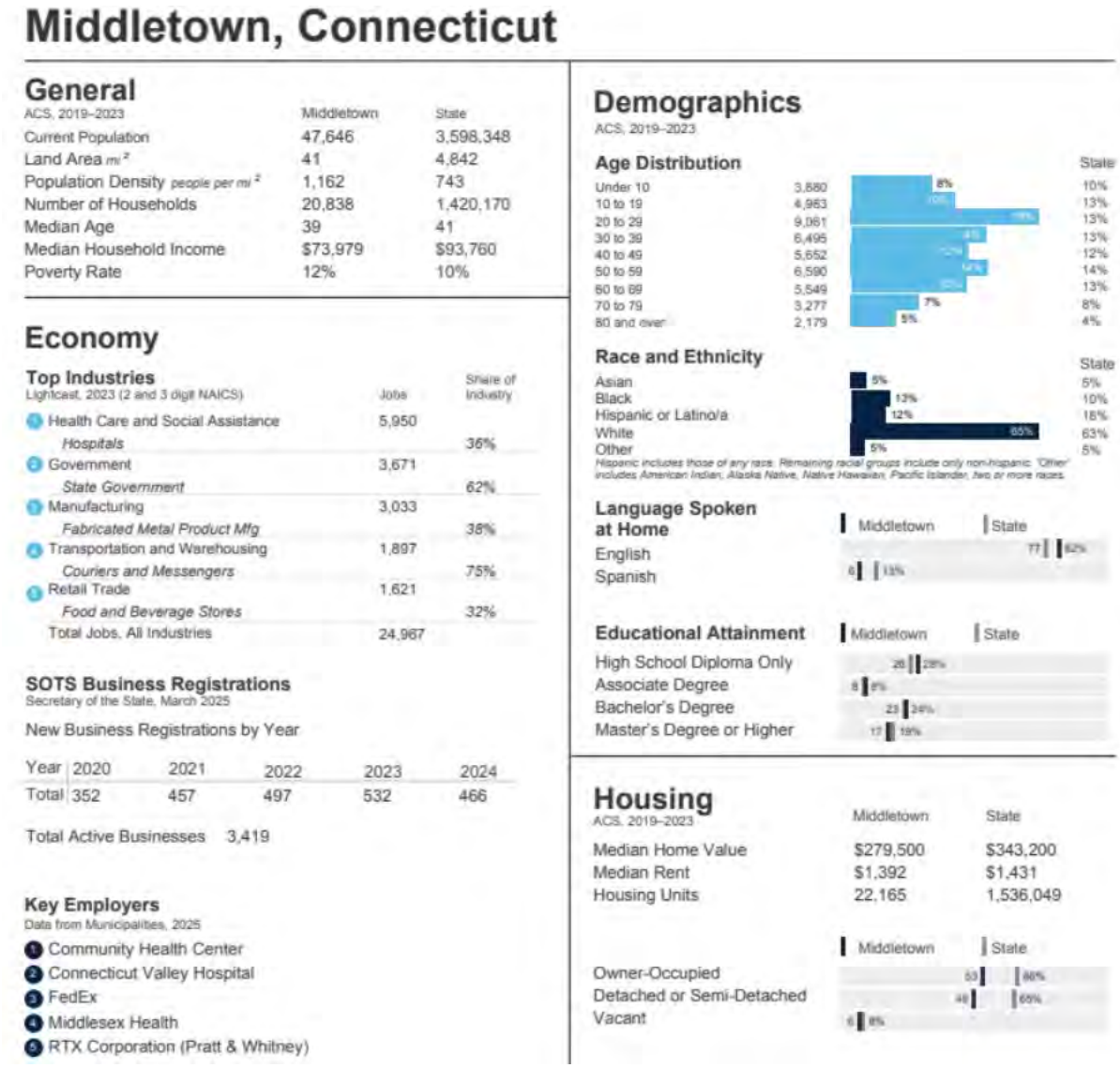


Figure 2.3. City of Middletown Demographics

2.2. Climate

Average weather data in Middletown was sourced from the Weather Spark website (weatherspark.com).

In Middletown, the summers are warm and humid, the winters are very cold, and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from 21°F to 83°F and is rarely below 7°F or above 91°F.

The warm season lasts for 3.5 months, from May 31 to September 15, with an average daily high temperature above 74°F. The hottest day of the year is July 20, with an average high of 83°F and low of 66°F.

The cold season lasts for 3.3 months, from December 1 to March 12, with an average daily high temperature below 46°F. The coldest day of the year is January 30, with an average low of 21°F and high of 36°F.

A wet day is one with at least 0.04 inches of liquid or liquid-equivalent precipitation. The chance of wet days in Middletown varies throughout the year. The wetter season lasts 4.7 months, from March 26 to August 17, with a greater than 28% chance of a given day being a wet day. The drier season lasts 7.3 months, from August 17 to March 26. Middletown experiences some seasonal variation in monthly rainfall. Rain falls throughout the year in Middletown. The greatest quantity of rain falls during the 31 days centered around October 3, with an average total accumulation of 3.8 inches.

Middletown experiences some seasonal variation in monthly liquid-equivalent snowfall. The snowy period of the year lasts for 5.0 months, from November 10 to April 9, with a sliding 31-day liquid-equivalent snowfall of at least 0.1 inches. The most snow falls during the 31 days centered around January 26, with an average total liquid-equivalent accumulation of 0.9 inches. The snowless period of the year lasts for 7.0 months, from April 9 to November 10.

2.3. Government Style

Middletown is governed by a Mayor with a Common Council. It also has many Boards and Commissions. The Mayor, Council members, and many other public officials are elected.

2.4. Development Trends

Middletown has a distinct urban downtown centered on Main Street and adjacent to the Connecticut River. The city has four major transportation corridors with commercial development along Routes 66 (Washington Street), Route 17 (South Main Street), Route 3 (Newfield Street), and Saybrook Road. Recent development has been concentrated near downtown, the riverfront and along the commercial corridors within the sewer boundary area.

New development noted by the Local Planning Team includes:

- A large residential community is under construction on Newfield Street (400+ units – three phases).
- A new grocery store on Rt. 17, South Main Street
- Revitalization and adaptive reuse of buildings on Main Street is the current trend.
- A major expansion of the YMCA is in permitting phase.
- A new four-story building, warming center, soup kitchen and supportive housing units on Liberty Street.
- On Saybrook Road there is a new commercial retail building and recreational facility.
- Currently working on a renovation of a downtown elementary school – property partially in floodplain. Renovations will comply with NFIP standards.

- Major renovation to a city facility leased for a restaurant in the Connecticut River floodplain – locally known as Harbor Park.
- Renovations completed in CT River in the floodplain: new public and safety docks on the river.
- New off ramp in planning phase for Rt 9 south to River Road. Reconstruction of bridge over Sumner brook and removal of traffic light on Rt. 9 – planned for 2032.
- Under construction – reconfiguration of Rt. 9 / 17.
- Changes to zoning since 2021 – redid mixed use zoning to expand mixed uses to allow up to 6 families and mixed-use buildings as of right.

Middletown is the most densely developed and fastest growing community in the RiverCOG region. The proposed development in Middletown elevates the city's vulnerability to natural disasters, specifically flooding, due to the concentration of some new projects within and adjacent to the Connecticut River floodplain (Harbor Park, restaurant renovation, new public and safety docks, and the downtown elementary school renovation). Adhering to NFIP standards and stormwater standards, along with building codes, will reduce structural risks. For all developments outside of the floodplain, modern advances in stormwater management practices, increased use of green infrastructure, and other techniques will be used to mitigate the risk of stormwater flooding from increased impervious surfaces, to the extent feasible. Finally, all residential, transportation, and other infrastructure projects undergo a vigorous development review process to mitigate risk to the fullest extent feasible. This review process also considers increased operational risks and risks to vulnerable populations.

2.5. City-Specific Hazard Concerns

Municipal staff reported several specific hazard concern issues, which are listed below. The information below is intended to supplement the hazard-specific analysis completed in Section 2, of Volume I of this plan. All hazards analyzed and applicable to Middletown in Volume I are not included in this annex.

A note: To preserve the reader's ability to align RiverCOG-Level and municipal-level hazard identification and risk analysis, the order of the following hazards aligns with the order of hazards in Volume I. Individual municipalities have ranked these hazards differently. This municipal-level ranking can be found in Section 3.3 Hazard Risk Ranking.

2.5.1. Severe Winter Weather

Winter storms are one of the three most significant hazards for the City of Middletown. They occur regularly. Roof collapse is a major concern during snow events. A major ice storm can cause trees and tree limbs to fall and result in major road closures and power outages. There is a need for additional people to operate snow removal equipment during big events. FEMA Public Assistance was received by the city in both 2013 and 2015 for winter weather events. Since the 2021 plan update, with the exception of two large snowfalls in the 2025/2026 winter season, there have been no damaging severe winter weather events.

2.5.2. Flooding

Flooding - Riverine and Inland Flooding

There have been no major floods along rivers since the 2021 plan updates. Most flooding has been caused by high intensity short duration rainfall events.

Flash Flooding

The City is seeing more high intensity short duration rainfall events that cause drainage flooding issues. Washington Street near the Public Works facility has flooded in the past from such an event. There is a problem with critical infrastructure erosion near the outlet of Summer Brook. There have been only a few bridge and culvert replacements since the last plan update. Engineering is concerned that the rainfall runoff coefficients being used for design are insufficient. Beavers were noted as being a problem in the Connecticut River. A new flood study is needed near the South Fire District. In terms of riverine flooding, the Connecticut River is the primary source with several other inland rivers and streams causing flooding to a lesser extent.

Since the 2021 plan update, there has been flash flooding along Randolf Road, Millbrook Road, River Road, Mile Lane and the Connecticut River riverfront. There were multiple road failures on River Road from erosion, including a partial roadway collapse in 2023.

Sea Level Rise

Although the City of Middletown is an inland community, the Connecticut River and Mattabasset River are tidally influenced. Sea level rise will have long-term consequences to tidal water surface elevations of the Connecticut River, Mattabasset River, and associated wetlands. In the long term, changes to flood water surface elevations could be noticed. Researchers[4] in Connecticut believe that Connecticut River communities should plan for about half of the vertical sea level rise projected for Long Island Sound. In other words, the State-mandated planning threshold of 20 inches by 2050 could translate to ten inches of vertical flooding added to tidal flooding along the Connecticut River and Mattabasset River by 2050. Nevertheless, over the five-year timeframe for this plan, changes in horizontal flood extents associated with this vertical increment are not likely to be noticeable.

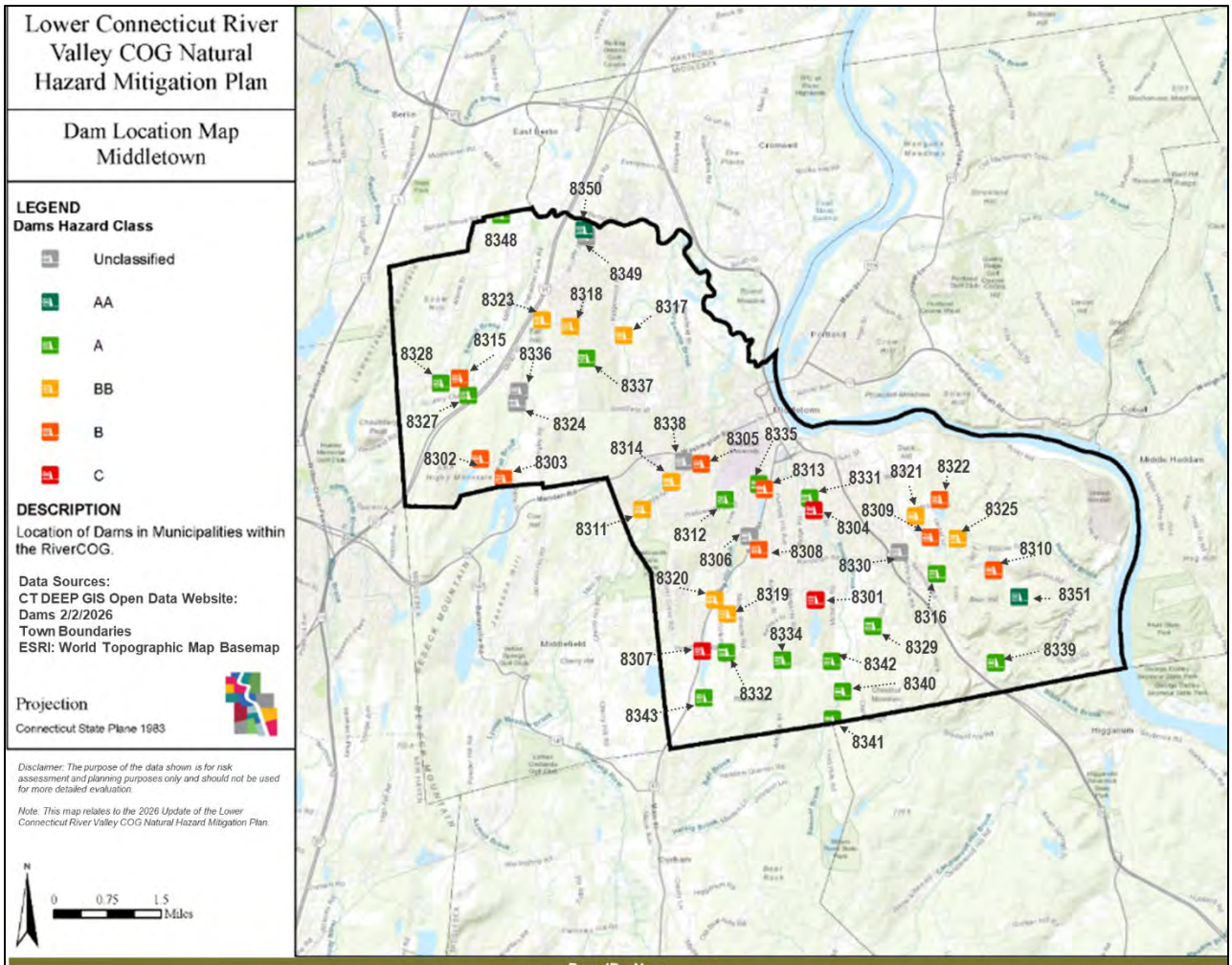
2.5.3. Dam Breach

Dams, due to both the risk of their failure and their inability to operate effectively during flood conditions due to poor maintenance, are of concern to the City. Dam breach and associated inundation of streams passing through Middletown and low-lying roads are of great concern during significant rain events. The areas along the Connecticut River, and especially near the South Fire District along Sumner Brook, are areas of concern. The City of Middletown has a total of 50 dams

[4] Robert Thorson, UConn, via presentation at the UConn Law School in April 2026

according to the CT DEEP Dam Registry. Of the 50, four have an unclassified hazard level, three have a Negligible Hazard (AA) classification, 17 have a Low Hazard (A) classification, 12 have a Moderate Hazard (BB) classification, seven have a Significant Hazard (B) classification and two have a High Hazard (C) classification. Additionally, three of the registered dams are listed as breached and two reportedly no longer are in place.

Figure 2.4 shows the location of all dams within Middletown. Moderate, Significant, and high hazard-class dams are presented in Table 2.1. A full list of dams is provided in Appendix B.



Dam ID - Name				
8301 – Crystal Lake	8310 – Asylum Reservoir Dam #6	8319 – Heinrich Pond Dam	8329 – Harris Brook Pond Dam	8339 – Hidden Pond Dam
8302 – Adder Reservoir	8311 – Spring Street Dam	8320 – Dolans Pond Dam	8330 – Obscure Pond Dam	8340 – {Unnamed Dam}
8303 – Mount Higby Reservoir Dam	8312 – Long Lane Dam	8321 – Asylum Reservoir Dam #1	8331 – Lower Mill Pond Dam	8341 – Last Pond Dam
8304 – Upper Mill Pond Dam	8313 – Pameacha Pond Dam	8322 – Asylum Reservoir Dam #4	8332 – Coleman Road Pond Dam	8342 – Summer Brook Pond Dam
8305 – Butternut Hollow Pond Dam	8314 – Starr Mill Pond Dam	8323 – Westfield Falls Dam	8334 – East Round Hill Brook Dam	8343 – Long Hill Brook Pond Dam
8306 – Lock Shop Pond Dam	8315 – Highland Pond Dam	8324 – Fall Brook Dam	8335 – Bretton Road Pond Dam	8348 – Spruce Brook Pond North Dam
8307 – Dooley Pond	8316 – Laurel Ledge Pond Dam	8325 – Asylum Reservoir Dam #5	8336 – Fall Brook	8349 – West Lake Association Dam #1
8308 – Zoar Pond Dam	8317 – West Swamp Brook Dam	8327 – Country Club Road Pond Dam	8337 – Camp Bryne Pond Dam	8350 – West Lake Association Dam #2
8309 – Asylum Reservoir Dam #2	8318 – Miner Pond Dam	8328 – Atkins Street Pond Dam	8338 – Upper Coginchaug Dam	8351 – Frank Rak Dam

Figure 2.4. Location of Dams, Middletown, CT

Table 2.1. Moderate, Significant and High Hazard Dams, Middletown, CT

CT Dam #	Dam Name	Hazard Class	Owner
8301	CRYSTAL LAKE DAM	C - High	CONNECTICUT DEEP
8307	DOOLEY POND DAM	C - High	CONNECTICUT DEEP
8302	ADDER RESERVOIR	C- High	CITY OF MIDDLETOWN
8303	MOUNT HIGBY RESERVOIR DAM	B - Significant	CITY OF MIDDLETOWN
8309	ASYLUM RESERVOIR #2 DAM	B - Significant	CONNECTICUT VALLEY HOSPITAL
8310	ASYLUM RESERVOIR DAM #6	B - Significant	CONNECTICUT VALLEY HOSPITAL
8315	HIGHLAND POND DAM	B - Significant	MIDDLESEX LAND TRUST – Reported by city as removed at the Jan. 2026 meeting.
8322	ASYLUM RESERVOIR #4 DAM	B - Significant	CONNECTICUT VALLEY HOSPITAL
8305	BUTTERNUT HOLLOW POND DAM	B - Significant	CITY OF MIDDLETOWN
8304	UPPER MILL POND DAM	BB - Moderate	FENNER DRIVES, INC.
8314	STARR MILL POND	BB - Moderate	NEWFIELD REALTY CORPORATION
8308	ZOAR POND	BB - Moderate	CITY OF MIDDLETOWN
8311	SPRING STREET DAM	BB - Moderate	SAVAGE MILL ASSOCIATES
8313	PAMEACHA POND DAM	BB - Moderate	City of Middletown - Reported by city as breached and temporarily repaired at the Jan. 2026 meeting.
8317	WEST SWAMP BROOK DAM (GILBERT)	BB - Moderate	WEST SWAMP BROOK
8318	MINER POND	BB - Moderate	EAST MINER BROOK
8319	HEINRICH POND	BB - Moderate	LONG HILL BROOK TRIB
8320	DOLAN'S POND	BB - Moderate	LONG HILL BROOK
8321	ASYLUM RESERVOIR #1 DAM	BB - Moderate	RESERVOIR BROOK
8323	WESTFIELD FALLS (UPPER POND)	BB - Moderate	UNNAMED
8325	ASYLUM RESERVOIR #5 DAM	BB - Moderate	UNNAMED

During a January 2026 Meeting of the Local Planning Team, the following observations were noted regarding dams:

- Westlake dam is in poor condition and under design review by the City of Middletown.
- Laurel Brook Dam in Middlefield would have impacts on Middletown if it failed.
- The State of Connecticut has recently made significant improvements to the Dooley Pond Dam.

- The Adder Reservoir and Mount Higby Reservoir Dams have reportedly been reclassified from Significant Hazard to High Hazard, although this change does not appear in either the DEEP dam inventory or on the National Inventory of Dams.
- The Highland Pond Dam has been removed.
- The Upper Mill Pond Dam is under conceptual design for potential removal
- It was noted that Spring Street Dam is on Middlefield Street which eventually becomes Spring Street, near the Middlefield border.
- The Pameacha Pond Dam failed in 2023 and is now temporarily reconstructed with concrete blocks, trap rock, and fabric. This is a temporary repair. The city is engaged with an engineer to redesign the dam.

The subject plan update seeks approval under Element G of the Local Plan Review Tool, for potential HHPD eligibility. Five high hazard dams are located in Middletown: Adder and Mount Higby Reservoir (both owned by the City and used for water supply); Crystal Lake and Dooley Pond (both owned by the State); and Upper Mill Pond (privately owned). These dams were introduced and described in the multi-jurisdiction document. The Emergency Action Plans (EAP) were obtained and reviewed to understand the people, critical facilities, and community assets in the dam failure inundation areas.

Adder Reservoir Dam

This dam is owned by the city. An EAP was prepared and accepted by DEEP. Two streams lead downstream from the dam. Roaring Brook leads to Mount Higby Reservoir through the Fall Brook Diversion Structure. A second stream leads downstream and eventually meets up with Fall Brook. During a dam failure, some backwater conditions would extend into Mount Higby Reservoir, but the stage would not rise more than 0.1 foot. The chance for a cascading failure was deemed to be small. Overall, the Adder Reservoir dam failure area includes the following:

- The Water Treatment Plant and associated buildings;
- Homes near the intersection of Partridge Lane and Country Club Road;
- Homes near Sachem Drive;
- Homes near Lancaster Court, including those accessed from Miner Street;
- Homes on Miner Street near Miner Hills Drive;
- The area on Smith Street east of Interstate 91, including an industrial complex, some commercial buildings, and several large multi-family apartment buildings;
- Interstate 91 between Exit 20 and Exit 21;
- The underpasses carrying Smith Street beneath the highway; and
- Most of the industrial park between Interstate 91 and Middle Street and along Industrial Park Road.

The inundation area ends just downstream of Aetna Drive. In general, numerous structures were anticipated to be affected.

Mount Higby Reservoir Dam

This dam is owned by the city. An EAP was prepared and accepted by DEEP. Fall Brook begins at the outlet of the spillway and is joined by the flow from Adder Reservoir through the Fall Brook diversion. The dam failure area includes much of the same area as Adder Reservoir described above but is more extensive downstream due to the greater storage in Mount Higby Reservoir. The area of inundation included the following:

- The Water Treatment Plant and associated buildings;
- Homes near the intersection of Partridge Lane and Country Club Road;
- Homes near Sachem Drive;
- Homes near Lancaster Court, including those accessed from Miner Street;
- Homes on Miner Street near Miner Hills Drive;
- The area on Smith Street east of Interstate 91, including an industrial complex, some commercial buildings, and several large multi-family apartment buildings;
- Interstate 91 between Exit 20 and Exit 21;
- The underpasses carrying Smith Street beneath the highway;
- Most of the industrial park between Interstate 91 and Middle Street and along Industrial Park Road;
- The apartment complex on Russet Lane in Middletown;
- Route 372 east of Interstate 91 in Cromwell and areas south of the Mattabasset in Middletown, including numerous commercial properties as well as residential areas on Coles Road and West Lake Drive;
- The Liberty Bank and CVS plaza on Route 372;
- Residential areas on Cromwell Hills and Cedarland Court and the commercial triangle formed by Route 372, Shunpike Road, and Route 524;
- Numerous commercial properties along Newfield Street along the Mattabasset downstream into Middletown;

After Sawmill Brook reaches its confluence with the Mattabasset River, backwater conditions were expected upstream into the Town of Cromwell (in the RiverCOG region) and the Town of Berlin (not in the RiverCOG region). The backwater flooding in Berlin extends upstream nearly to Route 9, affecting numerous residential homes particularly on Mattabasset Street. Additional homes and businesses would be affected on Progress Drive, Sebethe Drive, and Pasco Hill Road. The backwater in Cromwell would affect the commercial area along Route 372 near the Berlin line, including Walmart and numerous residential and commercial properties leading east on Route 372 towards Interstate 91. The inundation area ends at the large swamp associated with the lower Mattabasset River affected by backwater conditions from the Connecticut River. In general, numerous structures were anticipated to be affected.

Upper Mill Pond Dam

This dam is privately owned. According to the City, an EAP does not exist for this dam and impoundment. The Upper Mill Pond is an impoundment of Sumner Brook. The FEMA-delineated flood zones along Sumner Brook downstream of the dam are a reasonable approximation of a dam failure inundation area. The area of inundation included the following:

- Residential properties are located between Front Street (on the west side of the stream corridor) and East Main Street (on the east side of the stream corridor) and on the northeast side of Mill Street.
- Residents on Front Street, East Main Street, Mill Street, Cooley Street, and West Silver Street would likely experience flooding during dam failure.
- Further downstream, the inundation area would intersect with transportation infrastructure associated with Route 17, Route 9, and the Route 17/9 interchange. These are major transportation corridors, and they would likely need to be closed during a dam-related emergency.
- Nonresidential commercial and industrial properties are located throughout these areas, and would likely be impacted by flooding associated with dam failure.
- Middlesex Hospital is located on Crescent Street, and its parking and access areas are likely to be impacted by a failure of the Upper Mill Pond Dam.
- Lastly, the southern periphery of downtown Middletown's central business district (south of Crescent Street and MacDonough Place) would likely experience some flooding during a dam failure.

Crystal Lake Dam

The State of Connecticut owns this dam. An EAP was prepared and accepted by DEEP. The outflow from the dam is the headwaters of Prout Brook. The EAP notes that "a major flood caused by a breach of the dam is estimated to inundate 35 structures and one roadway. The properties are situated on the east and west side of Millbrook Road, north and south side of Prout Hill Road, and the north and south side of Wilcox Road. Flood inundation areas past this point merge to the 500-year FEMA floodplain, prior to merging with Sumner Brook." Because the mapped inundation area was truncated where Prout Brook joins Sumner Brook at Randolf Road, additional detail downstream of this location was not available. However, the Middletown South Fire District building is located on Randolf Road on the east side of Sumner Brook and could potentially be cut off from some parts of Middletown if Crystal Lake Dam were to fail. Downstream of Randolf Road, Sumner Brook enters the Upper Mill Pond which is described above. Therefore, the areas listed above that are downstream of Upper Mill Pond Dam (from Upper Mill Pond to the southern periphery of downtown Middletown's central business district) could be at risk during a failure of Crystal Lake Dam, although the inundation depth may not exceed mapped FEMA flood zones and depths.

Dooley Pond Dam

The State of Connecticut owns this dam. An EAP has not been prepared; an EOP from 1983 is on file with DEEP. The EOP from 1983 includes a map of the "limits of potential flooding." The outflow from Dooley Pond is the headwater of Long Hill Brook. Long Hill Brook flows from south to north along the Route 17 corridor – a major transportation corridor for the region – and the area of potential flooding crosses Route 17 several times. Long Hill Brook ends at Sumner Brook, and portions of the inundation area described above for Upper Mill Pond would likewise be impacted by a failure of Dooley Pond Dam. Given the age of the EOP, the limitations associated with the inundation area mapping (lacking any arrival times or flood depths), and the approximate nature of the mapping, one of the recommendations of this plan is for the State of Connecticut to develop an EAP with inundation mapping that meets the current standards in the Dam Safety Regulations.

2.5.4. Hurricanes and Tropical Storms

The threat of hurricane has the potential for the most catastrophic damage potential of all wind events; however, tornado or severe wind events in the city are also of concern. Although relatively rare in CT, a tornado could cause significant damage to life and property in the City of Middletown. Residents of the densely populated sections of Middletown are susceptible to the most danger and damage if a tornado were to occur.

Along with severe storms come strong winds which result in power outages and fallen trees and debris that causes blocked roads. Tree maintenance/removal is needed to mitigate debris and fallen trees. Trees are maintained under a limited budget and Eversource handles tree maintenance around transmission lines. Power outages are a significant concern in the city.

2.5.5. Earthquakes

The entire City could be affected by an earthquake in this region and surrounding areas. The level of impacts would likely vary locally throughout the city. Recorded impacts have been limited to shaking to the extent that things were knocked off shelves and people were alarmed in Middletown and the surrounding region. Structural damage has been limited to building components such as chimneys and buildings in poor repair but failing structures have caused property damage in nearby towns. Middletown has more unreinforced masonry buildings and taller buildings than other communities in the region, making it potentially more vulnerable. If an earthquake occurs in Middletown, it is likely it would be of a low magnitude. For example, a small quake occurred 6 km south of Middletown, registering Mn 2.0 and Mc 2.2 in July of 2019.

2.5.6. Drought and Wildfire

Droughts are infrequently occurring natural events. When they do occur, the most at-risk populations are those residents with shallow wells. Dangerously low water company reservoirs put everyone on those systems at risk. Municipalities and water companies often ask for the public's help in conserving water during dry periods to prevent the depletion of water supplies. One area of concern is the potential for wildfire in large forest tracks. According to DEEP, Connecticut

traditionally experiences high forest fire danger during the Spring from mid-March through May. Large forest in the region include the Cockaponset, a forest encompassing over 17,000 acres in the City of Middletown and towns of Durham, Haddam, and neighboring Chester and Killingworth. Middletown, as the largest urban community in the RiverCOG region, has the lowest vulnerability to wildfire, but the risk still exists. There was a wildfire in 2024, mostly in Berlin and Meriden. Fire paths were carved through Middletown, and the City was on alert as the fire spread. Drought was an issue.

2.5.7. Extreme Temperature

Extreme cold spells do occur periodically, typically between the months of December and March. Although cold temperatures are normal during the winter months, occasionally temperatures can drop below freezing for extended periods, sometimes as low as 0ºF. Low-income housing residents and the elderly in homes without sufficient heat sources are particularly vulnerable. City officials have planned and continue to update the accommodations of shelters. One classification of shelters is warming centers, to be used by those that either have insufficient heat sources or for times of power outages.

Extreme heat and heat waves occur during the summer months, particularly between June and August. A heat wave in Connecticut is defined as a period where the high temperature reaches at least 90ºF for three consecutive days. The elderly in homes without air conditioning are vulnerable. City officials have identified cooling centers for those desiring a place to go to cool off. Middletown has always had a warming center at various locations in the downtown area. It has plans for cooling centers in the following locations: city hall, PD community room, Library, Senior Center, and Recreation Center.

2.5.8. Aquatic Invasive Species

Each year the Connecticut River Conservancy and Jonas Center conduct a partnership for removal of Water Chestnut funded by the city. Through Wesleyan University there have been efforts to remove invasives from the Coginchaug, Connecticut, and Mattabesett Rivers with approximately $5,500 in funding from the city.

2.5.9. Other Hazards

Emergency Access

During the Hawthorne Fire, open space needed to be accessed and carved up for firefighting access, pointing to the need for fire roads to be built and maintained.

3. Hazard Risk

3.1. Historical Events

Table 3.1 lists the Federal Disaster declarations for Middlesex County, for which Middletown requested assistance. There have been no Presidential disaster declarations since the adoption of the 2021 plan update.

Table 3.1. Middletown Natural Hazard Events

Type of Event	Date	Preliminary Damage Assessment
Snow Event (DR-3176)	03/11/2003	$122,359
Snow Event (DR-3200)	02/17/2005	$200,994.93
Wind - Hurricane Event (DR-4023)	02/09/2011	$560,029.83
Snow Event (DR-4046)	11/17/2011	$1,070,189.82
Wind – Hurricane Event (DR-4046)	11/17/2011	$14,408.25
Wind - Hurricane Event (DR-4087)	10/30/2012	$342,671.93
Severe Storm - Snow Event (DR-4106)	03/21/2013	$555,301.31
Severe Winter Storm - Snow Event (DR-4213)	04/08/2015	$1,637.50
Tropical Storm Isaias (DR-4580)	1/12/2021	$511,822.84
Snow Event (DR-3176)	03/11/2003	$122,359
Snow Event (DR-3200)	02/17/2005	$200,994.93
Wind - Hurricane Event (DR-4023)	02/09/2011	$560,029.83

3.2. Recent Events

The following is a summary of recent events experienced in Middletown since the 2021 plan update.

The Local Planning Team noted the following recent events:

- Since the 2021 plan update, there had been flash flooding along Randolf Road, Millbrook Road, River Road, Mile Lane and the Connecticut River riverfront. There were multiple road failures on River Road from erosion, including a partial roadway collapse in 2023.

Public assistance is often provided by FEMA after Presidentially declared disasters. Funding is typically for extraordinary expenses incurred by the community such as public safety and public works overtime, certain equipment and contracted resources and debris cleanup.

Total PA reimbursements to the community were as follows:

- Flood Events: $0 ($0 annually)
- Hurricane (Wind) Events: $1,428,933 ($52,932 annually)
- Winter (Snow) Storm Events: $1,950,483 ($72,240 annually)

Table 3.2 and Table 3.4 list PA reimbursements in Middletown.

Table 3.2. Hurricane Wind Event PA Reimbursements

Disaster #	4023	4087	4046	4580
Incident Dates	Aug-Sept 2011	Oct-Nov 2012	Oct 2011	Jan 2021
Declaration	09/02/2011	10/30/2012	11/17/2011	1/12/2021
Entity	FEMA PA Reimbursement	FEMA PA Reimbursement	FEMA PA Reimbursement	FEMA PA Reimbursement
State	$	$	$	$
Municipal	$	$	$	$
Nonprofit	$0	$0	$0	$0
Total	$560,030	$342,672	$14,408	$511,823
Annualized	$20,742	$12,692	$534	$18,956

Table 3.3. Winter Storm PA Reimbursements, Middletown, CT

Disaster #	3176	3200	4046	4106	4213
Incident Dates	Feb 2003	Jan 2005	Oct 2011	Feb 2013	Jan 2015
Declaration	3/11/03	2/17/05	11/17/2011	3/21/13	04/08/2015
Entity	FEMA PA Reimbursement	FEMA PA Reimbursement	FEMA PA Reimbursement	FEMA PA Reimbursement	FEMA PA Reimbursement
State	$	$	$	$	$
Municipal	$	$	$	$	$
Nonprofit	$0	$0	$0	$0	$0
Total	$122,359	$200,995	$1,070,190	$555,301	$1,638
Annualized	**$4,532**	**$7,444**	**$39,637**	**$20,567**	**$61**

**Annualized is calculated over a 27-year period from 1998 and 2025*

3.3. Hazard Risk Ranking

Middletown participated in the regional hazard ranking conducted by the Hazard Mitigation Planning Team. Table 3.5 shows the scoring for the various ranking parameters that were used. The probability of each hazard is determined by assigning a level, from unlikely to highly likely, based on the

likelihood of occurrence from historical data. The total impact value includes the affected area, primary impact, and secondary impact levels of each hazard. Level of Community Concern reflects the perceived risk of each hazard as indicated by respondents to question 6 of the community survey. This question asks, "How concerned are you about each of the following hazards impacting your home, business, community, or organization?" and received 157 responses.

Each of these five criteria are assigned weights, as well as point values for each of their responses. Each level's score is reflected in the matrix. The total score for each hazard is the probability score multiplied by its importance factor times the sum of the impact level scores multiplied by their importance factors. Based on this total score, the hazards are separated into three categories based on the hazard level they pose to the communities: Significant, Moderate, Limited. Table 3.5. Hazard Ranking Parameters provides a summary of the categories used to rank the hazards and their weighted values for the Composite Hazard Risk Index.

Table 3.4. Hazard Ranking Parameters

Criteria	Weight	1 Point	2 Points	3 Points	4 Points
Hazard Probability	2.0	**Unlikely** Less than 1% probability in next 100 years or has a recurrence interval of greater than every 100 years.	**Somewhat Likely** Between 1 and 10% probability in next year or has a recurrence interval of 11 to 100 years.	**Likely** Between 10 and 100% probability in next year or has a recurrence interval of 10 years or less	**Highly Likely** Near 100% probability in next year or happens every year.
Impact – Affected Area	0.8	**Isolated** Less than 1% of area affected	**Small** Between 1 and 10% of area affected	**Medium** Between 10 and 50% of area affected	**Large** Between 50 and 100% of area affected
Impact – Primary Impact	0.7	**Negligible** 1 to 10% of people or property	**Limited** 10% to 25% of people or property	**Critical** 25 to 50% of people or property	**Catastrophic** >50% of people or property
Impact – Secondary Impact	0.5	**Negligible** No loss of function, downtime, and/or evacuations	**Limited** Minimal loss of function, downtime, and/or evacuations	**Moderate** Some loss of function, downtime, and/or evacuations	**High** Major loss of function, downtime, and/or evacuations
Level of Community Concern	1.0	**Low Concern**	**Moderate Concern**	**High Concern**	-

The hazard risk ranking generated from this exercise, along with consideration of available data, was used to prioritize the level of effort assigned to further analysis of each hazard in the vulnerability analysis and lost estimation sections. All the participating communities agreed upon the results of the hazard ranking for the overall region. Based on the results of the exercise, the hazards were ranked as follows in Table 3.6. Hazard Ranking Parameters. Middletown endorsed the ranking as accurate for the City.

Table 3.5. Summary of Potential Hazard Impacts.

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
Aquatic Invasive Species	Semi-quantitative, supplemented by state and municipal figures, recommend survey	**Highly Likely - 4**	**Large - 4**	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant
Terrestrial Invasive Species	Semi-quantitative, supplemented by state and municipal figures, recommend survey	**Highly Likely - 4**	**Large - 4**	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant
Tree Infestation	Semi-quantitative, supplemented by state and municipal figures, recommend survey	**Highly Likely - 4**	**Large - 4**	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant
Hurricanes	Hazus for wind	Likely - 3	**Large - 4**	Critical - 3	Moderate - 3	High Concern - 3	15.8	Significant
Winter Storms (Snow, Ice, Wind, including Nor'easters)	Historic analysis for probability and annualized damages	**Highly Likely - 4**	**Large - 4**	Negligible - 1	Moderate - 3	Moderate Concern - 2	15.4	Significant

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
Flood – Riverine and Inland Flooding (Riverine, Drainage)	Hazus, SLR Overlay, FS Model Overlay, Historic data and damages for additional probability	Likely - 3	Medium - 3	Critical - 3	**High - 4**	High Concern - 3	15.5	Significant
Extreme Heat and Cold	Qualitative based on historic	Likely - 3	**Large - 4**	Negligible - 1	Limited - 2	High Concern - 3	13.9	Moderate
Severe Weather (thunderstorms, downbursts, hail, lightning)	Historic analysis for probability and annualized damages	**Highly Likely - 4**	Small - 2	Negligible - 1	Limited - 2	Moderate Concern - 2	13.3	Moderate
Flood – Coastal Flood (tidal aspects of Connecticut River flooding that are affected by sea level rise)	Hazus, SLR Overlay, FS Model Overlay, Historic data and damages for additional probability	Likely - 3	Medium - 3	Limited - 2	Moderate - 3	Moderate Concern - 2	13.3	Moderate
Wildfire	Historic analysis for probability and annualized damages	Likely - 3	Small - 2	Critical - 3	Moderate - 3	Moderate Concern - 2	13.2	Moderate

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
Tornadoes	Historic analysis for probability and annualized damage - pulling in surrounding counties	Likely - 3	Isolated - 1	**Catastrophic - 4**	Limited - 2	Moderate Concern - 2	12.6	Moderate
Earthquakes	Hazus, 3 scenarios	Somewhat Likely - 2	Small - 2	**Catastrophic - 4**	**High - 4**	Low Concern - 1	11.4	Limited
Drought	Historic analysis for probability and annualized damages - some qualitative	Likely - 3	Medium - 3	Negligible - 1	Limited - 2	Low Concern - 1	11.1	Moderate
Flooding from Dam Failure	Dam Inundation areas, Historic analysis for probability and annualized damages	Unlikely - 1	Small - 2	Limited - 2	Moderate - 3	Moderate Concern - 2	8.5	Limited

3.3.1. National Flood Insurance Program (NFIP) Participation

Middletown began participating in the NFIP in 1974. There are currently 178 policies in force, providing approximately $52 million in coverage. Losses paid were approximately $1.4 million.

Repetitive Loss Properties

The City of Middletown has three (3) Repetitive Loss properties. These are located along the Connecticut River and Inland streams (2 residential and 1 commercial). There are no Severe Repetitive Loss (SRL) properties in Middletown.

4. Capability Assessment

This section discusses capabilities and operational procedures that Middletown undertakes that contribute to or have the potential to contribute to hazard mitigation. It also notes deficiencies in those capabilities that could be addressed to strengthen resilience.

4.1. Critical Facilities

Public and private utility facilities are vital to maintaining or restoring normal services to areas of the city before, during, and after a natural disaster.

Figure 4.1 shows the location of critical facilities in Middletown which are identified at the regional level.

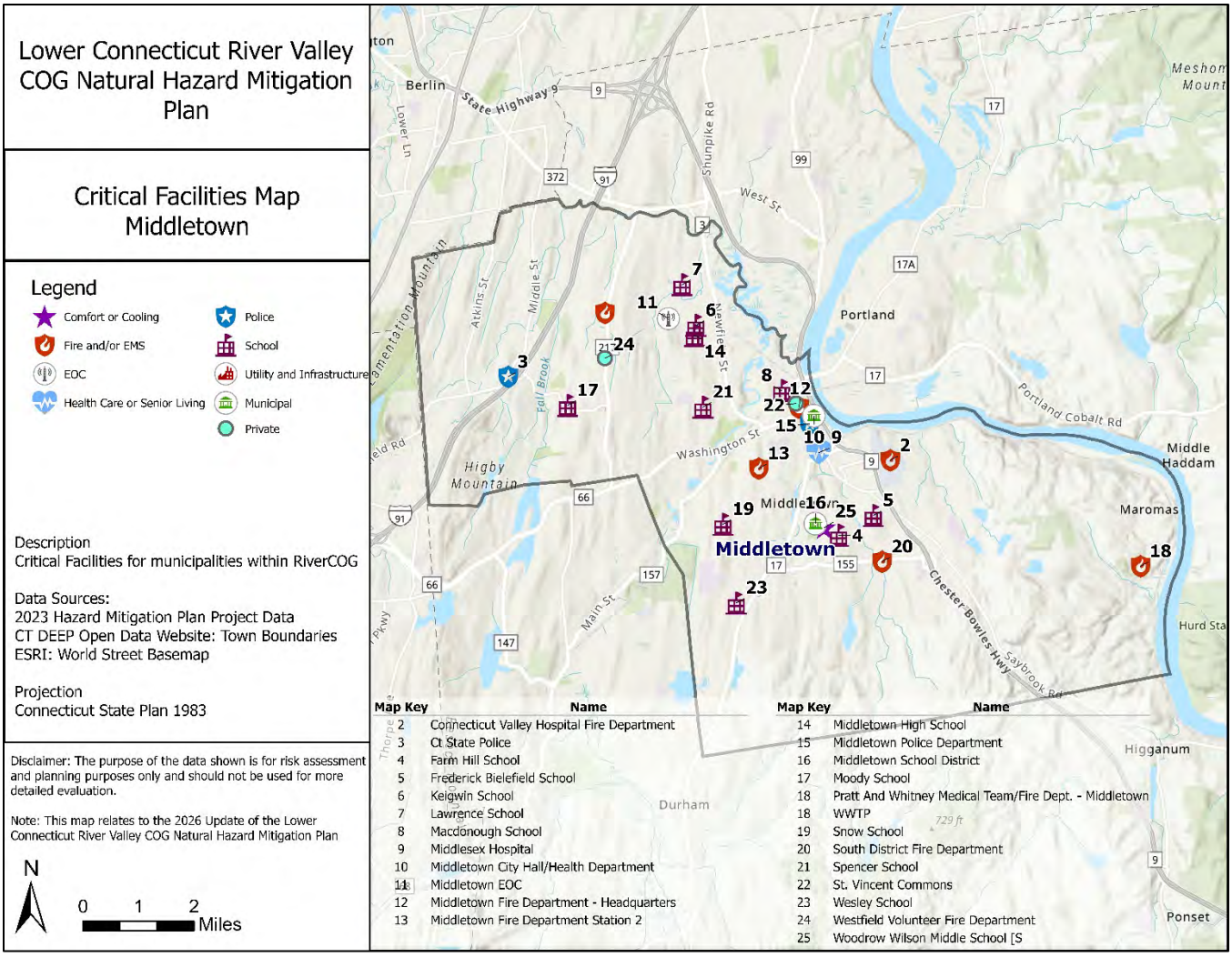


Figure 4.1. Location of Critical Facilities in Middletown

* Municipal solid waste, care-related facilities, and a gas station with a generator are included in the State list of critical facilities. They are mapped here but were not identified as critical facilities by the city in the following table.

Table 4.1 lists critical facilities identified by the City.

Table 4.1. Critical Facilities

Facility	Type	Address	Flood Zone	Generator	Notes
Middletown Police Department	Municipal	222 Main Street	No	X	Listed as critical facility
Ct State Police	State	1111 Country Club Road	No	X	Listed as critical facility
Middletown EOC	Municipal	499 Miles Lane	No	X	
Middletown Fire Department - Headquarters	EMS	533 Main Street	No	X	Listed as critical facility

Facility	Type	Address	Flood Zone	Generator	Notes
Middletown Fire Department Station 2	EMS	169 Cross Street	No	X	Listed as critical facility
South District Fire Department	EMS	445 Randolph Road	100-year Zone AE (BFE 82.4 ft)/Partial 500-year Zone X. Building is in 500-year. Egress and access are impacted by 100-year.	X	Listed as critical facility
Westfield Volunteer Fire Department	Private	653 East Street	No	X	Listed as critical facility
Pratt And Whitney Medical Team/Fire Dept. - Middletown	EMS	Aircraft Road	No	X	Listed as critical facility
Connecticut Valley Hospital Fire Department	EMS	Holmes Drive	No	X	Listed as critical facility
Middletown City Hall/Health Department	Municipal	245 Dekoven Drive	No	X	Listed as critical facility
Middlesex Hospital	EMS	28 Crescent Street	No	X	Listed as critical facility
Middletown School District	Municipal	311 Hunting Hill Ave	No		
Middletown High School	Municipal	200 La Rosa Lane	No		
Snow School	Municipal	299 Wadsworth Street	No		
Spencer School	Municipal	207 Westfield Street	No		
Frederick Bielefield School	Municipal	70 Maynard Street	No		
Wesley School	Municipal	10 Wesleyan Hills Road	100-year Zone AE parcel and buildings		
Beman Middle School	Municipal	1 Wilderman's Way	No		
Farm Hill School	Municipal	390 Ridge Road	No		
Lawrence School	Municipal	Kaplan Drive	No		
Keigwin School	Municipal	99 Spruce Street	500-year Zone X/Partial Zone X 0.2 PCT Annual Chance Flood Hazard		

Facility	Type	Address	Flood Zone	Generator	Notes
			encompasses parcel and building. 100-year, Zone AE on Parcel only.		
Macdonough School	Municipal	66 Spring Street	500-year Partial Zone X 0.2 PCT Annual Chance Flood Hazard – on parcel only. Buildings not in.		
Moody School	Municipal	300 Country Club Road	No		
St. Vincent Common	Diocese of Norwich	12 Liberty Street	No		

*Not mapped due to location being in another community or not included in available GIS data.

The following changes in critical facilities since the last plan or items deemed notable by the local planning team are below:

- Middletown EOC at 499 Miles Lane was added as a critical facility
- St. Vincent Common, owned by the Diocese of Norwich and located at 12 Liberty Street was added as a critical facility
- Frank's service station, previously listed as a critical facility has closed and is being repurposed to a non-critical facility use. It has been removed.
- Woodrow Wilson Middle School has been renamed Beman Middle School and remains a critical facility.
- The Connecticut Juvenile Training School/Correctional Facility is no longer in operation. There are discussions about it's reuse, which will likely not be a critical facility. It has been removed.

4.2. Municipal Capabilities

The City of Middletown has a variety of natural hazard mitigation capabilities, including local regulations and ordinances, operational protocols, and emergency response capabilities. Following is a list of some highlighted capabilities identified by municipal staff.

4.2.1. Regulations and Ordinances

The City of Middletown participates in the National Flood Insurance Program (NFIP). The City of Middletown uses the State Building Code for code compliance to ensure safe structures which withstand 110 mph wind speed and appropriate snow load. Middletown follows their Plan of Conservation and Development for planning infrastructure, open space, and development. City planners, P&Z, the building department, and emergency management work with RiverCOG to continuously monitor growth trends and vulnerable sites. Middletown has enhanced its land use regulations designed to protect natural resources and restrict development in flood zones and other hazard- prone areas. Middletown retained BL Companies to create a

new flood study to address a problem area near the South Fire District. The City may apply for a FEMA Letter of Map Revision to incorporate the new study into FEMA mapping.

WPCA proposed an ordinance requiring cisterns for all new development in areas of the City with no public water for fire suppression. The city has defined a sewer use area (WPCA) outlining areas of new construction where new infrastructure will be placed.

There is an urban forestry commission and forestry plan in Middletown. Middletown just passed a $5 million bond for open space and should consider hazards when planning acquisitions.

Other plans include a Stormwater Management Plan and Drought Management Plan.

4.2.2. Operations and Procedures

The Emergency Management Office maintains an emergency response plan. It has the primary responsibility for the coordination of emergency management activities including planning, preparedness, response, recovery, and mitigation; and serves as the central point of contact for receiving reports of incidents that occur within its jurisdiction and for disseminating emergency-related information.

4.2.3. Capital Improvements

The Capital Improvement Plan addresses municipal improvements including rights-of-way, land, housing, infrastructure, or utilities for public purposes. Mitigation actions from this NHMP should be included in the CIP. Larger items such as bridge and culvert replacements and elevation of roads are included in the 5-year CIP. The CIP should be reviewed often so that it can include new mitigation action items each time the NHMP is updated. This is a good way for the City to prioritize mitigation items and use the Capital Improvement Program (CIP) to set aside funds for infrastructure improvements to reduce loss of life and property during natural hazard (NH) events. Items such as culverts and bridge replacements and the flood study in the South Fire District have been funded from the CIP.

4.2.4. Plan Integration with Other Planning Mechanisms

The city of Middletown uses the mitigation plan to inform its 5-year capital improvement plan and associated annual budgets. Middletown staff reported that the plan has not been formally incorporated into other planning documents. There is new legislation (P.A. 25-33) that now requires cities and towns to incorporate climate vulnerability (specifically including flooding) and resilience strategies into Plans of Conservation and Development (POCDs). Middletown plans to comply with that new requirement during the next POCD Update. Further, communities are now required to develop and maintain affordable housing plans. The mitigation plan will help inform siting criteria within that plan.

4.2.5. Outreach, Education, Communication, and Warnings

Middletown uses Everbridge as a mass communication system to communicate hazard information to the public. Furthermore, Middletown will soon be launching the SeeClickFix application which will allow the public to report problems to various City Departments including but not limited to Fire, Health, Public Works

and Planning, Conservation and Development. The public can use this tool to inform city staff areas of damage, road closures, and failed stormwater infrastructure from hazard events.

4.2.6. Other Capabilities

Table 4.2 (including 4.2a and 4.2b), Table 4.3, and Table 4.4 list legal, regulatory, technical, administrative and financial capabilities that support hazard mitigation.

Table 4.2. Legal and Regulatory Capability

Table 4.2.a. Codes, Ordinances & Requirements

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Building Code	Yes	Yes	No	Yes	All municipalities enforce the State Building Code
Zoning Code	Yes	No	No	No	
Subdivisions	Yes	No	No	No	
Post Disaster Recovery	No	No	No	No	
Real Estate Disclosure	Yes	No	No	Yes	State requirement
Growth Management	No	No	No	No	
Site Plan Review	Yes	No	No	No	
Special Purpose (flood management, critical areas)	Yes	Yes	No	Yes	State flood management Statutes and regulations

Table 4.2.b. Planning Documents

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Plan of Conservation and Development	Yes	No	No	Yes	Current
Floodplain or Basin Plan	No	No	No	No	
Stormwater Plan	Yes	No	No	Yes	MS4 Community
Capital Improvement Plan	Yes	No	No	No	
Habitat Conservation Plan	No	No	No	No	

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Economic Development Plan (POCD)	Yes	No	No	No	Regional Comprehensive Economic Development Strategy
Emergency Response Plan	Yes	No	No	Yes	LEOP templates provided by DEMHS
Shoreline Management Plan	No	No	No	No	
Post Disaster Recovery Plan	No	No	No	Yes	LEOP templates provided by DEMHS

Table 4.3. Administrative and Technical Capability

Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Land Use Dept
Engineers or professionals trained in building or infrastructure construction practices	Yes	City Engineer, Public Works
Planners or engineers with an understanding of natural hazards	Yes	Land Use and Engineering
Staff with training in benefit/cost analysis	No	
Floodplain manager	Yes	Director of Land Use
Surveyors	Yes	Contracted Services
Personnel skilled or trained in GIS applications	Yes	Dept. of Information Technologies
Emergency manager	Yes	Emergency Management Office
Grant writers	Yes	Municipal Staff

Table 4.4. Financial Resources

Financial Resources	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes, Downtown BD, Fire Districts
User Fees for Water, Sewer, Gas or Electric Service	Yes, annually
Incur Debt through General Obligation Bonds	Yes

Financial Resources	Accessible or Eligible to Use?
Incur Debt through Special Tax Bonds	Investigate further
Incur Debt through Private Activity Bonds	Investigate further
Withhold Public Expenditures in Hazard-Prone Areas	No
State Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	No

Gaps in Capabilities

The following list highlights gaps in capabilities identified by City staff:

- Middletown has a critical facilities spreadsheet, but no corresponding GIS.
- There are ongoing discussions around back-up power at gas stations and other privately-owned facilities that are critical during disasters.
- There are still a lot of areas in the south and west ends of the city that are rural and do not have public water.
    - Middletown relies mostly on tankers, for fire suppression, in these areas and has very few dry hydrants.
    - One home was lost to fire for lack of water for fire suppression.
- CT Valley Hospital (State owned facility) no longer handles its own fire suppression, protection, and prevention, adding a burden to City resources.
    - South Fire district handles firefighting there. First response is at the City's expense.
- There is a proposed ordinance requiring cisterns for all new development in areas of the city with no public water for fire suppression. The ordinance met with resistance. Not having them will impact ISO rating. It has not been codified.
- There is a need for a citywide inventory of diseased or dying trees. An inventory has now been completed for the downtown area.

4.2.7. New Capabilities and Completed Actions

Since the last plan update in 2021 there have been many updated capabilities:

- The city updated its Debris Management Plan, which details bringing all debris to the city transfer station. The city has begun a survey of trees that need to come down -- 35-50 per year. It has completed a full ash tree inventory and has allocated funds for ash tree removal. In 2022, the city removed approximately 150 trees. City staff note that it might be helpful to have multiple locations in the city so debris does not have to travel as far; this discussion is ongoing.

- The city budgeted to maintain and remove dead, dying, dangerous, and diseased trees in rights-of-way and on city land. The city's usual budget includes $40,000-$50,000 for tree removal, but the increased need for ash tree removal as well as oak trees from spongy moth damage has led to an increased budget of approximately $150,000 for tree removal.
- A flood study of Sumner Brook in the Millbrook Road area was completed by BL Companies in fall 2021. Conclusions from this include the need for dam removal (not city-owned) and the need to increase the size of two DOT culverts across Randolph Road. The South Fire Department is located in this area and faces flood-related access issues and risks.
- The city replaced two wells below the 100-year flood at J.S. Roth Well field.

5. Hazard Mitigation Action Plan

This section presents the progress made since the 2021 action plan and establishes new goals, objectives and actions identified for the 2026-2030 planning horizon.

5.1. Previous Mitigation Actions Disposition

During the process of developing the 2021 Middletown Hazard Mitigation Plan, several hazard mitigation actions were identified to be pursued during the five-year planning horizon that followed. Table 5.1 presents the actions listed in that document, and the status of those actions.

Table 5.1. Status of Previous Mitigation Strategies and Actions.

Action	Description	Status	Notes
01	NFIP Community Rating System Participation. Work with FEMA's contractor to complete a "quick-check" to determine if ongoing activities in Middletown would qualify it for a class 9 rating in the CRS. If so, join and identify additional activities for additional points.	Carry Forward	
02	Update the Debris Management Plan. Annually survey trees that need to come down. 35-50 per year. Add requirement for on-call trimming. Create an inventory of ash trees and management plan.	Completed	
03	Budget appropriate money necessary to maintain and remove dead, dying, dangerous, and diseased trees in rights-of-way and on city land	Completed	
04	Comprehensive River Management Plan. Update and research property acquisition strategies for undeveloped property(ies) along the river front.	Carry Forward	Since 2021 adopted riverfront master plan. Acquired property at 225 River Road and adjacent properties. Received $12 M CIF grant to do brownfields remediation along river front.
05	Flood Prone Area Mitigation Materials. Increase inventory of flood prone mitigation items (i.e. sand bags and barricades. Items necessary for flooding in all flood prone areas.	Carry Forward/Ongoing	
06	Flood Study(ies) for RLP on Millbrook Road. Conduct a flood study South of	Carry Forward	

Action	Description	Status	Notes
	Randolf Road for a feeder brook into the main stem (Sumner Brook) that may address strategies for flooding on Millbrook Road		
07	Bank Stabilization. Conduct remediation project at RLP - Canoe Club, Harbor Drive to stabilize river bank and increase storage capacity.	Carry Forward/Underway	Upper and Lower Millbrook dams being investigated for potential removal and infrastructure improvements.
08	Financing and Mitigation for Nejako Drive RLPs. Study was conducted with mitigation strategies recommended. Implement strategies. Research funding sources.	Carry Forward	
09	Evacuation Routing. City working with contractor to improve current system and increase efficiency(ies) for evacuation routing.	Carry Forward/Underway	
10	Business Continuity. Continue to improve COOP (City Hall)	Carry Forward	
11	Debris Management Plan. Continue to develop an updated debris management plan city-wide.	Completed	
12	Critical Facilities. Currently the senior center needs a generator to operate elevators for evacuation. Conduct analysis of gas stations and supermarkets for cost of generators.	Carry Forward	
13	Upgrade Wells and Facilities. Replace two wells below the 100-year flood at J.S. Roth Well field. Well Improvements/Storm Hardening.	Completed	
14	Harbor Park Pumping Station. Abandon some facilities and install watertight grinder pump.	Carry Forward	
15	Johnson Street Pumping Station. Upgrade Storm Wall.	Carry Forward	
16	Adder Brook Dam. Repair Diversion Chamber.	Completed	
17	South Main Street. Replace station to upland site.	Completed	
18	Adder Brook Dam (see Dam Hazard Report). Repair outlet at gatehouse. Spillway needs improvement and dam raised to pass ½ PMF	Carry Forward	

Action	Description	Status	Notes
19	Mt. Higby Dam. Using Dam Hazard Report perform improvements to spillway and dam raised to pass ½ PMF.	Carry Forward	
20	Laurel Brook Dam. Intake improvements and dike repairs to pass ½ PMF.	Carry Forward	
21	Sawmill Interceptor. Need waterproof repair tops.	Deleted	
22	#3 Dam. Improvements needed to spillway. DOT Project (Route 66 Widening Project) is complete.	Completed	
23	Coginchaug River Sewer. Raise all structure tops above flood elevation.	Deleted	

5.2. Updated Mitigation Goals, Objectives, and Strategies

As noted in Section 3 of Volume 1, all the RiverCOG participating communities, including Middletown, participated in setting regional goals and objectives. Middletown has confirmed these goals and objectives valid for the City's annex. The three goals and objectives are as follows:

Goal 1: Promote implementation of sound flood management and other natural hazard mitigation principles on a regional and local level. Note: Covers future development through policy, planning, regulation, emergency services, and environmental strategies.

- **Objective for Goal 1:** To promote the development, improvement and implementation of programs, policies, regulations, and emergency services that result in the reduction of long-term risks to life and property.

Goal 2: Implementation of effective natural hazard mitigation projects at the regional and local level regional and local level. Note: Covers infrastructure and building related projects – the existing built environment.

- **Objective for Goal 2:** To enhance the ability of RiverCOG, other regional entities, and local communities to reduce or eliminate risks to life and property from natural hazards through cost-effective hazard mitigation projects, including avoidance.

Goal 3: Increase research, planning and outreach activities for the mitigation of natural hazards on a regional and local level. Note: Covers the people component of mitigation via outreach and education, and integration with other planning and continuous improvement through increased research.

- **Objective for Goal 3:** To increase general awareness of the region's natural hazards and encourage State agencies, local communities, and the public to be proactive in taking actions to reduce long-term risks to life and property.

The local planning team of Middletown reviewed these goals and objectives during meetings in June of 2025 and acknowledged that they are still aligned with the priorities of the city.

5.2.1. Prioritization of Mitigation Strategies

In considering which projects, processes, and other measures to undertake in the upcoming plan period, municipal and regional officials evaluated the need to address problems and vulnerabilities in their communities against the communities' resources and capabilities. To prioritize mitigation strategies, a set of criteria commonly used by public administration officials and planners was applied to each proposed strategy. The method, called STAPLEE, is outlined in FEMA planning documents such as Developing the Mitigation Plan (FEMA 386-3) and Using Benefit-Cost Review in Mitigation Planning (FEMA 386-5). STAPLEE stands for the "Social, Technical, Administrative, Political, Legal, Economic, and Environmental" criteria for making planning decisions. Benefit-cost review was emphasized in the prioritization process. Criteria were divided into potential benefits (pros) and potential costs (cons) for each mitigation strategy. The following questions were asked about the proposed mitigation strategies:

Social:

- Benefits: Is the proposed strategy socially acceptable to the community?
- Costs: Are there any equity issues involved that would mean that one segment of the community could be treated unfairly? Will the action disrupt established neighborhoods, break up voting districts, or cause the relocation of lower-income people? Is the action compatible with present and future community values?

Technical:

- Benefits: Will the proposed strategy work? Will it reduce losses in the long term with minimal secondary impacts?
- Costs: Is the action technically feasible? Will it create more problems than it will solve? Does it solve the problem or only a symptom?

Administrative:

- Benefits: Does the project make it easier for the community to administrate future mitigation or emergency response actions?
- Costs: Does the community have the capability (staff, technical experts, and/or funding) to implement the action, or can it be readily obtained? Can the community perform the necessary maintenance? Can the project be accomplished in a timely manner?

Political:

- Benefits: Is the strategy politically beneficial? Is there public support both to implement and maintain the project? Is there a local champion willing to see the project to completion? Can the mitigation objectives be accomplished at the lowest cost to the community (grants, etc.)?
- Costs: Have political leaders participated in the planning process? Do project stakeholders support the project enough to ensure success? Have the stakeholders been offered the opportunity to participate in the planning process?

Legal:

- Benefits: Is there a technical, scientific, or legal basis for the mitigation action? Are the proper laws, ordinances, and resolutions in place to implement the action?
- Costs: Does the community have the authority to implement the proposed action? Are there any potential legal consequences? Will the community be liable for the actions or support of actions or for lack of action? Is the action likely to be challenged by stakeholders who may be negatively affected?

Economic:

- Benefits: Are there currently sources of funds that can be used to implement the action? What benefits will the action provide? Does the action contribute to community goals such as capital improvements or economic development?

Costs: Does the cost seem reasonable for the size of the problem and the likely benefits? What burden will be placed on the tax base or local economy to implement this action? What proposed actions should be considered but be tabled for implementation until outside sources of funding are available?

Each proposed mitigation strategy presented in this plan was evaluated and quantitatively assigned a "benefit" score and a "cost" score for each of the seven STAPLEE criteria as outlined below:

- For potential benefits, a score of "1" was assigned if the project will have a beneficial effect for that criterion or a "0" if the project would have a negligible effect or if the questions were not applicable to the strategy.
- For potential costs, a score of "-1" was assigned if the project would have an unfavorable impact for that criterion or a "0" if the project would have a negligible impact or if the questions were not applicable to the strategy.
- Technical and Economic criteria were double weighted (multiplied by two) in the final sum of scores.
- The total benefit score and cost score for each mitigation strategy was summed to determine each strategy's final STAPLEE score.

Although a community may implement recommendations as prioritized by the STAPLEE method, an additional consideration is important for those recommendations that may be funded under the FEMA mitigation grant programs. To receive federal funding, the mitigation action must have a benefit-cost ratio (BCR) that exceeds a value of 1.0. Calculation of the BCR is conducted using FEMA's Benefit Cost Analysis

(BCA) toolkit. The calculation method may be complex and vary with the mitigation action of interest. Calculations are dependent on detailed information such as property value appraisals, design and construction costs for structural projects, and tabulations of previous damages or NFIP claims. The BCR scoring system used is outlined in Table 5.2.

Table 5.2. BCR Scoring System

Scoring	Benefits	Costs
Low: 0-1 points	Few would benefit; the impacts being addressed are not severe; benefits may be short term	Likely to be done by existing personnel with little impact on budget; not complicated to accomplish. Costs to implement is likely to be under $10,000.
Medium: 2-3 points	Benefits may be felt by many in the community; the action may solve a problem or otherwise benefit the community for several years	May need additional funding or studies; may require change in practices; costs to implement may be between $10,000 and $100,000
High: 4-5 points	Benefits would accrue to many in the community; benefits may accrue to the most vulnerable or those not able to recover on their own; benefits would be long term and may permanently protect from damages	Likely to cost over $100,000 and require obtaining funding outside of operating budget; complicated, lengthy process to implement

The STAPLEE method accounts for cost-benefit considerations both directly (through the "Economic" category) and indirectly (through general consideration of costs and benefits of actions). Additionally, the range of estimated costs of each strategy are included in the STAPLEE table. The assumed costs of projects and generalized presentation of the benefits accruing from them are not based on specific detailed cost estimates as that level of analysis is not appropriate for this type of planning effort. For some projects, such as routine or recurring operations that are established practices and conducted with municipal general operating funds and existing staff, the STAPLEE results can be the only explicit comparison of costs and benefits. For projects for which bonding and/or grant funding will be sought, more in-depth evaluations of costs and benefits will be required. As project scopes are detailed, benefits and costs can be identified with more precision, and the benefit-cost ratio which results from a full benefit-cost analysis may differ from the planning-level STAPLEE results presented here.

It should be noted that higher BCRs do not necessarily correspond to high priorities, nor do low BCRs or BCRs under 1.0 correspond to low-priority projects. An important project with a high priority to the community may have a lower BCR because of its complexity, assumed high expense, and other costs. Communities should not be discouraged or deterred from further consideration of projects that have low BCRs or BCRs less than 1.0 until additional, more specific evaluations of the costs and benefits have been undertaken.

5.2.2. 2021-2026 Prioritized Hazard Mitigation Actions

In addition to the regional mitigation actions endorsed by Middletown and outlined in Section 3 of Volume 1 of the regional plan, the City identified or carried over from the last update, ranked and evaluated the actions in Table 5.3. For each identified action, the goal and objective it addresses is noted. Additionally, a description, lead agency, indication of costs and potential funding sources, and an estimated timeline for completion is included. Also included are the hazards addressed by a specific action.

Figure 5.1 shows the locations of the projects listed in Table 5.3 with spatial elements that have been carried forward. Additionally, completed projects identified in Table 5.1 with spatial elements are also shown on the map. There are no new projects in Middletown with mappable spatial elements. Projects carried forward are identified by their activity number (from Table 5.3) while completed projects are identified by the description of the project completed.

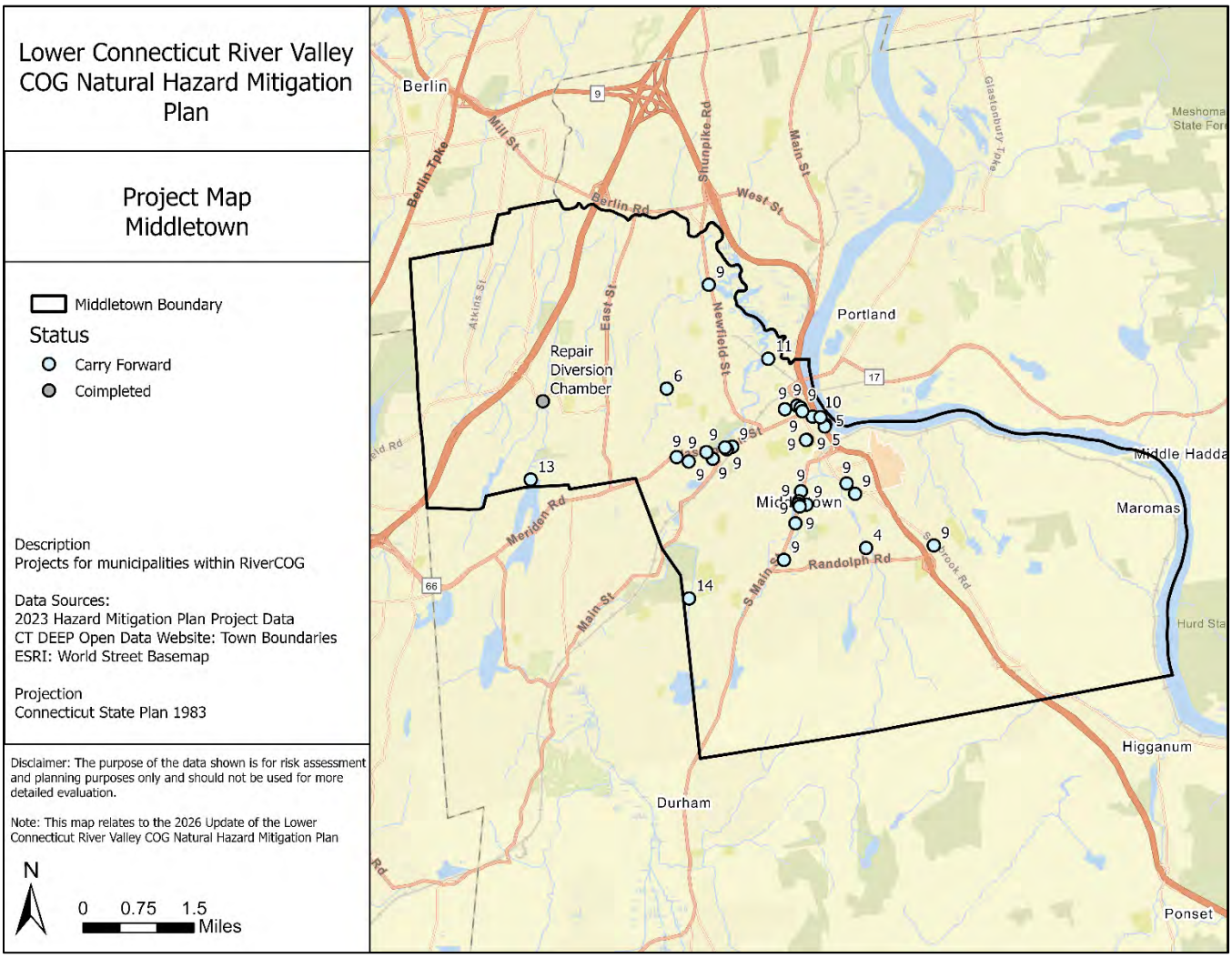


Figure 5.1. Carried Forward and Completed Projects in Middletown

Table 5.3. Middletown Hazard Mitigation Strategies and Prioritization

KEY: SW= Severe Weather, TW = Tornado/Wind, ET = Extreme Temperatures, WS=Winter Storm, F = Flood, IS = Invasive Species, WF = Wildfire, D = Drought, E = Earthquake, CC = Climate Change

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	Total STAPLEE Score/Priority
1	1-1, 3-1	NFIP Community Rating System Participation. Work with FEMA's contractor to complete a "quick-check" to determine if ongoing activities in Middletown would qualify it for a class 9 rating in the CRS. If so, join and identify additional activities for additional points.	PZ, PW, EM	$0-$5,000	OP, Staff Time	2027	F	1	0	0	0	1	1	1	0	0	0	1	0	0	0	6/H

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria													Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
2	1-1, 3-1	Comprehensive River Management Plan. Update and research property acquisition strategies for undeveloped property(ies) along the river front.	LUO, PW	$50-60K	HMGP, RLP, FMA, CIP	2028-2030	F	0	0	1	1	1	0	1	0	1	0	1	1	0	0	10/H
3	1-1	Flood Prone Area Mitigation Materials. Increase inventory of flood prone mitigation items (i.e. sand bags and barricades. Items necessary for flooding in all flood prone areas.	PW	$1,000-$10,000	CIP	2026-2027	F	1	0	0	0	1	1	1	0	0	0	0	0	0	0	4/M

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria													Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
4	2-1, 3-1	Flood Study(ies) for RLP on Millbrook Road. Conduct a flood study South of Randolf Road for a feeder brook into the main stem (Sumner Brook) that may address strategies for flooding on Millbrook Road	LUO, BO, FM	$15,000-$30,000	HMGP, RLP, FMA	2027	F	0	0	1	1	1	0	0	0	1	0	0	0	1	1	8/H
5	2-1	Bank Stabilization. Conduct remediation project at RLP - Canoe Club, Harbor Drive to stabilize river bank and increase storage capacity.	LUO	$15,000-$30,000	HMGP, RLP, FMA	2026-2027	F	0	0	1	1	1	0	0	0	1	0	0	0	1	1	8/H

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria													Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
6	2-1	Financing and Mitigation for Nejako Drive RLPs. Study was conducted with mitigation strategies recommended. Implement strategies. Research funding sources.	LUO	$75,000-150,000	HMGP, RLP, FMA, BRIC	2027	F	0	0	1	1	1	0	0	0	1	0	0	0	1	1	8/H
7	2-1	Evacuation Routing. City working with contractor to improve current system and increase efficiency(ies) for evacuation routing.	LUO	$10,000-$25,000	HMGP, RLP, FMA	Ongoing through 2028	SW, TW, WS, F	1	0	1	0	1	1	0	0	0	0	0	0	0	0	5/H
8	2-1	Business Continuity. Continue to improve COOP (City Hall)	BOF	$0-$1,000	HMGP, CIP	Annually through 2029	SW, TW, ET, WS, F, TI, WF, D, E, CC	1	0	1	0	1	1	0	0	0	0	0	0	0	0	5/H

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria													Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
9	1-1	Critical Facilities. Currently the senior center needs a generator to operate elevators for evacuation. Conduct analysis of gas stations and supermarkets regarding the cost of generators.	BOS	$2,000-$7,000	CDBG	2027	SW, TW, WS, E	1	0	0	0	1	0	0	0	1	0	1	0	1	0	6/H
10	2-1	Harbor Park Pumping Station. Abandon some facilities and install watertight grinder pump.	Water and Sewer	$150K	HMGP, CIP, OP	2028	F	1	0	1	1	0	0	1	1	0	0	1	1	0	0	9/H

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria													Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
11	2-1	Johnson Street Pumping Station. Upgrade Storm Wall.	Water and Sewer	$20K	HMGP, CIP, OP	2029	F	1	0	1	1	0	0	1	1	0	0	1	1	0	0	9/H
12	2-1	Adder Brook Dam (see Dam Hazard Report). Repair outlet at gatehouse. Spillway needs improvement and dam raised to pass ½ PMF	Water and Sewer	$250K (outlet) $2M (raise dam)	HMGP, CIP, OP	2028 (raising dam may be longer term project)	F	1	1	1	1	0	0	1	1	0	0	1	1	0	0	12/H
13	2-1	Mt. Higby Dam. Using Dam Hazard Report perform improvements to spillway and dam raised to pass ½ PMF.	Water and Sewer	$2.5M	HMGP, CIP, OP	2029 (may be longer term project)	F	1	1	1	1	0	0	1	1	0	0	1	1	0	0	12/M

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
14	2-1	Laurel Brook Dam. Intake improvements and dike repairs to pass ½ PMF.	Water and Sewer	$900K	HMGP, CIP, OP	2029	F	1	0	1	1	0	0	1	1	0	0	1	1	0	0	9/H
15 new	3-1	Complete emergency interconnect with Cromwell for Potable Water	Water and Sewer	$2M+	Bonds, Grants, OP	2030	D, WF, E	1	0	1	1	0	0	1	1	0	0	1	1	0	0	9/H
16 new	2-1	Work with CIRCA to advance to project scoping, study, and conceptual design in the Resilience Opportunity Area (ROAR) in the Mile Land and La Rose Lane area.	Land Use	$200k	CIRCA Resilient CT DEEP CRF	2028	F, ET	1	0	0	0	1	0	0	0	1	0	1	0	1	0	6/H

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria													Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
17 new	1-1. 2-1	Multi-jurisdictional Study for Lamentation Mountain, including fire road restoration, invasive species removal. Working with Meriden, Berlin, RiverCOG, CRCOG, SCCOG.	Land Use	$250K (study)	CT Recreational Trails Grant	2027, if awarded, then implementation 2030	WF	0	0	1	1	1	0	0	0	1	0	0	0	1	1	8/H
18 new	2-1	Shoreline stabilization along CT River and Sumner Brook.	ECD	$200k-$500K	Community Investment Fund	2028	F	0	0	1	1	1	0	0	0	1	0	0	0	1	1	8/H

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria													Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
19 new	2-1	Large scale compensatory storage project off of Washington Street on private property. Use excavated volume to bank for adjacent properties for elevation of adjacent commercial properties.	Land Use	TBD	FEMA HMA, BRIC, OP, Bonds	2030	F, SW	1	0	0	0	1	0	0	0	1	0	1	0	1	0	6/H

LOWER CONNECTICUT RIVER VALLEY COUNCIL OF GOVERNMENTS
HAZARD MITIGATION PLAN 2026 UPDATE

TOWN OF OLD LYME MUNICIPAL ANNEX

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1. Contact Information

1.1. Point of Contact

Table 1.1. Town of Old Lyme Contact Information

Information	Town of Old Lyme
Contact Name	Martha Shoemaker, First Selectwoman
Address	52 Lyme Street Old Lyme, CT 06371
Telephone	860-434-1605 x 211
Email	mshoemaker@OldLymect.ct.gov

1.2. Local Planning Team

The following representatives listed in Table 1.2 participated in meetings and provided input, data, and council toward the development of Volume 1 and this Old Lyme, Connecticut Annex.

Table 1.2. Town of Old Lyme Planning Team

Name	Title
Martha Shoemaker*	First Selectwoman
Greg Futoma	Chair of Open Space Commission
Eric Knapp	Land Use Coordinator
Dave Roberge	Fire Marshal and EMD
Juliann Michell	Land Use Technician

**Local Coordinator*

1.3. Lower Connecticut River Valley Council of Governments

Table 1.3. RiverCOG Contact Information

Information	RiverCOG Information
Contact Name	Margot Burns – Senior Environmental Planner
Address	RiverCOG 145 Dennison Rd. Essex, CT 06426
Telephone	(860) 581-8554 x 702
Email	mburns@rivercog.org

Information	RiverCOG Information

2. Jurisdiction Profile

2.1. Town Profile

Old Lyme is a community of about 7,600 permanent residents, in addition to several thousand seasonal vacationers who occupy a seaside community of summer residences. It is located on the east bank of the Connecticut River at its confluence with the Long Island Sound, across the river from Old Saybrook on the west bank. Numerous examples of Colonial and Federal architecture can be found throughout the town. According to the United States Census Bureau, Old Lyme occupies a total area of 28.8 square miles (75 km^2) of shoreline, tidal marsh, inland wetlands, and forested hills of which 23.1 square miles (60 km^2) is land and 5.7 square miles (15 km^2), or 19.85%, is water. Its neighbor to the north is the Town of Lyme, and to the east is East Lyme.

Figure 2.1 shows the location and corporate boundaries of Old Lyme.

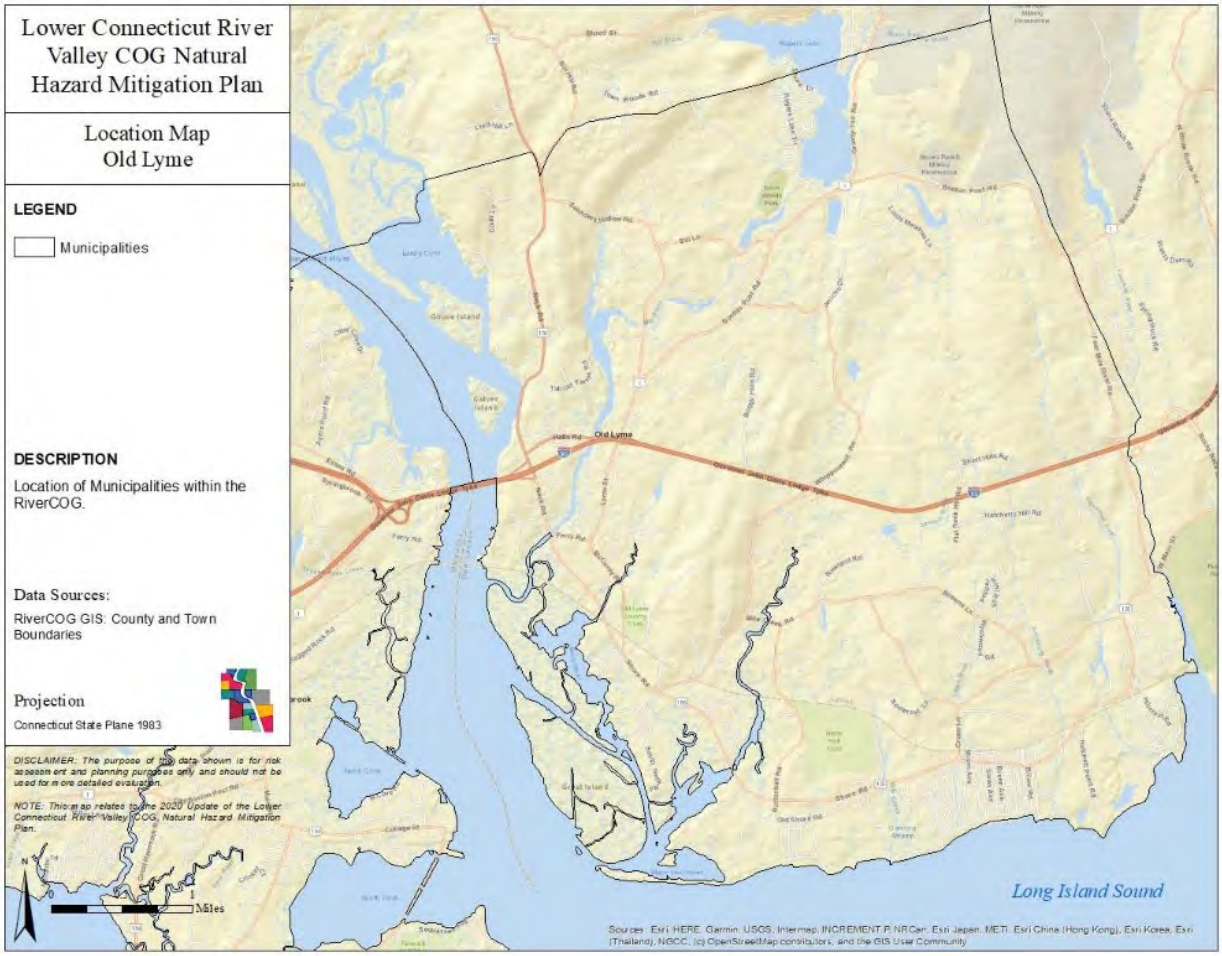


Figure 2.1. Old Lyme Location

Old Lyme was set off from Saybrook, which is on the west bank of the river mouth, on February 13, 1665. South Lyme was later incorporated from Lyme in 1855, then renamed Old Lyme in 1857 because it contains the oldest-settled portion of the "Lymes". Other place names from the same root are Hadlyme (between Lyme and East Haddam) and South Lyme (a beach resort area of Old Lyme). The place name "Lyme" derives from Lyme Regis, a small port on the coast of Dorset, England, from which it is believed the early settlers migrated in the 17th century. The picturesque Old Lyme Cemetery contains the graves of the original settlers. The Duck River flows through the cemetery and into the Connecticut River at Watch Rock Park.

Lyme disease was named after the town. It was discovered in 1975 after a mysterious outbreak of what appeared to be juvenile rheumatoid arthritis in children who lived in Lyme and Old Lyme.

Figure 2.2 shows land cover in Old Lyme.

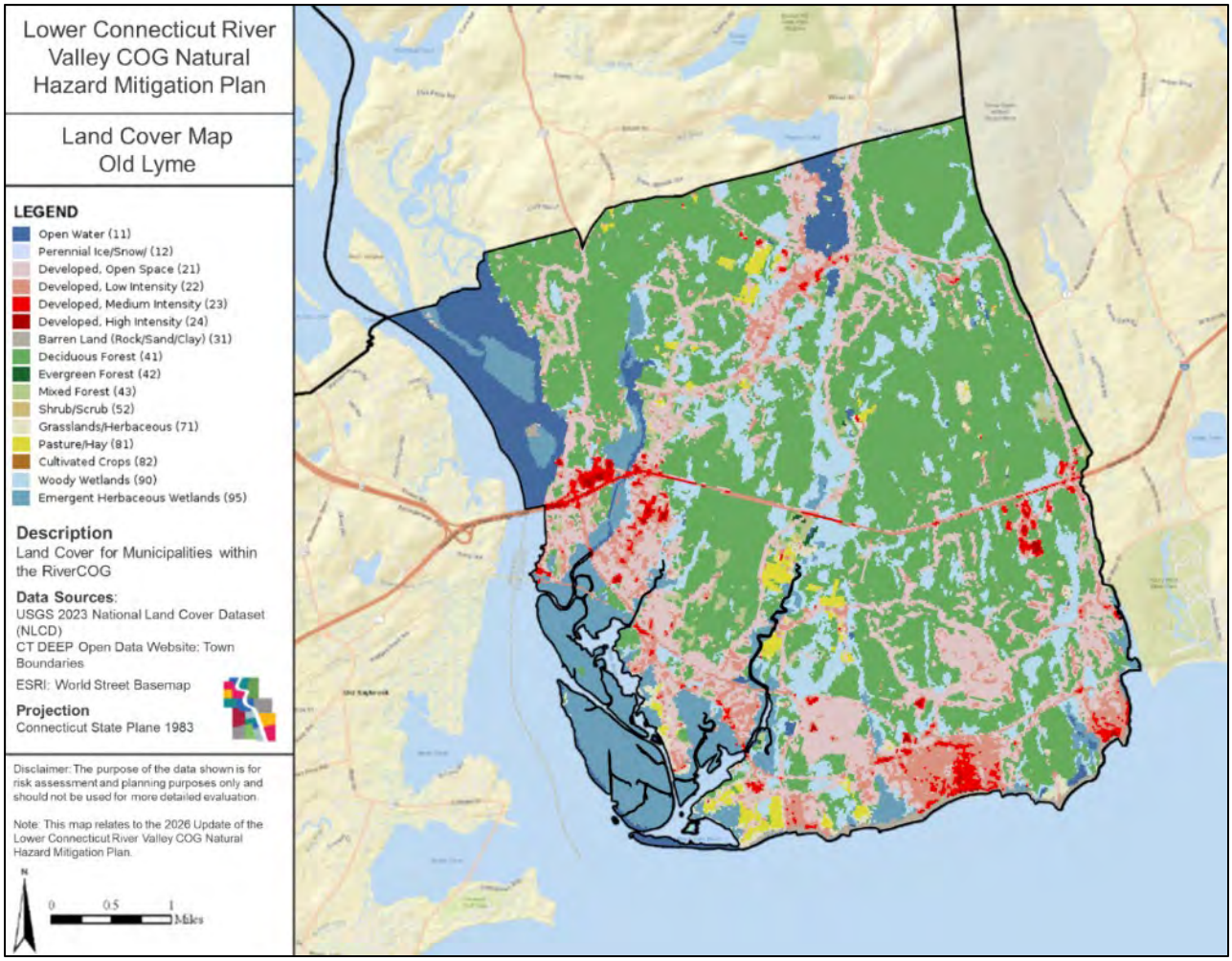
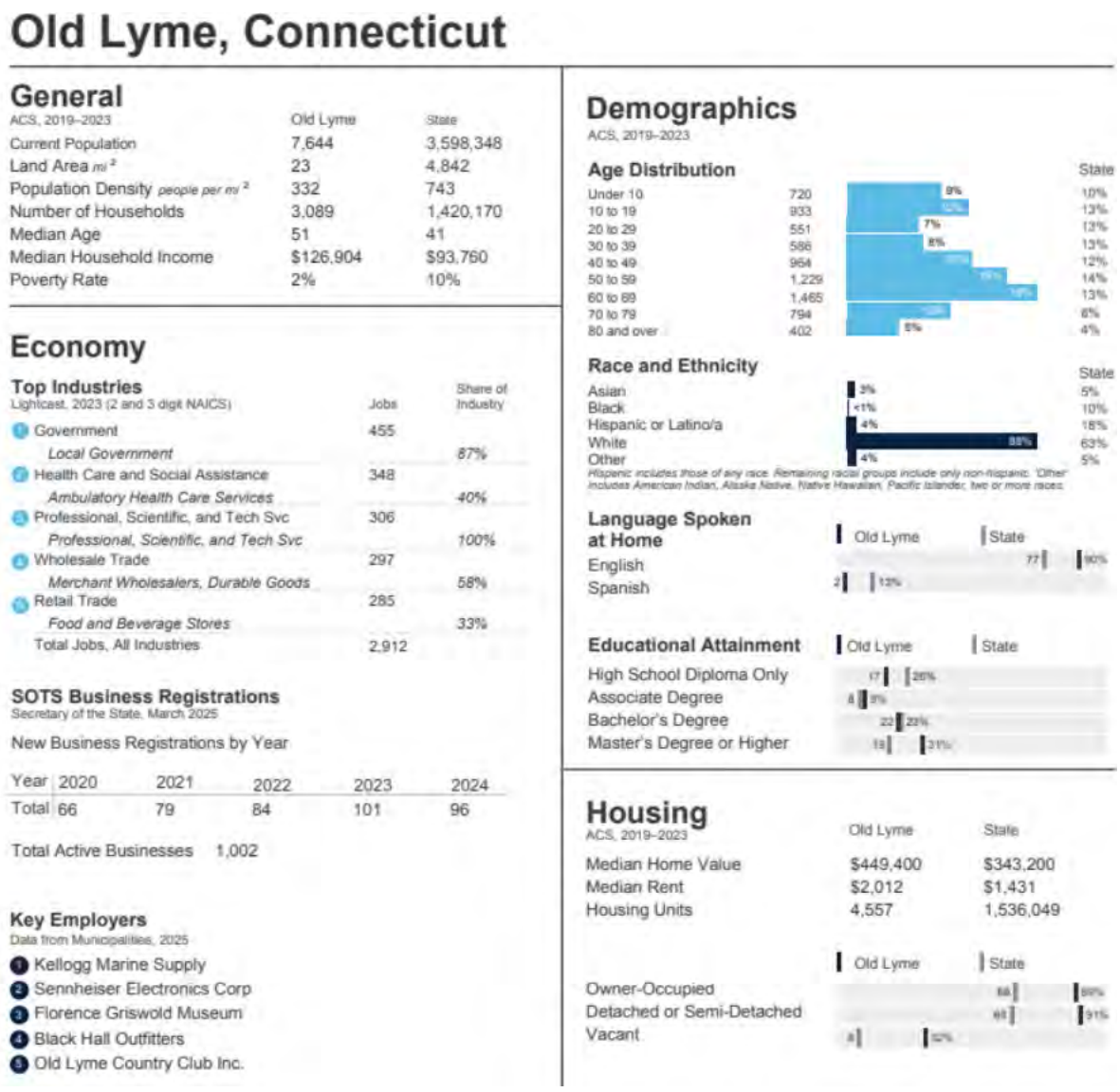


Figure 2.2. Old Lyme Land Cover

The population as of the 2023 American Community Survey (ACS) of Old Lyme, Connecticut is 7,644, a 3.4% increase from 2019.[1] As of the 2023 ACS, there are 3,089 households and 2,153 families residing in the town. The population density was 332 people per square mile (123.8/km^2). There were 4,570 housing units at an average density of 197.8 per square mile (76.4/km^2). The racial makeup of the town was 97.37% White, 0.26% African American, 0.28% Native American, 1.16% Asian, 0.01% Pacific Islander, 0.32% from other races, and 0.59% from two or more races. Hispanic or Latino of any race were 0.95% of the population. Figure 2.3 provides a demographic profile for Old Lyme.[2]

[1] https://s3-us-west-2.amazonaws.com/cerc-pdfs/2025/Old Lyme.pdf
[2] - Published on Town of Old Lyme, CT *(Source: Connecticut Data Collaborative)*



Old Lyme, Connecticut

General

ACS, 2019–2023

	Old Lyme	State
Current Population	7,644	3,598,348
Land Area mi²	23	4,842
Population Density people per mi²	332	743
Number of Households	3,089	1,420,170
Median Age	51	41
Median Household Income	$126,904	$93,760
Poverty Rate	2%	10%

Economy

Top Industries

Lightcast, 2023 (2 and 3 digit NAICS)

	Jobs	Share of Industry
Government	455	
Local Government		*87%*
Health Care and Social Assistance	348	
Ambulatory Health Care Services		*40%*
Professional, Scientific, and Tech Svc	306	
Professional, Scientific, and Tech Svc		*100%*
Wholesale Trade	297	
Merchant Wholesalers, Durable Goods		*58%*
Retail Trade	285	
Food and Beverage Stores		*33%*
Total Jobs, All Industries	2,912	

SOTS Business Registrations

Secretary of the State, March 2025

New Business Registrations by Year

Year	2020	2021	2022	2023	2024
Total	66	79	84	101	96

Total Active Businesses 1,002

Key Employers

Data from Municipalities, 2025

1. Kellogg Marine Supply
2. Sennheiser Electronics Corp
3. Florence Griswold Museum
4. Black Hall Outfitters
5. Old Lyme Country Club Inc.

Demographics

ACS, 2019–2023

Age Distribution

		State
Under 10	720	10%
10 to 19	933	13%
20 to 29	551	13%
30 to 39	586	13%
40 to 49	964	12%
50 to 59	1,229	14%
60 to 69	1,465	13%
70 to 79	794	6%
80 and over	402	4%

Race and Ethnicity

	State
Asian	5%
Black	10%
Hispanic or Latino/a	18%
White	63%
Other	5%

Hispanic includes those of any race. Remaining racial groups include only non-hispanic. 'Other' includes American Indian, Alaska Native, Native Hawaiian, Pacific Islander, two or more races.

Language Spoken at Home

Old Lyme State

English

Spanish

Educational Attainment

Old Lyme State

High School Diploma Only

Associate Degree

Bachelor's Degree

Master's Degree or Higher

Housing

ACS, 2019–2023

	Old Lyme	State
Median Home Value	$449,400	$343,200
Median Rent	$2,012	$1,431
Housing Units	4,557	1,536,049

Old Lyme State

Owner-Occupied

Detached or Semi-Detached

Vacant

Figure 2.3. Town of Old Lyme Demographics

2.2. Climate

Average weather data in Old Lyme was sourced from the Weather Spark website (weatherspark.com). In Old Lyme, the summers are warm and humid; the winters are very cold, wet, and windy; and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from 24°F to 81°F and is rarely below 10°F or above 88°F. The warm season lasts for 3.4 months, from June 3 to September 16, with an average daily high temperature above 72°F. The hottest day of the year is July 20, with an average high of 81°F and low of 67°F. The cold season lasts for 3.4 months, from December 3 to March 14, with an average daily high temperature below 46°F. The coldest day of the year is January 30, with an average low of 24°F and high of 38°F.

Old Lyme does not experience significant seasonal variation in the frequency of wet days (i.e., those with greater than 0.04 inches of liquid or liquid-equivalent precipitation). The frequency ranges from 23% to 32%, with an average value of 27%.

Among wet days, we distinguish between those that experience rain alone, snow alone, or a mixture of the two. Based on this categorization, the most common form of precipitation throughout the year is rain alone, with a peak probability of 32% on May 30. Rain falls throughout the year in Old Lyme. The most rain falls during the 31 days centered around April 2, with an average total accumulation of 3.9 inches.

The snowy period of the year lasts for 4.5 months, from November 19 to April 5, with a sliding 31-day liquid-equivalent snowfall of at least 0.1 inches. The most snow falls during the 31 days centered around January 27, with an average total liquid-equivalent accumulation of 0.7 inches.

2.3. Government Style

Old Lyme uses a Board of Selectmen form of government with a First Selectman as the chief elected official. The Town Meeting serves as the legislative branch. The Town encourages involvement in community activities, boards, and commissions. Meeting dates are posted online and on the public bulletin board in the Town Hall.

2.4. Development Trends

Since the last plan update, Old Lyme has experienced some changes in development, including:

- The densely developed beach associations along Long Island Sound have been considering the need for sewers. Some of these areas have received consent orders from the Connecticut Department of Energy and Environmental Protection (DEEP) to install sewers. The Old Colony, Old Lyme Shores, and Miami Beach associations are planning to install a sewer system and connect it eastward along Route 156 to the existing sewer system at Point O' Woods that discharges sewage into East Lyme for eventual treatment in New London. Sewers for another shoreline neighborhood, Soundview, failed to pass referendum. It is anticipated that the installation of sewers will enable some homeowners in the beach associations to accelerate the ongoing conversion of seasonal cottages to year-round homes.
- Although a sewer main is anticipated to eventually extend along much of Route 156, the majority of the areas between the beach associations are large lot residential properties unlikely to connect to sewer or be redeveloped into higher density uses.
- Some of the redevelopment that has been occurring in the beach associations has been to replace existing structures with FEMA-compliant structures. In some cases, multiple lots have been consolidated to support a larger year-round structure. The Town recognizes that demographics may shift as this trend continues but is pleased that new development is FEMA-compliant as it reduces risk to these structures.

- Development has continued in other parts of Town, although it was slowed by the pandemic. In several cases, redevelopment of formerly closed businesses are occurring such as at the old Italian Club (redevelopment into single family residential) and the redevelopment of a former pizzeria. The largest development proposal in the works is 165 residential units on a former driving range.

While any new development that adds people and property to the town increases vulnerability, building to newer codes and standards has a mitigating effect. Most ongoing and anticipated development is residential in the beach communities and along Route 156. Much of the waterfront development involves replacing seasonal cottages that predate the NFIP with larger homes built to NFIP standards. While more people may be at risk for major portions of the year, the new construction techniques should equalize vulnerability. Development along Route 156 is not anticipated to significantly increase density and is already in developed areas on large lots. Overall, any expansion of public sewer in flood hazard areas may result in increased development pressure and potentially increased vulnerabilities in the future.

2.5. Town-Specific Hazard Concerns

Municipal staff reported several specific hazard concern issues, which are listed below. The information below is intended to supplement the hazard-specific analysis completed in Section 2, of Volume I of this plan. Not all hazards expected to impact the Old Lyme, as outlined in Volume I, are included here.

A note: To preserve the reader's ability to align RiverCOG-Level and town-level hazard identification and risk analysis, the order of the following hazards aligns with the order of hazards in Volume I. Individual towns have ranked these hazards differently. This town-level ranking can be found in Section 3.3 Hazard Risk Ranking.

2.5.1. Severe Winter Weather

Winter storms typically will impact the entire town; however, effects can vary locally depending on weather conditions (e.g., snowfall in upland areas with rain along the shore) or coastal flooding from nor'easters. Winter storms are very likely to occur in Old Lyme. They have caused significant damage and are second only to hurricanes and floods in terms of the potential damage they can cause in Old Lyme. Significant snowfall rates or ice accumulation can exceed the ability of crews to keep roads open for travel and can bring down electric, telephone, and cable wires. Winter storms can also cause significant coastal flooding.

2.5.2. Flooding

In Old Lyme flooding is the most significant recurring natural hazard. It can be broken into three general categories: 1) inland flooding along streams and low-lying areas; 2) coastal flooding of areas along Long Island Sound and the Connecticut River; and 3) nuisance flooding primarily in coastal areas at low elevation. Inland flooding can be caused by any weather event with significant

amounts of rain over a short time span. Coastal flooding typically occurs with hurricanes, tropical storms, and nor'easters where low pressure and strong winds create storm surges that when coupled with rising tides can push sea water far inland. Nuisance flooding in low lying coastal areas is caused by extreme astronomical high tides, which can flood yards, basements, septic systems, storm water drainage systems, and roads.

Flooding - Riverine and Inland Flooding

Hawks Nest sluiceway, which was built in the 30s-40s, had been reconfigured in years past. This area captures Swan Brook which flows through town. The sluiceway was patched in 2023, then destroyed in a December storm. The Town spent $170k on repairs, and $30k on engineering. It has since held together. The Town also dredged the culvert that leads to the sluiceway and conducted education on impacts on dumping in the culvert. The same thing is happening in the White Sands Beach area where Phragmites is taking over, and drainage is not working. Residents have reportedly seen 12 to 18 inches of floodwaters in garages during events.

Flooding - Coastal Flood

Coastal flooding (with impacts accelerated by sea level rise, below) is a significant risk in Old Lyme. Coastal flooding threatens parts of the Amtrak line. Evacuation routes coming from the south end of the community face increasing risks during storms, especially at the Cross Lane Underpass. There are also issues with shallow flooding of roadways in low areas of Lord's Meadow which needs further evaluation.

Shoreline Change

Related to flooding and coastal storms, coastal erosion is an issue. With permitting challenges associated with hardening shorelines, Old Lyme is beginning to explore green solutions along the shoreline and potentially wave attenuation devices offshore. West End Drive is experiencing erosion. This is an emerging concern.

Sea Level Rise

In Old Lyme, low lying coastal areas adjacent to Long Island Sound and the Connecticut River will be affected. Unlike the event-driven natural hazards discussed previously, sea level rise is a relatively slow-moving process – a slow-motion natural disaster. Sea level rise must be considered a natural hazard that has a likelihood of impacting Old Lyme in the future. Furthermore, the State of Connecticut requires use of the planning threshold (20 inches by 2050) for development of municipal plans such as the POCD and this hazard mitigation plan. An analysis of properties at risk to sea level rise scenarios is included in Volume 1, Section 2 of this plan update.

2.5.3. Dam Breach

Dams, due to both the risk of their failure and their inability to operate effectively during flood conditions due to poor maintenance, are of concern to the Town. Dam breach and associated inundation of streams passing through Old Lyme and low-lying roads are of great concern during

significant rain events. According to the CT DEEP Dam Registry, there are 17 dams in Old Lyme. Three are listed as breached. Of the remaining 14, two are unclassified, seven are classified as Low Hazard (A), one is classified as Moderate Hazard (BB) and three are classified as Significant Hazard (B). There are no High Hazard dams in Old Lyme.

Figure 2.4 shows the location of all dams within Old Lyme. Moderate and Significant hazard-class dams are presented in Table 2.1.

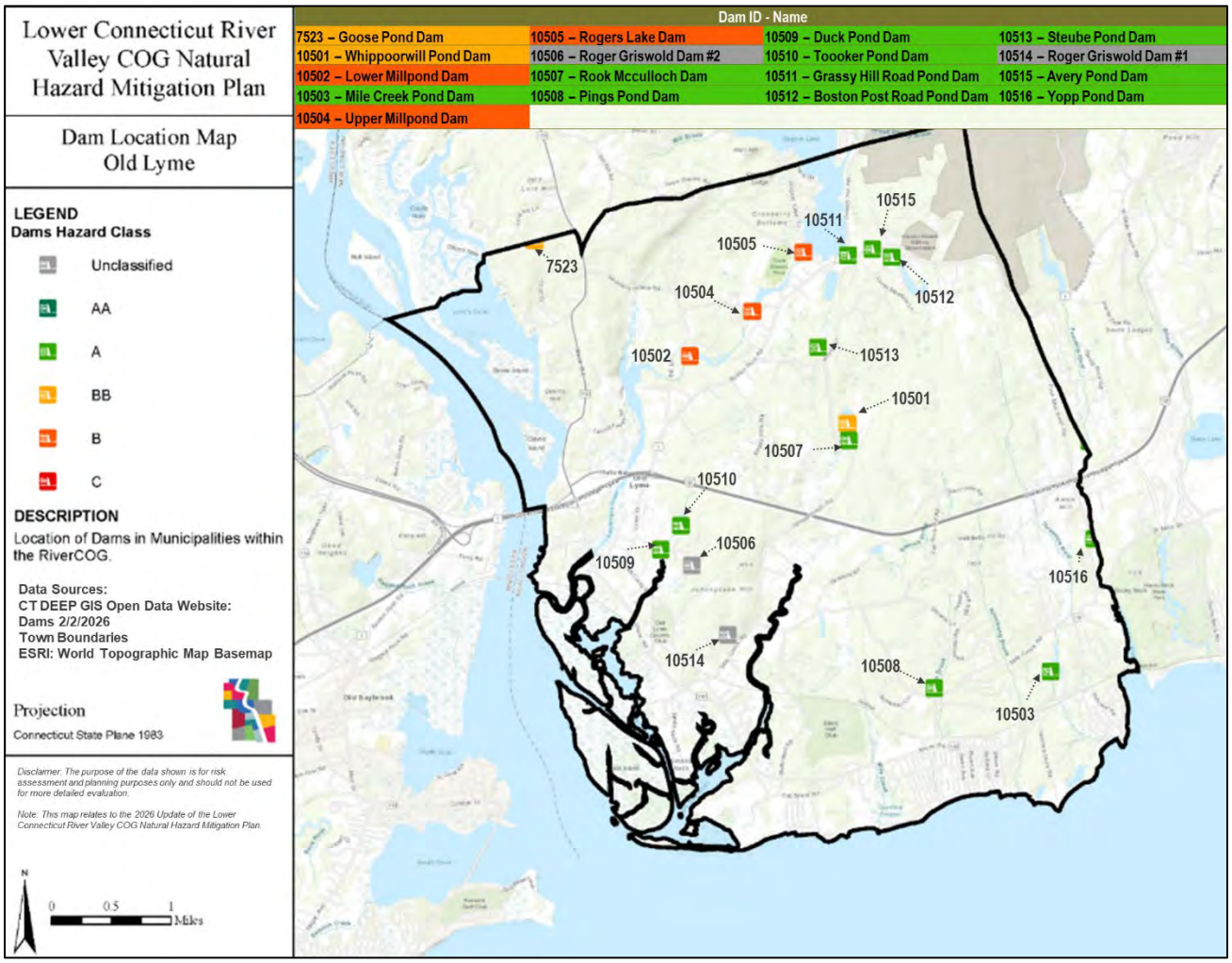


Figure 2.4. Location of Dams, Old Lyme, CT

Table 2.1. Moderate and Significant Hazard Dams, Old Lyme, CT

CT Dam #	Dam Name	Hazard Class	Owner
10502	LOWER MILLPOND DAM	B-significant	Municipal
10504	UPPER MILLPOND DAM	B-significant	Private
10505	ROGERS LAKE DAM	B-significant	Municipal
10501	WHIPPOORWILL POND DAM	BB-moderate	Private

Out of the four moderate and significant hazard dams in Old Lyme, two are owned by the Town of Old Lyme. These are reportedly in general good condition. The remaining dams are privately owned and in varying conditions of repair.

During the June 1982 flooding that took place throughout the region, several dams in Old Lyme were damaged and one failed. The Lower Mill Pond Dam failed, causing water to rush downstream. In addition, the Mill Creek Dam and the Upper Millpond Dam were both damaged. Resulting floods caused major damage to six homes (between $5,000 and $20,000) and caused between $50,000 and $250,000 worth of losses to commercial and industrial structures.

2.5.4. Thunderstorms and Severe Weather

Old Lyme has experienced significant road blockages due to downed trees and tree limbs following winter storm and high wind events. An increase in the number of dead or dying trees throughout Town has presented problems during storms and high wind events.

The economic core of Old Lyme is vulnerable to loss of electricity and communication services due to downed utility lines. The local energy utility, Eversource, targets its tree maintenance and trimming activities along the main trunk lines of its distribution network. This is a change since previous years, where the utility proactively performed maintenance along all lines.

2.5.5. Hurricanes and Tropical Storms

Hurricanes and tropical storms will affect the entire town; however, effects will vary depending on location. Strong winds and rain will affect the entire town while storm surges and flooding will affect shoreline areas. Hurricane Sandy hit Old Lyme on October 29, 2012 and Tropical Storm Irene on September 2, 2011, both of which caused significant coastal flooding, property damage, damage to homes and downed power lines resulting in week-long power outages in many cases. The flooding from Tropical Storms Elsa, Fred, Henri, and Ida in 2021 impacted Old Lyme to varying degrees.

Keeping trees and other debris clear of powerlines and roads in town will allow for less power outages and clear evacuation routes. In addition, emergency alert systems in place will allow for early warning and proactive information for the town's residents and businesses.

2.5.6. Tornado

Tornados are unlikely to occur in New London County. Historically there have been tornados and microburst wind events in other parts of the state. Thus, these events should not be dismissed. Severe thunderstorms have been known to occur and spawn small tornados. Damage from sheer downburst winds has been suspected as another source of damage in the state. Old Lyme-area historical tornado action is near the Connecticut state average, which is 25% smaller than the overall U.S. average (Source: City Data). Overall, residents throughout Old Lyme are equally susceptible to the chance of a tornado occurrence.

One Tornado has occurred in Old Lyme. An EF-1 Tornado was recorded in town on June 30, 1998. Although no tornadoes have been confirmed since that time, evidence lead locals to believe tornadoes may have occurred in Old Lyme on July 31, 2009 when tornadoes were recorded in other parts of the state.

All areas of Old Lyme are equally susceptible to damages from High Wind and Tornadoes; however, a high wind event in more densely populated areas such as around Rogers Lake and immediate shoreline would result in more property damage than in other areas of town.

2.5.7. Earthquakes

An earthquake would likely affect the entire town. Damages to homes and businesses would depend on the age and quality of the structure. As recently as March 23, 2011 the village of Moodus in East Haddam, just north of Old Lyme experienced a tremor which measured 1.3 on the Richter scale. In Old Lyme and the surrounding region, recorded impacts have been limited to shaking to the extent that things were knocked off shelves and people were alarmed. Structural damage has been limited to building components such as chimneys and buildings in poor repair; but failing structures have caused property damage in nearby towns.

2.5.8. Drought and Wildfire

Severe droughts are not frequently occurring natural events, but flashy droughts have been occurring with some regularity. As with all towns in the region, Old Lyme is small enough that a drought would most likely be town wide. Under extreme drought conditions, areas of concern for wildfire include the deciduous forest located throughout the town or areas of Phragmites in coastal tidal marshes. Drought also can exacerbate potential for small wildfires and hinder the ability of the town to control outbreaks. Large expanses of deciduous forest are located throughout the town and areas of Phragmites in coastal areas are prime areas of concern. At times of severe drought, communities face growing rural urban interface problems.

Different areas throughout town are susceptible to different types of fires. Inland areas where thick forest cover is abundant is more susceptible to fires feeding on ground fuels and ladder fuels. Areas closer to the shoreline where development is denser, and more roads are present are more susceptible to fires feeding on surface fuels. Overall Connecticut does not have a significant history of fire feeding on the canopy of trees. Most fires remain on the ground.

2.5.9. Extreme Temperature

Old Lyme falls in the humid continental climate zone, the same as much of interior Connecticut. Summer is hot and humid throughout the state, with average highs in New London of 81 °F (27 °C) and 87 °F (31 °C) in Windsor Locks. July and August tend to be the hottest months of the year with average temperatures in Hartford being 84ºF and 82ºF, respectively. The elevated summer temperatures bring the risk of extreme heat. With its dense forest coverage and abundant water features, Old Lyme is slightly more protected from extreme heat than some of its neighbors as it lies along the shoreline, but heat waves do occur. Generally, the entire town is susceptible to the same

hazards from extreme heat and heat waves. Cooling centers located around town would be a mitigation action Old Lyme may consider during extreme heat waves.

Extreme cold spells do occur periodically, typically between the months of December and March. Although cold temperatures are normal during the winter months, occasionally temperatures can drop below freezing for extended periods, sometimes as low as 0ºF. Low-income housing residents and the elderly in homes without sufficient heat sources are particularly vulnerable. Town officials will continue to update the accommodations of shelters in their municipalities as needed for warming centers, particularly during winter power outages.

2.5.10. Terrestrial Invasive Species

Invasive species are an emerging challenge for the Town of Old Lyme. Terrestrial invasive species include those typically found in Connecticut. However, the Town did not identify any significant challenges that exceed those identified Statewide.

2.5.11. Aquatic Invasive Species

Aquatic invasive species include those typically found in the Connecticut River and its tributaries. Hydrilla and Phragmites are concerns. The Open Space Commission received a grant to address Phragmites at Ecklund Pond. The Town would like to pursue a grant to remove vegetation from the Lower Mill Pond. This would help restore some storage in the pond.

The Rodgers Lake Authority is actively trying to prevent the introduction of hydrilla into Rodgers Lake, but the ability of the authority to enforce restrictions at the state boat launch is unclear. Mitigation actions could potentially include the Town assisting the authority with the installation of signage, with creating and funding a study related to identifying the presence of hydrilla in the lake and recommending treatment options, and/or a regional action for RiverCOG who could potentially coordinate with all member towns having similar concerns to evaluate the potential jurisdictional and enforcement issues related to boat inspections at state boat launches.

3. Hazard Risk

3.1. Recent Events

The following is a summary of recent events experienced in Old Lyme since the 2021 plan update. The Local Planning Team noted the following recent events:

- The Rocky Neck Fire in East Lyme in October 2024 was proximal to the Old Lyme boundary and was a concern for the Town.
- A significant winter storm on January 25, 2026 produced 10.5 inches of snow in Old Lyme. This was the largest snow total since Winter Storm Nemo in 2013.
- Beaver activity on private land remains an issue at Black Hall Pond, which can elevate water levels to the point that there are impacts to nearby homes.

- Due to development close to Rodgers Lake, a one-inch rainfall event causing two inches of rise in the pond is sufficient to impact septic systems and wells around the lake. This requires timely operation of the dam outlet to prevent issues.

3.2. Historical Events

Table 3.1 lists Presidentially declared disaster events that have impacted Old Lyme since 2003. Preliminary Damage Assessment figures are based on Public Assistance applications. There have been no Presidentially declared disasters since the adoption of the 2021 plan update.

Table 3.1. Old Lyme Natural Hazard Events

Type of Event	Date	Preliminary Damage Assessment
Flood Event (DR-1619)	12/16/2005	$9,695.13
Flood Event (DR-1904)	04/23/2010	$78,432.36
Snow Event (DR-1958)	03/03/2011	$51,885.44
Snow Event (DR-3176)	03/11/2003	$14,534.28
Snow Event (DR-3192)	01/15/2004	$14,912.57
Snow Event (DR-3200)	02/17/2005	$26,847.06
Snow Event (DR-3342)	10/31/2011	$2,883.11
Wind Event - Hurricane (DR-4023)	09/02/2011	$253,413.75
Flood Event - Hurricane (DR-4087)	10/30/2012	$201,984.44
Wind Event – Hurricane (DR-4087)	10/30/2012	$86,379.14
Snow Event (DR-4106)	03/21/2013	$137,991.19
Snow Event (DR-4213)	04/08/2015	$59,270
Tropical Storm Isaias (DR-4580)	1/12/2021	$133,357.47
Tropical Storm Henri (EM-3564)	8/22/2021	$5,901.02

Public assistance is often provided by FEMA after Presidentially declared disasters. Funding is typically for extraordinary expenses incurred by the community such as public safety and public works overtime, certain equipment and contracted resources and debris cleanup.

Total PA reimbursements (1998-2025) to the community were as follows:

- Flood Events: $290,111 ($10,745 annually)
- Hurricane (Wind) Events: $479,051 ($17,743 annually)
- Winter (Snow) Storm Events: $308,323 ($11,419 annually)

Table 3.2 through Table 3.4 list PA reimbursements in Old Lyme.

Table 3.2. Flood Event PA Reimbursements, Old Lyme, CT

Disaster #	1619	1904	4087
Incident Dates	Oct 2005	Mar-May 2010	Oct-Nov 2012
Declaration	12/16/2005	04/23/2010	10/30/2012
Entity	FEMA PA Reimbursement	FEMA PA Reimbursement	FEMA PA Reimbursement
State	$	$	$
Municipal	$	$	$
Nonprofit	$0	$0	$0
Total	$9,695	$78,432	$201,984
Annualized	$359	$2,905	$7,481

**Annualized is calculated over a 27-year period from 1998 and 2025*

Table 3.3. Hurricane Wind Event PA Reimbursements, Old Lyme, CT

Disaster #	4023	4087	4580	3564
Incident Dates	Aug-Sept 2011	Oct-Nov 2012	Jan 2021	Aug 2021
Declaration	09/02/2011	10/30/2012	1/12/2021	8/22/2021
Entity	FEMA PA Reimbursement	FEMA PA Reimbursement	FEMA PA Reimbursement	FEMA PA Reimbursement
State	$	$	$	$
Municipal	$	$	$	$
Nonprofit	$0	$0	$0	$0
Total	$253,414	$86,379	$133,357	$5,901
Annualized	**$9,386**	**$3,199**	**$4,939**	**$219**

**Annualized is calculated over a 27-year period from 1998 and 2025*

Table 3.4. Winter Storm PA Reimbursements, Old Lyme, CT

Disaster #	1958	3176	3192	3200	3342	4106	4213
Incident Dates	Jan 2011	Feb 2003	Dec 2003	Jan 2005	Oct 2011	Feb 2013	Jan 2015
Declaration	03/03/2011	03/11/2003	01/15/2004	02/17/2005	10/31/2011	03/21/2013	04/08/2015
Entity	FEMA PA Reimbursement	FEMA PA Reimbursement	FEMA PA Reimbursement	FEMA PA Reimbursement	FEMA PA Reimbursement	FEMA PA Reimbursement	FEMA PA Reimbursement
State	$	$	$	$	$	$	$
Municipal	$	$	$	$	$	$	$

Disaster #	1958	3176	3192	3200	3342	4106	4213
Nonprofit	$0	$0	$0	$0	$0	$0	$0
Total	$51,885	$14,534	$14,913	$26,847	$2,883	$137,991	$59,270
Annualized	**$1,922**	**$538**	**$552**	**$994**	**$107**	**$5,111**	**$2,195**

**Annualized is calculated over a 27-year period from 1998 and 2025*

3.3. Hazard Risk Ranking

Old Lyme participated in the regional hazard ranking conducted by the Hazard Mitigation Planning Team. Table 3.5 shows the scoring for the various ranking parameters that were used. The probability of each hazard is determined by assigning a level, from unlikely to highly likely, based on the likelihood of occurrence from historical data. The total impact value includes the affected area, primary impact, and secondary impact levels of each hazard. Level of Community Concern reflects the perceived risk of each hazard as indicated by respondents to question 6 of the community survey. This question asks, "How concerned are you about each of the following hazards impacting your home, business, community, or organization?" and received 157 responses.

Each of these five criteria are assigned weights, as well as point values for each of their responses. Each level's score is reflected in the matrix. The total score for each hazard is the probability score multiplied by its importance factor times the sum of the impact level scores multiplied by their importance factors. Based on this total score, the hazards are separated into three categories based on the hazard level they pose to the communities: Significant, Moderate, Limited. Table 3.5. Hazard Ranking Parameters provides a summary of the categories used to rank the hazards and their weighted values for the Composite Hazard Risk Index.

Table 3.5. Hazard Ranking Parameters

Criteria	Weight	1 Point	2 Points	3 Points	4 Points
Hazard Probability	2.0	**Unlikely** Less than 1% probability in next 100 years or has a recurrence interval of greater than every 100 years.	**Somewhat Likely** Between 1 and 10% probability in next year or has a recurrence interval of 11 to 100 years.	**Likely** Between 10 and 100% probability in next year or has a recurrence interval of 10 years or less	**Highly Likely** Near 100% probability in next year or happens every year.
Impact – Affected Area	0.8	**Isolated** Less than 1% of area affected	**Small** Between 1 and 10% of area affected	**Medium** Between 10 and 50% of area affected	**Large** Between 50 and 100% of area affected
Impact – Primary Impact	0.7	**Negligible**	**Limited** 10% to 25% of	**Critical** 25 to 50% of	**Catastrophic** >50% of people or

Criteria	Weight	1 Point	2 Points	3 Points	4 Points
		1 to 10% of people or property	people or property	people or property	property
Impact – Secondary Impact	0.5	**Negligible** No loss of function, downtime, and/or evacuations	**Limited** Minimal loss of function, downtime, and/or evacuations	**Moderate** Some loss of function, downtime, and/or evacuations	**High** Major loss of function, downtime, and/or evacuations
Level of Community Concern	1.0	**Low Concern**	**Moderate Concern**	**High Concern**	-

The hazard risk ranking generated from this exercise, along with consideration of available data, was used to prioritize the level of effort assigned to further analysis of each hazard in the vulnerability analysis and lost estimation sections. Based on the results of the exercise, the hazards were ranked as follows in Table 3.6. Summary of Potential Hazard Impacts.

Old Lyme staff did not fully concur with the quantitative hazard ranking for the region. In particular:

- Town staff believe that wind, flooding, extreme rainfall (flash flooding, hurricanes, storm surge, and drought are of highest concern.
- Wildfires and dam failure are of moderate risk to Old Lyme.
- The remaining hazards are of moderate or low concern.

This ranking by Town staff was made qualitatively based on the perceived hazard risk. No effort was made to rescore the hazards ranked for the region in Table 3.6.

3.3.1. National Flood Insurance Program (NFIP) Participation

Old Lyme began participating in the NFIP in emergency status in 1973 and gained regular entry into the program in 1980. There are 417 policies in force, providing approximately $148 million in coverages. Losses paid have been approximately $8.1 million.

Repetitive Loss Property Detail

The Town of Old Lyme has had thirty-four (34) properties listed as repetitive loss (RL) with two (2) being listed as Severe Repetitive Loss (SRL) properties. All 34 properties are located within the coastal zone along Long Island Sound. All but one property listed is residential. Of the 34 RL properties there have been a total of 73 losses claimed, with payments of approximately $2.1 million. The two SRL properties have had a combination of nine paid losses, with payments totaling $301,278.

Table 3.6. Summary of Potential Hazard Impacts.

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
Aquatic Invasive Species	Semi-quantitative, supplemented by state and municipal figures, recommend survey	**Highly Likely - 4**	**Large - 4**	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant
Terrestrial Invasive Species	Semi-quantitative, supplemented by state and municipal figures, recommend survey	**Highly Likely - 4**	**Large - 4**	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant
Tree Infestation	Semi-quantitative, supplemented by state and municipal figures, recommend survey	**Highly Likely - 4**	**Large - 4**	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
Hurricanes	Hazus for wind	Likely - 3	**Large - 4**	Critical - 3	Moderate - 3	High Concern - 3	15.8	Significant
Winter Storms (Snow, Ice, Wind, including Nor'easters)	Historic analysis for probability and annualized damages	**Highly Likely - 4**	**Large - 4**	Negligible - 1	Moderate - 3	Moderate Concern - 2	15.4	Significant
Flood – Riverine and Inland Flooding (Riverine, Drainage, Coastal Surge, Sea Level Rise - includes flooding from Nor'easters)	Hazus, SLR Overlay, FS Model Overlay, Historic data and damages for additional probability	Likely - 3	Medium - 3	Limited - 2	Moderate - 3	High Concern - 3	14.3	Significant
Extreme Heat and Cold	Qualitative based on historic record	Likely - 3	**Large - 4**	Negligible - 1	Limited - 2	High Concern - 3	13.9	Moderate
Severe Weather (thunderstorms, downbursts, hail, lightning)	Historic analysis for probability and annualized damages	**Highly Likely - 4**	Small - 2	Negligible - 1	Limited - 2	Moderate Concern - 2	13.3	Moderate

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
Wildfire	Historic analysis for probability and annualized damages	Likely - 3	Small - 2	Critical - 3	Moderate - 3	Moderate Concern - 2	13.2	Moderate
Drought	Historic analysis for probability and annualized damages - some qualitative	Likely - 3	Medium - 3	Negligible - 1	Limited - 2	High Concern - 3	13.1	Moderate
Tornadoes	Historic analysis for probability and annualized damages - pulling in surrounding counties	Likely - 3	Isolated - 1	**Catastrophic - 4**	Limited - 2	Moderate Concern - 2	12.6	Moderate
Earthquakes	Hazus, 3 scenarios	Somewhat Likely - 2	Small - 2	**Catastrophic - 4**	**High - 4**	Low Concern - 1	11.4	Limited
Flooding from Dam Failure	Dam Inundation areas, Historic analysis for probability and annualized damages	Unlikely - 1	Small - 2	Limited - 2	Moderate - 3	Moderate Concern - 2	8.5	Limited

4. Capability Assessment

This section discusses capabilities and operational procedures that Old Lyme undertakes that contribute to or have the potential to contribute to hazard mitigation. It also notes deficiencies in those capabilities that could be addressed to strengthen resilience.

4.1. Critical Facilities

Public and private utility facilities are vital to maintaining or restoring normal services to areas of town before, during, and after a natural disaster. Figure 4.1 shows the location of critical facilities in Old Lyme which are identified at the regional level.

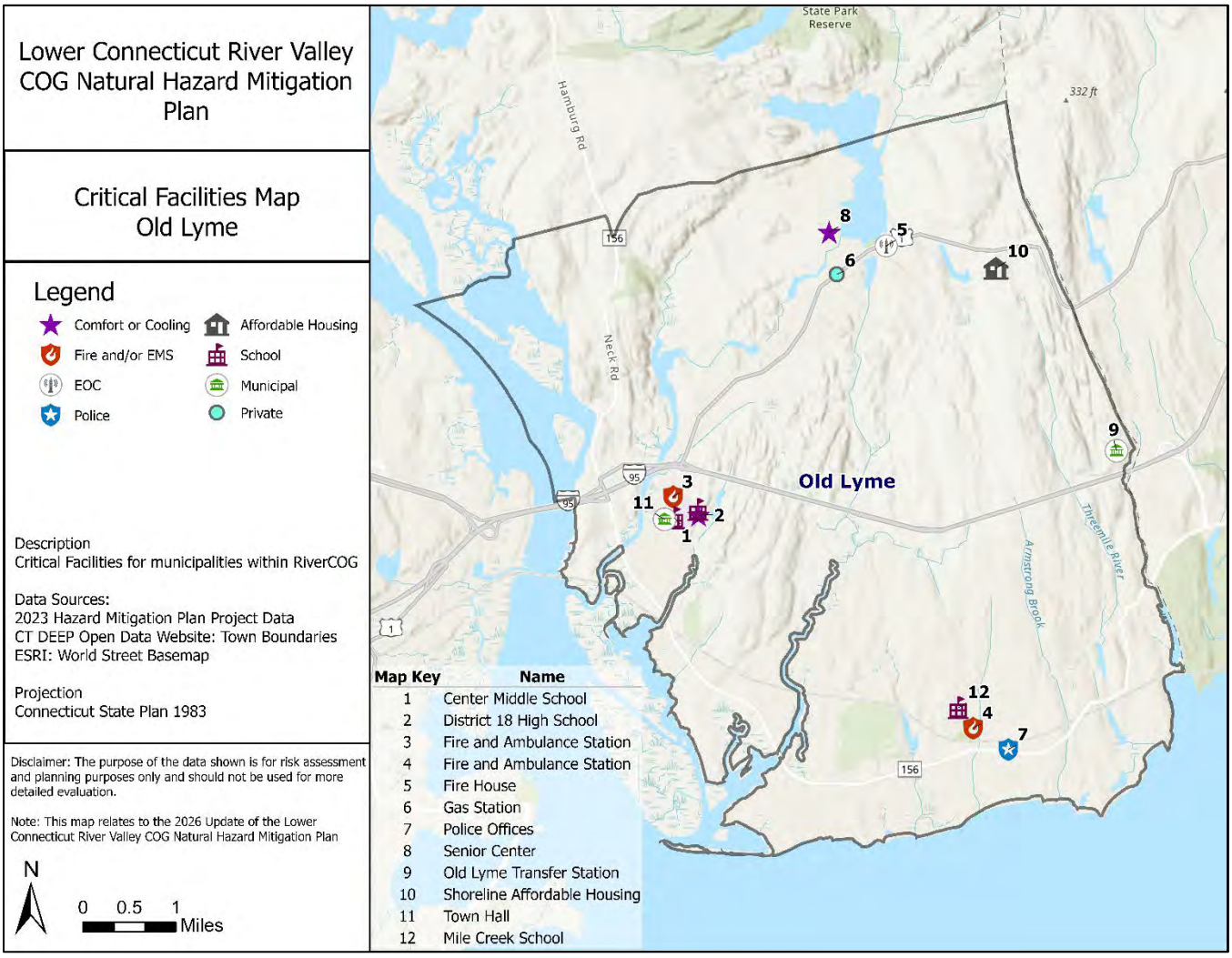


Figure 4.1. Location of Critical Facilities in Old Lyme

Table 4.1 lists critical facilities identified by the Town.

Table 4.1. Critical Facilities

Facility	Type	Address	Flood Zone	Generator	Notes
Town Hall	Municipal	52 Lyme Street	100-year AE Zone on rear of Parcel. 500-year Zone covers parking lot and into the rear of the building.	Yes	Standby power
Fire House	EMS	189 Boston Post Rd.	No	Yes	Standby power
Fire and Ambulance Station	EMS	69 Lyme Street	No	Yes	Standby power
Fire and Ambulance Station	EMS	14 Cross Lane	No	Yes	Standby power
Police Offices	EMS	294 Shore Road	No	Yes	Standby power
Mill Creek School	Municipal	207 Mile Creek Rd.	No	Yes	Standby power
Center Middle School	Municipal	49 Lyme Street	No	Yes	Standby power
District 18 High School	Municipal	69-2 Lyme Street	No	Yes	Standby power
Transfer Station	Municipal	109 Four Mile River Road	No	Yes	Standby power
Shoreline Affordable Housing	Private	1 Rye Field Road	No	No	No Generator (units are detached and spread out)
Senior Center	Municipal	26 Town Woods Road	No	Yes	Standby power
Gas Station	Private	147 Boston Post Rd.	No	Yes	Gas Station with Generator

The following changes in critical facilities since the last plan or items deemed notable by the local planning team are below:

- A new senior center for Lyme and Old Lyme is located at 26 Town Woods Road
- Old Lyme received federal funding (approximately $700,000) to expand/new Emergency Operations Center at Boughton Road Fire House. A new Emergency Operations Center is under consideration at this existing fire station

Old Lyme uses many of its public buildings for minor natural hazard events, such as cooling centers during heat waves. Public and private utility facilities are vital to maintaining or restoring normal services to areas of town before, during, and after a natural disaster. Public water systems located in the town are owned and

operated by Connecticut Water Company and small community system providers. Electricity is provided by Eversource. Public and private utility facilities are subject to the same loss of power, potable water, communications, and accessibility as the community they serve.

4.2. Municipal Capabilities

The Town of Old Lyme has a variety of natural hazard mitigation capabilities, including local regulations and ordinances, operational protocols, and emergency response capabilities. Table 4.2, Table 4.3, and Table 4.4 list legal, regulatory, technical, administrative and financial capabilities that support hazard mitigation.

Table 4.2. Legal and Regulatory Capability

Table 4.2.a. Codes, Ordinances & Requirements

Capability	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Building Code	Yes	Yes	No	Yes	All municipalities enforce the State Building Code
Zoning Code	Yes	No	No	No	Includes Flood Damage Prevention Ordinance
Subdivisions	Yes	No	No	No	
Post Disaster Recovery	Yes	No	No	No	
Real Estate Disclosure	Yes	No	No	Yes	State requirement
Growth Management	No	No	No	No	
Site Plan Review	Yes	No	No	No	
Special Purpose (flood management, critical areas)	Yes	Yes	No	Yes	State flood management statutes and regulations

Table 4.2.b. Planning Documents

Document	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
General Plan	Yes	No	No	Yes	The POCD is current
Floodplain or Basin Plan	No	No	No	No	
Stormwater Plan	Yes	No	No	Yes	MS4 community
Capital Improvement Plan	Yes	No	No	No	Five-year plan
Habitat Conservation Plan	No	No	No	No	

Document	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Economic Development Plan	Yes	No	Yes	No	Regional Comprehensive Economic Development Strategy
Emergency Response Plan	Yes	No	No	Yes	LEOP templates provided by DEMHS
Shoreline Management Plan	No	No	No	No	
Post Disaster Recovery Plan	No	No	No	No	LEOP templated provided by DEMHS

Table 4.3. Administrative and Technical Capability

Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	No	Land use coordinator with a legal background
Engineers or professionals trained in building or infrastructure construction practices	Yes	Engineering subcontractor and Public Works
Planners or engineers with an understanding of natural hazards	No	Land use coordinator, will need future CRS staff (as of right now per diem)
Staff with training in benefit/cost analysis	No	Supported by RiverCOG
Floodplain manager	Yes	Zoning Enforcement Officer
Surveyors	No	Contracted as needed
Personnel skilled or trained in GIS applications	Yes	Land use coordinator, supported by RiverCOG
Emergency manager	Yes	Fire Marshal
Grant writers	Yes	Municipal Staff

Table 4.4. Financial Resources

Financial Resources	Accessible or Eligible to Use?
Community Development Block Grants	No
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	No
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes

Financial Resources	Accessible or Eligible to Use?
Incur Debt through Private Activity Bonds	Yes
Withhold Public Expenditures in Hazard-Prone Areas	Yes (State)
State Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	No

Gaps in Capabilities

The following list highlights gaps in capabilities identified by municipal staff:

- There is a lack of mapping of catch basins, stormwater outfalls, bridges, and culverts. This presents challenges and likely hurts planning efforts. There is potential for RiverCOG to assist with inventorying and mapping under this effort. Ideally age, condition, and design storm information could be included to help prioritize infrastructure rehabilitation or replacement.
- Evacuation routes coming from the south end may intersect a repetitive roadway flooding issue at Crossline Underpass during storms. A solution to this flooding issue is needed.
- Although annual maintenance of storm water infrastructure, including detention basins, is desired, it is not always achieved with existing staffing levels.
- The Town has been actively performing fire well / dry hydrant maintenance as well as developing agreements with private property owners to access these sources of water.

Following is a list of some highlighted capabilities identified by municipal staff.

4.2.1. Regulations and Ordinances

The Town of Old Lyme participates in the National Flood Insurance Program (NFIP). It uses the State Building Code for code compliance to ensure new construction results in safe structures that can withstand 110 mph wind speed and appropriate snow load. Old Lyme follows their Plan of Conservation and Development for planning infrastructure, open space, commercial and industrial development. There have been no significant changes to regulatory policy for new development, due primarily to the lack of development.

The Town of Old Lyme utilizes flood enforcement through existing zoning, building and flood permitting processes and construction standards to minimize flood risks.

The Soundview Beach area recently applied to gain historic recognition, but some business owners were opposed due to potential restrictive requirements. The application is still pending.

4.2.2. Operations and Procedures

Old Lyme follows their Emergency Operations Plan in case of any emergencies within the town. There have been no changes to sheltering and evacuation plans in town.

Old Lyme has a tree warden, tree commission, and annual budget for tree trimming and removal of debris. The town is evaluating open space for any dead or dying trees to be stored.

The Town is current on the inspections for the Rogers Lake Dam and the Lower Millpond Dam, and there are no structural recommendations for these dams at this time.

4.2.3. Emergency Response Capabilities

The Department of Public Works maintains a fleet of trucks and other snow removal equipment and monitors weather forecasts during the winter months to mobilize in advance of storms. The town purchases adequate salt and sand supplies to apply to roads and conducts routine maintenance and replacement of equipment used for snow removal. A maintenance schedule is in place for all snow removal equipment to guarantee that the equipment is in good working order when the need arises. The Board of Finance and the Board of Selectmen work together to ensure proper funding is available to support these mitigation efforts.

Other emergency response capabilities include:

- Old Lyme has approximately 160 fire wells (dry hydrants) in town.
- The Connecticut Water Company supplies public water to several beach communities. Most private beach associations have supplied water. However, public hydrants for fire protection are limited or non-existent.
- There is a program to address immobile evacuees. The program is reviewed annually, and regular drills (due to the Millstone power plant) are conducted by Emergency Management. There is a plan to evacuate people without means of transport.
- There are caches of emergency supplies in areas of town that will be cut off during major flooding events.

4.2.4. Capital Improvements

The Capital Improvement Plan (CIP) addresses municipal improvements including rights-of-way, rights-of-way, land, housing, or infrastructure and utilities for public purposes. Mitigation actions from this NHMP should be included in the CIP. Larger items such as bridge and culvert replacements and elevation of roads are included in the 5-year CIP.

The CIP should be reviewed often so that it can include new mitigation action items each time the NHMP is updated. This is a good way for the town to prioritize mitigation items and use the Capital Improvement Program to set aside funds for infrastructure improvements to reduce loss of life and property during natural hazard events.

The Town of Old Lyme believes it would be helpful for RiverCOG to consider and recommend set-aside guidance that local communities could follow to ensure that CIP funding is available to address mitigation improvements.

The State of Connecticut funded Grassy Hill Bridge project. This funding was received years ago, lapsed, and then was renewed.

4.2.5. Plan Integration with Other Planning Mechanisms

The town of Old Lyme uses the mitigation plan to inform its 5-year capital improvement plan and associated annual budgets. Old Lyme staff reported that the plan has not been formally incorporated into other planning documents. There is new legislation (P.A. 25-33) that now requires cities and towns to incorporate climate vulnerability (specifically including flooding) and resilience strategies into Plans of Conservation and Development (POCDs). Old Lyme plans to comply with that new requirement during the next POCD Update. Further, communities are now required to develop and maintain affordable housing plans. The mitigation plan will help inform siting criteria within that plan.

4.2.6. Outreach, Education, Communication, and Warnings

The Town of Old Lyme has the following responsibility to the public for hazardous storms or events:

- The Town recommends that homeowners and businesses with structures in vulnerable areas should monitor local Flood Warnings. Specifically, residents in floodplains should have a flood evacuation plan and when possible floodproof their buildings.
- Old Lyme posts storm information on their website, including proper preparations and warnings. The DPH and DEMHS post info on their websites seasonally.

The Town of Old Lyme offers the following to educate the community in case of hazardous conditions:

- Old Lyme offers Natural Hazard Training – this training is for emergency responders and teaches about mitigating natural hazards.
- Wildfire Education is offered in the town to educate the public about potential hazard of wildfire caused by campfires or open burning.

Old Lyme uses Everbridge for mass communication during hazard events.

4.2.7. Other Capabilities

The following list highlights capabilities identified by Municipal staff:

- Old Lyme has a tree warden, tree commission, and annual budget for tree trimming and removal of debris. The town is evaluating open space for a debris removal site.
- The Town has had funding in the past from the Nature Conservancy to cut and remove invasive Phragmites.
- The Town continues to require structural engineering reports for expansion or alteration of buildings within the V zone and is evaluating the benefits of requiring structural engineering reports for expansion or alteration of buildings within other zones.
- Flood proof construction standards for roads and structures within the floodplain are strictly enforced.
- No net runoff from development is allowed. New development is to be built using techniques to eliminate run-off and are included in commercial projects and subdivisions. Zoning prohibits large commercial construction.

- Approximately $75,000 per year is placed into a fund by the Town for property (open space) acquisition.
- CTDOT performs extensive cutting of trees along State roads.

4.2.8. New Capabilities and Completed Actions

Since the last plan update in 2021 there have been a few updated capabilities:

- New Policy or Regulatory Capabilities:
    - A student from the University of Connecticut began work in August 2025 on creating a policy book through an internship program. The result is anticipated in May 2026.
    - The Town partnered with Eversource on an extensive program to identify and remove hazardous trees, which has likely saved money on cleanup after storms.
    - The Tree Commission and Tree Warden regularly inspect trees and encourage the planting of resilient and appropriate trees.
- New Administrative or Technical Resources
    - The Flood and Erosion Control Board (FECB) has been revitalized over the last few years. One of their charges is to enter the Town into FEMA's community rating system (CRS) program. The day-to-day CRS tasks would take place in the planning department, with other tasks (such as certification maintenance) deferred to the FECB.
    - The Town can use SHPO's best practices guidelines when evaluating design of improvements to at-risk historic and cultural resources.
    - One new land use technician has already obtained his CZET certification. The other is undergoing her training in May, 2026.
    - UConn CIRCA identified a resiliency opportunity area (ROAR) in Old Lyme. The potential related action is to "Work with CIRCA to develop a scope of work for study and concept design in the resiliency opportunity area related to the Old Lyme Center Critical Facilities.
    - Old Lyme applied to Sea Grant for funding under its "Round 2 Planning Services" for a resiliency study. The Town was selected, and Sea Grant retained a consultant to provide a study for a maximum cost of $58,000. A potential new action is to "Implement the recommendations of the Sea Grant study once it is completed."
    - The Town completed the Mile Creek Road bridge replacement using State grant funding, and future projects anticipated to be completed using State grants include Grassy Hill Bridge, two bridges on Route 156, several culvert projects (Route 156 by Hatchets Point, Armstrong Brook), and marsh rehabilitation.
    - The Town has funded an engineering study for a culvert near Sea Spray Avenue, which includes an old tide gate installed in the 1950s/1960s to divert the marsh to Long Island Sound. DEEP did a marsh restoration and has helped keep the water flowing but the culvert is in disrepair and there are easement issues. Shore Engineering will work on this in 2026 and 2027.

5. Hazard Mitigation Action Plan

This section presents the progress made since the 2021 action plan and establishes new goals, objectives and actions identified for the 2026-2030 planning horizon.

5.1. Previous Mitigation Actions Disposition

During the process of developing the 2021 Old Lyme Hazard Mitigation Plan, several hazard mitigation actions were identified to be pursued during the five-year planning horizon that followed. Table 5.1 presents the actions listed in that document, and the status of those actions.

Table 5.1. Status of Previous Mitigation Strategies and Actions.

Action	Description	Status	Details
01	**Business Recovery Plan** - Emergency Management is working on long-term recovery for COVID-19, ESF14, Regional Emergency Planning Team. Complete this work and expand to other natural disasters.	Completed	Covid plan was completed. Regional planning team is a capability. Provided 33 $10,000 loans to small businesses in the wake of Covid through ARPA.
02	**Capital Improvement Program** - Use Capital Improvement Program (CIP) to set aside funds for infrastructure improvements to reduce loss of life and property during natural hazard (NH) events.	Carry Forward	A CIP mitigation fund is still needed. It would be helpful for the COG to consider and recommend a set aside level that local communities can follow.
03	**Design Standards -** Use SHPO Best Practices Guide for resilience when evaluating design of improvements to at-risk historic and cultural resources.	Capability	Most historic resources are in the Town Center historic district and are not floodprone. Most at-risk structures are located along the shore, where there are many potential historic structures. The Town can reference the SHPO design guidelines as needed.
04	**Flood Zone Study -** Review other flood study work (i.e. CIRCA SLR Study) currently available and prepare recommendations for incorporation the next time there is a FEMA flood study. Evaluate incorporation into planning initiatives before there is a FEMA flood study update.	Completed	Draft updated FIRMs were released in 2022 and the Town reviewed the maps as well as the potential erosion data.

Action	Description	Status	Details
05	**Grants -** Identify and apply for grants to fund infrastructure improvements and other mitigation tasks identified in this plan.	Capability	Past projects completed with State grants include: • Mile Creek Road bridge replacement Future anticipated projects to be completed with State grants include: • Grassy Hill Bridge replacement to box culvert at slightly higher elevation • Two bridges on Route 156 • Culvert projects (Route 156 by Hatchets Point, Armstrong Brook) Town has applied for two grants to study and rebuild marsh near Mile Creek to reduce flooding, particularly to West End Drive in Hawk's Nest
06	**Local Sea Level Rise Study** - Review and use CIRCA SLR Study, UCONN Sea Grant education outreach, flood susceptibility mapping to investigate possible mitigation actions and to assess legal, financial and policy implications. Establish an ad hoc committee to look at impacts and make recommendations.	Completed	The Flood and Erosion Control Board has been reestablished and reviewed this.
07	**Possible Open Space Criteria -** Acquisition of open space is ongoing. Make flooding and SLR a criterion. Advance an assertive land acquisition plan to reserve vacant land subject to natural hazards.	Carry Forward	The Town and local land trusts together own approximately 2,000 acres. The current primary criteria are property availability and that properties are contiguous to other open space properties. $75,000 per year is placed into a fund by Town for acquisitions. Land Trusts routinely apply for State funding for purchases.
08	**Post Disaster School Arrangements -** Establish reciprocal arrangements with other school districts for getting students back into classes during extended recovery periods. Working with other Town School Districts. Distance learning post COVID-19 could eliminate the need. Re-evaluate in 5 years.	Completed	This was a pandemic recommendation. Region 18 did a great job of getting kids back into school including upgrading the HVAC to improve the system.

Action	Description	Status	Details
09	**Potential Financial Impact of Probable Events -** Estimate the municipal tax revenue that could potentially be lost in various events to provide the Board of Selectmen and Board of Finance with an idea of how large a "rainy day" fund might be necessary to cover that post disaster period when there would be minimal income and maximum output of public funds at all levels of government.	Carry Forward	The Town presently has a surplus that can be used to cover shortages, but notes that 5% of the grand list is commercial and 90% is residential. The Town has begun setting aside money into a "rainy day" fund, but the policy is not finalized as to the amount that should be retained vs. invested. There needs to be a balance between property value vs. tax value, as some structures are worth far less than the land they are built upon.
10	**Private Property Funds -** Evaluate opportunities for public funding for projects on private property where the benefits exceed the costs. Potential to share resources between town and beach communities.	Carry Forward with Revisions	This approach has been challenging for the Town in the past, in particular when dealing with sharing costs for plowing and sewer service between the various Beach communities. Focus this action on the necessary coordination.
11	**Regulations -** Strengthen existing subdivision regulations to either optimally prevent road or house construction within the floodplain, or alternatively raise structures above BFE. Looking at increasing setbacks to tidal wetlands from 50 to 100 feet.	Carry Forward with Revisions	As most land available to subdivide is not located in flood zones, this has been a low priority. Town is currently finishing up a Phase 1 Zoning review. Revise action to support upcoming review and revision of flood ordinance to be consistent with model ordinance including substantial damage / substantial improvement lookback periods.
12	**Critical Facilities -** Upgrade as necessary all facility mechanicals, such as generators, in municipal and other critical facilities. Continue to participate in a regional sheltering program with East Lyme and others. Add generator to Sr. Center.	Completed	The majority of Town buildings now have generators including all critical facilities. Portable generators are available. A new Senior Center was constructed that has a generator and is a shelter that can accommodate 297 people. Can technically also be used as a heating/cooling/charging center although heating and cooling centers have not been utilized by residents in the past. Participation in the regional sheltering program continues to be a capability.
13	**Firefighting Infrastructure Analysis -** Evaluate existing firefighting infrastructure to identify needs for improvement to cover gaps in availability. Underway with ISO review in 2020.	Carry Forward with Revisions	Feedback from ISO was never received. A new water supply analysis for public water system availability for fire protection is underway.

Action	Description	Status	Details
14	**Municipal Buildings Capable of being Shelters -** Future investment in municipal structures should include funding for new construction or renovation that will ensure the structure is compliant with the standards for use as a shelter, to the extent possible. Need 24-hour location to be set up at schools. Town Hall is currently in flood zone.	Deleted	See above. 24-hour sheltering requirements have been addressed with the new Senior Center. The Town Hall and local and regional schools can also be used for warming/cooling/charging stations.
15	**Promote Self Inspection -** Develop a list of techniques for homeowner self-inspection especially for those located in coastal areas.	Deleted	Recommended as a COG-level regional action to address coastal homes in multiple towns.
16	**Risk Reduction -** Develop a strategy and funding program to elevate or relocate structures of flood-prone properties or acquire RL properties that request a "buy-out". Encourage owners of repetitive loss and severe repetitive loss properties (residential and commercial) to obtain assistance for hazard mitigation funding from DEEP/FEMA for elevation of structures and repairs where applicable.	Carry Forward with Revisions	Landowners are generally uninterested in acquisitions and elevations because buyers are interested in redeveloping coastal properties with FEMA-compliant structures. Town is also concerned about potential liability related to administering grants for actions on private property. Modify this action to review grant process and the legal and liability aspects regarding FEMA grants for acquisitions and elevations. Recommend this as a COG-level regional action as it would benefit multiple towns. Information about Risk Reduction will be included on the Town's Preparedness Webpage (OLY-025)
17	**Upgrade Fire Fighting Infrastructure -** Upgrade existing fire ponds to ensure adequate water supply is available. Construct new fire ponds and fire wells where water is not currently available. Upgrade where appropriate and maintain dry hydrants and water sources to ensure adequate fire-fighting capability. Any subdivision of more than three homes needs a pond or cistern.	Carry Forward with Revisions	See also OLY-013 above. There is concern about subdivisions from the 1990s that lack fire protection as well as fire ponds silting in over time and reducing available capacity. There is a concern that private owners will not want to pay to dredge fire ponds, but the Town is hesitant to fund projects on private property. The Town has been working on identifying new firefighting sources and developing memorandums of understanding with the owners of existing fire ponds.
18	**Dam Inventory -** Review DEEP requirements (i.e. rules updated for high hazard dams). Update inventory of dams and assess downstream risks due to catastrophic failure. Include State, Town, and Privately-owned dams. Future studies on dam inundation areas are needed and DEEPs database needs to be updated to reflect existing dams not listed.	Carry Forward with Revisions	EAPs have been prepared for Town-owned dams and Rodgers Lake Dam and dam inspections are up to date. There are presently no concerns about the integrity of these dams. This action needs to be revised to focus on the remainder of the proposed action.

Action	Description	Status	Details
19	**Dune Restoration -** Review Sea Grant study on living shoreline projects/education on dunes. Implement dune restoration and marshland protection techniques for flood storage and surge protection.	Carry Forward with Revisions	Recommended modification is to tie into the Mile Creek marsh study above (OLY-005), but that action is a capability. Updated action to encourage Town to apply for grant funding for such projects.
20	**Drought Mitigation -** Consider regulatory changes to require moisture sensors for all newly installed irrigation systems.	Carry Forward with Revisions	No progress. It is unclear if the Town can regulate private irrigation systems. Zoning regulations could potentially be updated to include a requirement for larger commercial development projects as it would likely be too time-consuming to regulate individual homes.
21	**Risk Assessment -** Use GIS to conduct natural hazard risk assessments that identify potentially affected areas and depicts evacuation routes.	Carry Forward	The FECB is looking at this. The evacuation routes should be put into a GIS. Studies currently underway (such as the Sea Grant SRC-funded plan) can be used.
22	**Street Tree Program -** Implement a tree hazard management program to encourage appropriate planting practices to minimize future storm damage to buildings, utilities and streets.	Capability	The Town partnered with Eversource on an extensive program to identify and remove hazardous trees, which has likely saved money on cleanup after storms. DOT also performs extensive cutting along State roads. The Tree Commission and Tree Warden regularly inspect trees and encourage the planting of resilient and appropriate trees.
23	**Circulate Existing Literature -** Access existing literature prepared by regional groups, the Chamber of Commerce and FEMA and display for public distribution in the Library. Already completed for Town Hall	Completed	Brochures are available at both the Town Hall and the Library. Staff check both locations on occasion to make sure the information is up to date. This is a capability.
24	**Drought Education -** Coordinate with Connecticut Water Company on public education and public service announcements during droughts. Add recommendations for moisture sensors and other water conservation techniques.	Completed	The Town coordinates with Connecticut Water Company on drought alerts, and also keeps them up to date with contact information for various Beach communities so they can contact them about drought. The Town announces when the State declares a drought and encourages private well owners to conserve. The Town has no interest in making recommendations regarding moisture sensors or water conservation techniques other than passing on information and recommendations established by other agencies.

Action	Description	Status	Details
25	**Preparedness Webpage -** Annually (or as events dictate) update Town website with natural hazard preparedness information, including hazard areas, evacuation routes deemed appropriate per event and locations of shelters. Post on Town website information about recovery assistance following events. Update town webpage with the section on Hazard Preparedness for the public. Include maps of evacuation routes, storm surge areas, and shelters. Include options for mitigation for residential structures and business recovery and provide links to FEMA, NOAA, DEMHS and RiverCOG websites for additional information.	Carry Forward with Revisions	Preparedness information is on the Town's website and additional information is posted as needed. There is a desire to consolidate this information into one place on the website as part of the ongoing website refresh.
26	**Neighborhood Mitigation.** Engage neighborhood associations annually to participate in implementing the Natural Hazard Mitigation Plan. Encourage engagement in future HMP updates.	Carry Forward with Revisions	The Town holds three meetings per year with the Beach associations. The meetings each spring are designed to encourage the associations on how to share information with the transient populations. There are 700+ rental cottages in town. Sea Grant helped with a flyer to be placed in cottages. There are limits to the effectiveness of the outreach. Sea Grant funded a one-off project to develop a website and informational flyer for transient populations and seasonal residents in the Beach communities. There is a need for an updated "laminated card" that includes hospital/veterinary locations, evacuation routes, and other information.
27	**Repetitive Loss and Other Flood Prone Properties -** Work with property owners to identify funding sources to mitigate properties through elevation or acquisition. Identify means of overcoming past challenge of not having the appetite to be the subgrantee and contract with owners.	Deleted	See also OLY-016. The Town is not interested in being a subgrantee and there is a significant difference in what property owners want to sell for than the assessed value for FEMA. In some cases, multiple homes are purchased, the parcels combined, and the new parcel redeveloped into a FEMA-compliant structure. The Town expects a demographic change related to this in the beach associations but is pleased with the FEMA-compliant structures. It was noted that some homes made historic agreements with the Beach associations to not convert to year-round use, and legal challenges have occurred between current homeowners and the associations.

Action	Description	Status	Details
28	**Conduct engineering studies** to mitigate various Town-owned structures in need of repair, culverts, pipes, bridges, etc., on Town-owned roadways that are causing flooding and overtopping problems. Replace 1-2 annually. Cross Lane Underpass is top priority.	Carry Forward with Revisions	The Town has funded an engineering study for a culvert near Sea Spray Avenue, which includes an old tide gate installed in the 1950s/1960s to divert the marsh to Long Island Sound. DEEP did a marsh restoration and has helped keep the water flowing but the culvert is in disrepair and there are easement issues. Shore Engineering will work on this in 2026 and 2027.
29	**Support mitigation projects** that will result in protection of public or private property from natural hazards through stormwater management improvements for areas identified by the Town. Identify and implement one per year.	Carry Forward with Revisions	The FECB is working towards certification in FEMA's Community Rating System (CRS). The Planning Department would handle day-to-day CRS tasks while the FECB would assist with maintaining certification. The Town prefers this approach, which will reduce flood insurance costs in Old Lyme, over the complex logistics related to attempting to fund projects within the Beach associations or on private property.
30	**Plan of Conservation and Development.** During the next update, add this plan by reference to the POCD	Completed	The Plan of Conservation and Development was updated in 2021 to include references to natural hazards.

5.2. Updated Mitigation Goals, Objectives, and Strategies

As noted in Section 3 of Volume 1, all the RiverCOG participating communities, including Old Lyme, participated in setting regional goals and objectives. Old Lyme has confirmed these goals and objectives valid for the Town's annex. The three goals and objectives are as follows:

Goal 1: Promote implementation of sound flood management and other natural hazard mitigation principles on a regional and local level. Note: Covers future development through policy, planning, regulation, emergency services, and environmental strategies.

- **Objective for Goal 1:** To promote the development, improvement and implementation of programs, policies, regulations, and emergency services that result in the reduction of long-term risks to life and property.

Goal 2: Implementation of effective natural hazard mitigation projects at the regional and local level regional and local level. Note: Covers infrastructure and building related projects – the existing built environment.

- **Objective for Goal 2:** To enhance the ability of RiverCOG, other regional entities, and local communities to reduce or eliminate risks to life and property from natural hazards through cost-effective hazard mitigation projects, including avoidance.

Goal 3: Increase research, planning and outreach activities for the mitigation of natural hazards on a regional and local level. Note: Covers the people component of mitigation via outreach and education, and integration with other planning and continuous improvement through increased research.

- **Objective for Goal 3:** To increase general awareness of the region's natural hazards and encourage State agencies, local communities, and the public to be proactive in taking actions to reduce long-term risk to life and property.

The local planning team of Old Lyme reviewed these goals and objectives during meetings in June of 2025 and acknowledged that they are still aligned with the priorities of the Town.

5.2.1. Prioritization of Mitigation Strategies

In considering which projects, processes, and other measures to undertake in the upcoming plan period, municipal and regional officials evaluated the need to address problems and vulnerabilities in their communities against the communities' resources and capabilities. To prioritize mitigation strategies, a set of criteria commonly used by public administration officials and planners was applied to each proposed strategy. The method, called STAPLEE, is outlined in FEMA planning documents such as Developing the Mitigation Plan (FEMA 386-3) and Using Benefit-Cost Review in Mitigation Planning (FEMA 386-5). STAPLEE stands for the "Social, Technical, Administrative, Political, Legal, Economic, and Environmental" criteria for making planning decisions. Benefit-cost review was emphasized in the prioritization process. Criteria were divided into potential benefits (pros) and potential costs (cons) for each mitigation strategy. The following questions were asked about the proposed mitigation strategies:

Social:

- Benefits: Is the proposed strategy socially acceptable to the community?
- Costs: Are there any equity issues involved that would mean that one segment of the community could be treated unfairly? Will the action disrupt established neighborhoods, break up voting districts, or cause the relocation of lower-income people? Is the action compatible with present and future community values?

Technical:

- Benefits: Will the proposed strategy work? Will it reduce losses in the long term with minimal secondary impacts?
- Costs: Is the action technically feasible? Will it create more problems than it will solve? Does it solve the problem or only a symptom?

Administrative:

- Benefits: Does the project make it easier for the community to administrate future mitigation or emergency response actions?
- Costs: Does the community have the capability (staff, technical experts, and/or funding) to implement the action, or can it be readily obtained? Can the community perform the necessary maintenance? Can the project be accomplished in a timely manner?

Political:

- Benefits: Is the strategy politically beneficial? Is there public support both to implement and maintain the project? Is there a local champion willing to see the project to completion? Can the mitigation objectives be accomplished at the lowest cost to the community (grants, etc.)?
- Costs: Have political leaders participated in the planning process? Do project stakeholders support the project enough to ensure success? Have the stakeholders been offered the opportunity to participate in the planning process?

Legal:

- Benefits: Is there a technical, scientific, or legal basis for the mitigation action? Are the proper laws, ordinances, and resolutions in place to implement the action?
- Costs: Does the community have the authority to implement the proposed action? Are there any potential legal consequences? Will the community be liable for the actions or support of actions or for lack of action? Is the action likely to be challenged by stakeholders who may be negatively affected?

Economic:

- Benefits: Are there currently sources of funds that can be used to implement the action? What benefits will the action provide? Does the action contribute to community goals such as capital improvements or economic development?
- Costs: Does the cost seem reasonable for the size of the problem and the likely benefits? What burden will be placed on the tax base or local economy to implement this action? What proposed actions should be considered but be tabled for implementation until outside sources of funding are available?

Each proposed mitigation strategy presented in this plan was evaluated and quantitatively assigned a "benefit" score and a "cost" score for each of the seven STAPLEE criteria as outlined below:

- For potential benefits, a score of "1" was assigned if the project will have a beneficial effect for that criterion or a "0" if the project would have a negligible effect or if the questions were not applicable to the strategy.
- For potential costs, a score of "-1" was assigned if the project would have an unfavorable impact for that criterion or a "0" if the project would have a negligible impact or if the questions were not applicable to the strategy.
- Technical and Economic criteria were double weighted (multiplied by two) in the final sum of scores.
- The total benefit score and cost score for each mitigation strategy was summed to determine each strategy's final STAPLEE score.

Although a community may implement recommendations as prioritized by the STAPLEE method, an additional consideration is important for those recommendations that may be funded under the FEMA mitigation grant programs. To receive federal funding, the mitigation action must have a benefit-cost ratio (BCR) that exceeds a value of 1.0. Calculation of the BCR is conducted using FEMA's Benefit Cost Analysis

(BCA) toolkit. The calculation method may be complex and vary with the mitigation action of interest. Calculations are dependent on detailed information such as property value appraisals, design and construction costs for structural projects, and tabulations of previous damages or NFIP claims. The BCR scoring system used is outlined in Table 5.2.

Table 5.2. BCR Scoring System

Scoring	Benefits	Costs
Low: 0-1 points	Few would benefit; the impacts being addressed are not severe; benefits may be short term	Likely to be done by existing personnel with little impact on budget; not complicated to accomplish. Costs to implement is likely to be under $10,000.
Medium: 2-3 points	Benefits may be felt by many in the community; the action may solve a problem or otherwise benefit the community for several years	May need additional funding or studies; may require change in practices; costs to implement may be between $10,000 and $100,000
High: 4-5 points	Benefits would accrue to many in the community; benefits may accrue to the most vulnerable or those not able to recover on their own; benefits would be long term and may permanently protect from damages	Likely to cost over $100,000 and require obtaining funding outside of operating budget; complicated, lengthy process to implement

The STAPLEE method accounts for cost-benefit considerations both directly (through the "Economic" category) and indirectly (through general consideration of costs and benefits of actions). Additionally, the range of estimated costs of each strategy are included in the STAPLEE table. The assumed costs of projects and generalized presentation of the benefits accruing from them are not based on specific detailed cost estimates as that level of analysis is not appropriate for this type of planning effort. For some projects, such as routine or recurring operations that are established practices and conducted with municipal general operating funds and existing staff, the STAPLEE results can be the only explicit comparison of costs and benefits. For projects for which bonding and/or grant funding will be sought, more in-depth evaluations of costs and benefits will be required. As project scopes are detailed, benefits and costs can be identified with more precision, and the benefit-cost ratio which results from a full benefit-cost analysis may differ from the planning-level STAPLEE results presented here.

It should be noted that higher BCRs do not necessarily correspond to high priorities, nor do low BCRs or BCRs under 1.0 correspond to low-priority projects. An important project with a high priority to the community may have a lower BCR because of its complexity, assumed high expense, and other costs. Communities should not be discouraged or deterred from further consideration of projects that have low BCRs or BCRs less than 1.0 until additional, more specific evaluations of the costs and benefits have been undertaken.

5.2.2. 2026-2031 Prioritized Hazard Mitigation Actions

In addition to the regional mitigation actions endorsed by Old Lyme and outlined in Section 3 of Volume 1 of the regional plan, the Town identified or carried over from the last update, ranked and evaluated the actions in Table 5.3. For each identified action, the goal and objective it addresses is noted. Additionally, a description, lead agency, indication of costs and potential funding sources and an estimated timeline for completion is included. Also included are the hazards addressed by a specific action.

Figure 5.1 shows the locations of the projects listed in Table 5.3 with spatial elements that have been carried forward. Additionally, completed projects identified in Table 5.1 with spatial elements are also shown on the map. Projects carried forward are identified by their activity number (from Table 5.3) while completed projects are identified by the description of the project completed.

Figure 5.1 shows the locations of the projects listed in Table 5.3 with spatial elements that have been carried forward or are new additions. Additionally, completed projects identified in Table 5.1 with spatial elements are also shown on the map. Projects carried forward and new projects are identified by their activity number (from Table 5.3) while completed projects are identified by the description of the project completed.

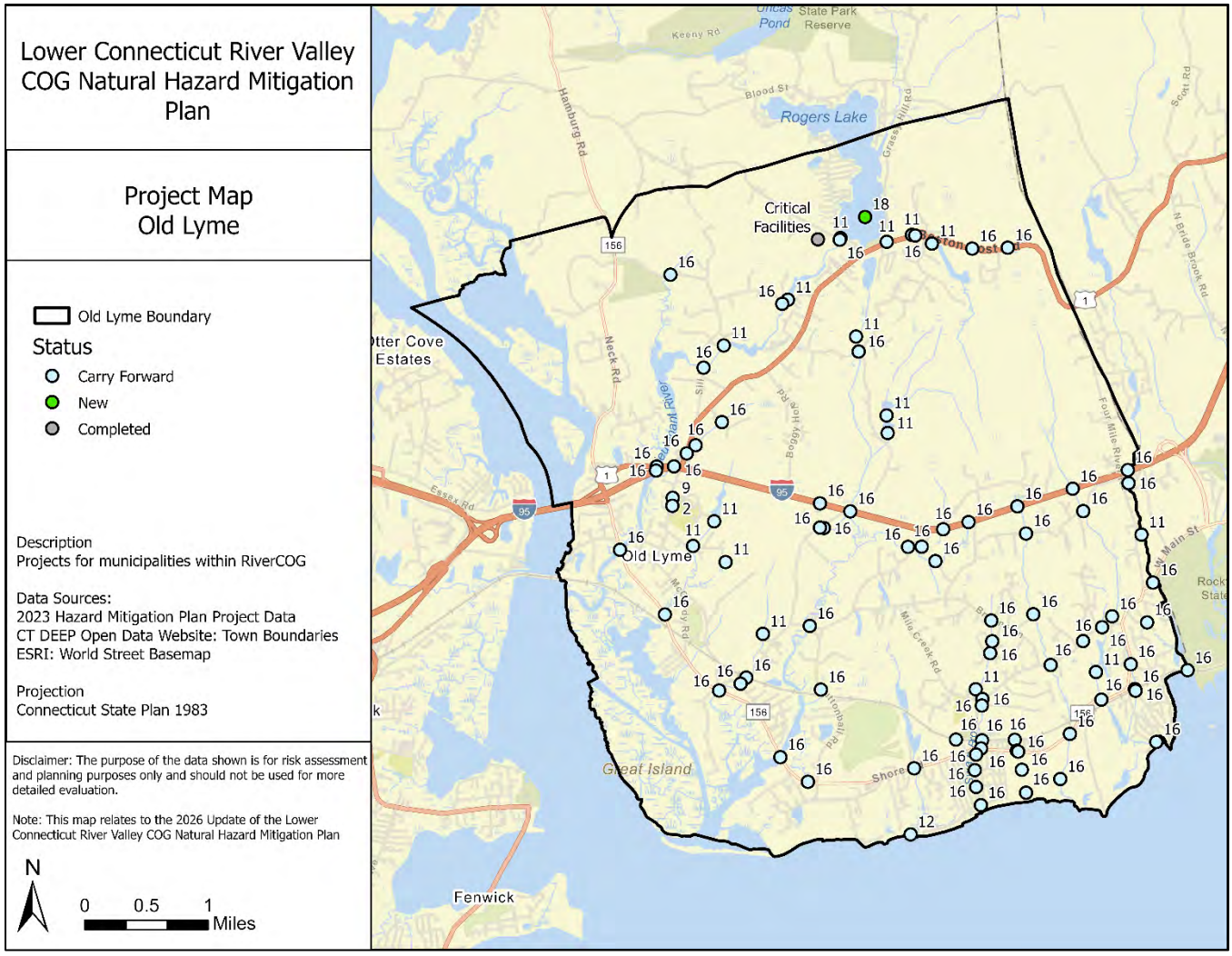


Figure 5.1. Carried Forward, Completed, and Current Projects in Old Lyme

Table 5.3. Old Lyme Hazard Mitigation Strategies and Prioritization

KEY: SW= Severe Weather, TW = Tornado/Wind, ET = Extreme Temperatures, WS=Winter Storm, F = Flood, TI = Tree Damage and Invasive Species, WF = Wildfire, D = Drought, E = Earthquake, CC = Climate Change

Town Activity Number	Goal / Objective	Activity	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria															
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	Total STAPLEE Score / Priority
1	2	**Townwide Resiliency Plan:** Implement Recommendations from the study funded by the Sea Grant Sustainable and Resilient Communities (SRC) Program in 2026-2027.	BOS, LUO	TBD	Sea Grant SRC, HMGP, DEEP DCRF, FMA, CIP, OP	2027 to 2030	F, CC	1	0	1	0	1	0	1	0	0	0	1	-1	1	0	6/M

Town Activity Number	Goal / Objective	Activity	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	Total STAPLEE Score / Priority
2	2	**Resilient Connecticut and/or DCRF Program Deployment for Old Lyme Center:** Work with CIRCA to develop scope of work for study and concept design in the "resilience opportunity area" related to Old Lyme Center Critical Facilities.	BOS, LUO, EMD	$0-10,000	CIRCA and DEEP DCRF	2027 to 2030	All	1	0	1	0	1	0	1	0	0	0	1	0	0	0	7/H
3	3	**Evacuation Routes.** Use GIS to identify potentially affected areas identified by this hazard mitigation plan and the Townwide Resiliency Plan; and delineate evacuation routes.	LUO, EMD, IT	$10,000 - $20,000	Sea Grant SRC, OP	2027-2028	SW, TW, WS, F, WF, E, CC	1	0	1	1	1	1	0	0	0	0	0	0	0	0	7/H

Town Activity Number	Goal / Objective	Activity	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	Total STAPLEE Score / Priority
4	1	**Capital Improvement Program.** Use CIP to set aside funds for infrastructure improvements to reduce loss of life and property during natural hazard events.	BOF, BOS, PW	$10,000-$100,000	CIP, OP	Annually	All	1	0	1	0	1	0	1	0	1	0	1	0	1	0	9/H
5	1	**Possible Open Space Criteria.** Acquisition of open space is ongoing. Make flooding and sea level rise a criterion. Advance an assertive land acquisition plan to reserve vacant land subject to hazards.	ZC, PC, LUO, CC, OS, BOS, BOF	$50,000-$100,000	HMGP, DEEP OSF, CIP	2027 to 2028	F, CC	1	0	1	0	1	0	1	0	0	0	1	0	1	0	8/M

Town Activity Number	Goal / Objective	Activity	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria															
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	Total STAPLEE Score / Priority
6	1	**Potential Financial Impact of Probable Events.** Estimate the municipal tax revenue that could potentially be lost in various events to provide the Board of Selectmen and Board of Finance with an idea of how large a "rainy day" fund might be necessary to cover that post disaster period when there would be minimal income and maximum output of public funds at all levels of government.	Assessor, LUO, BOS, BOF, Tax Collector	$100,000	CIP, OP	2029	SW, TW, WS, F, E	1	0	0	0	1	0	0	0	0	0	1	1	0	0	6/M

Town Activity Number	Goal / Objective	Activity	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	Total STAPLEE Score / Priority
7	1	**Private Property Funds.** Evaluate opportunities to share resources and costs between town and beach communities and develop enforceable agreements governing related actions.	BOS, BOF, LUO, EMD	$10,000-$20,000	CIP, OP	Annually	SW, F, CC	1	0	0	0	0	0	1	0	0	0	1	0	0	0	4/L
8	1	**Regulations.** Support review and revision of flood ordinance to be consistent with model ordinance including substantial damage/substantial improvement lookback periods.	IWC, PC, ZC, LUO, BO, FM	$0-10,000	OP	2027	F	1	1	1	0	1	0	1	0	1	0	0	0	1	0	8/H

Town Activity Number	Goal / Objective	Activity	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score / Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
9	2	**Firefighting Infrastructure Analysis.** Evaluate existing firefighting infrastructure to identify needs for improvement to cover gaps in availability. A new water supply analysis is underway to evaluate public water system availability for fire protection.	FM, Fire Dept.	$10,000-$25,000	CIP, OP	2027	WF, D, SW, WW, HW	1	0	1	0	1	0	1	0	0	0	0	0	1	0	6/M

Town Activity Number	Goal / Objective	Activity	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria															
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	Total STAPLEE Score / Priority
10	2	**Upgrade Fire Fighting Infrastructure.** Upgrade existing fire ponds and secure agreements with property owners to ensure adequate water supply is available. Construct new fire ponds and fire wells where water is not currently available. Upgrade where appropriate and maintain dry hydrants and water sources to ensure adequate fire-fighting capability. Any subdivision more than three homes should have a pond or cistern.	FM, EMD, BOS, FD	$50,000-$100,000	HMGP, CIP, OP	2027 to 2028	WF, D	1	1	1	1	0	0	0	0	0	0	0	0	0	0	6/M

Town Activity Number	Goal / Objective	Activity	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	Total STAPLEE Score / Priority
11	2	**Dam Inventory.** Update inventory of dams and assess downstream risks due to catastrophic failure. Include State, Town, and Privately-owned dams. DEEPs database needs to be updated to reflect existing dams not listed.	LUO, BOS, EMD	$10,000-$25,000	CIP, OP for Inventory, DCRF for inundation study work.	2027 to 2029	F	0	0	1	0	1	1	0	0	1	0	0	0	0	0	5/H
12	2	**Dune Restoration.** Review Sea Grant study on living shoreline projects/education on dunes. Apply for grants to implement dune restoration and marshland protection techniques for flood storage and surge protection.	LUO, PW, BOF, BOS, FECB	$50,000-$100,000	FMA, HMGP	2027	SW, F, CC	0	0	1	0	0	0	0	0	0	0	0	0	1	0	3/L

Town Activity Number	Goal / Objective	Activity	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria															
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	Total STAPLEE Score / Priority
13	2	**Drought Mitigation.** Consider requiring moisture sensors for newly installed irrigation systems on commercial developments via Zoning or ordinance.	LUO	$10,000-$25,000	OP	2027	D	0	0	1	0	1	1	0	0	0	0	0	0	0	0	4/L

Town Activity Number	Goal / Objective	Activity	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria															
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	Total STAPLEE Score / Priority
14	3	**Preparedness Webpage.** Annually update Town website with hazard preparedness information, including areas of risk (i.e., storm surge), evacuation routes, and shelter locations. Post information about recovery assistance following hazard events. Include options for mitigation of residential structures and business recovery. Provide links to FEMA, NOAA, DEMHS and RiverCOG websites for additional information.	BOS, IT, EMD, LUO	$10,000-$25,000	HMGP, DCRF, FMA, CIP, OP	2027 and annually	SW, TW, ET, WS, F, TI, WF, D, E, CC	1	0	1	0	1	1	0	0	0	0	0	0	0	0	5/H

Town Activity Number	Goal / Objective	Activity	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria															
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	Total STAPLEE Score / Priority
15	3	**Neighborhood Mitigation.** Engage neighborhood associations annually to participate in implementing the Hazard Mitigation Plan. Encourage engagement in future HMP updates. Prepare updated laminated information card containing emergency information for transient populations.	BOS, EMD	$0-$1,000	CIP, OP	2027	SW, TW, ET, WS, F, TI, WF, D, E, CC	1	1	0	0	1	1	0	0	0	0	0	0	0	0	4/M

Town Activity Number	Goal / Objective	Activity	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	Total STAPLEE Score / Priority
16	2	**Conduct engineering studies** to mitigate various Town-owned structures in need of repair, culverts, pipes, bridges, etc., on Town-owned roadways that are causing flooding and overtopping problems. Replace 1-2 annually. Cross Lane Underpass is top priority.	PW, BOS, BOF	$25,000-$50,000	HMGP, FMA, DCRF, CIP, OP, State DOT	Annually	F	1	0	1	1	0	0	1	1	0	0	0	0	0	0	7/H
17	2	**Community Rating System.** Join FEMA's Community Rating System to reduce flood insurance costs for residents and businesses.	LUO, FECB, BOS	$10,000-$25,000	OP	2027	SW, TW, ET, WS, F, TI, WF, D, E, CC	0	0	1	0	1	0	1	0	1	0	1	0	1	0	8/H

Town Activity Number	Goal / Objective	Activity	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	Total STAPLEE Score / Priority
18	3	**Rodgers Lake Invasive Species.** Work with local, regional, and state partners to determine best methods to mitigate the spread of hydrilla in Rodgers Lake, including potential methods of boat enforcement and studies to evaluate the lake.	BOS, LUO, IWC	$0-10,000	OP	2027 to 2030	TI	1	0	1	0	1	0	1	-1	0	-1	0	0	1	0	4/M
19	1	**Create Geospatial Inventory of Municipal Infrastructure.** Including infrastructure condition and engineering design storm will help Town to prioritize potential bridges, culverts, and storm sewer infrastructure for replacement.	BOS, LUO	$0-10,000	OP, DCRF	2028	F, CC	1	0	1	0	1	0	0	0	0	0	0	0	0	0	4/M



LOWER CONNECTICUT RIVER VALLEY COUNCIL OF GOVERNMENTS
HAZARD MITIGATION PLAN 2026 UPDATE

TOWN OF PORTLAND MUNICIPAL ANNEX

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1. Contact Information

1.1. Point of Contact

Table 1.1. Town of Portland Contact Information

Information	Town of Portland
Contact Name	Michale Pelton, First Selectman
Address	33 East Main Street, 2nd Floor Portland, CT 06480
Telephone	860-342-6715
Email	mpelton@portland.org

1.2. Local Planning Team

The following representatives listed in Table 1.2 participated in meetings and provided input, data, and council toward the development of Volume 1 and this Portland, Connecticut Annex.

Table 1.2. Town of Portland Planning Team

Name	Title
Don Gouin	Emergency Management Director
Robert Shea	Facility Director for Schools
Michael Pelton	First Selectman
Robert Puida	Fire Chief
Jason Morrocco*	Director of Public Works
Dan Bourret	Town Planner

**Local Coordinator*

1.3. Lower Connecticut River Valley Council of Governments

Table 1.3. RiverCOG Contact Information

Information	RiverCOG Information
Contact Name	Margot Burns – Senior Environmental Planner
Address	RiverCOG 145 Dennison Rd. Essex, CT 06426
Telephone	(860) 581-8554 x 702
Email	mburns@rivercog.org

2. Jurisdiction Profile

2.1. Town Profile

Portland is a town in Middlesex County, Connecticut, United States. The population was 9,508 at the 2010 census. The town center is listed as a census-designated place (CDP). It is situated across the Connecticut River from Middletown. Brownstone quarried in Portland was used in the construction of Hartford's Old State House in 1796. The majority of the brownstone buildings in Connecticut (see College Row at Wesleyan University and the Long Walk at Trinity College) as well as the famous brownstones in New York City were built with brownstone from Portland's quarries.

About half of the town's perimeter is made up of the Connecticut River. The town has eight marinas and boat clubs as well as three 18-hole golf courses. Surrounding municipalities include Middletown, Glastonbury, East Hampton, and Cromwell. Portland is located at the mid-point between Boston and New York. **Figure 2.1** shows the location and corporate boundaries of Portland.

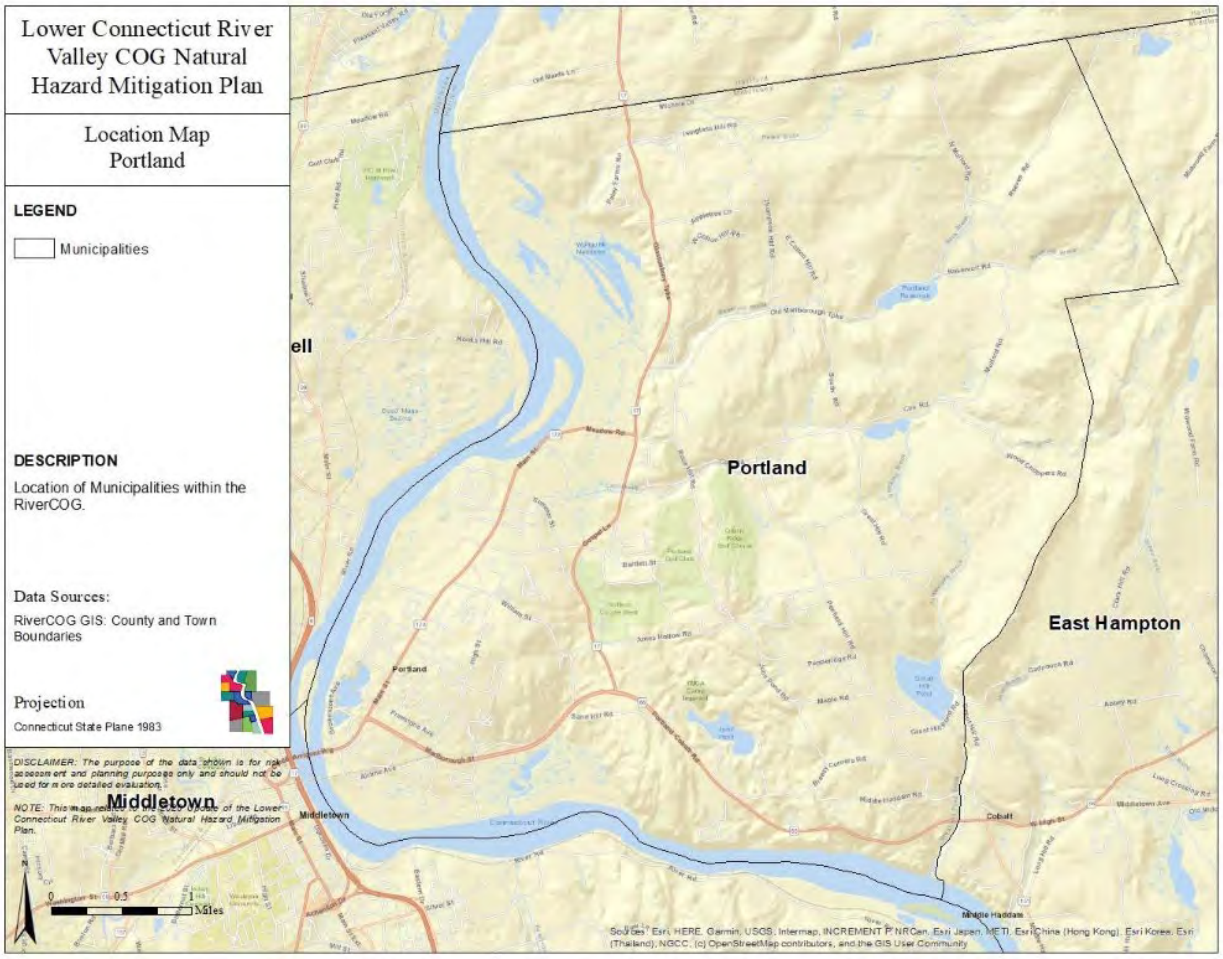


Figure 2.1. Portland Location

The original inhabitants of what we now call Portland belonged to a Native American tribe known as Wangunk ("big bend," referring to the Connecticut River which curves around half the Town's perimeter). They arrived in the area between 8,000 and 10,000 years ago, surviving on local game and their own crops.

The first European-Americans came to the Portland area in the 1650's, the first being James Stanclift, an English stonecutter. They were drawn by the availability of brownstone, a valuable resource for construction and for gravestones. The proximity of the river to these brownstone quarries made the transportation of cut stone affordable. This resulted in several flourishing family businesses, that eventually consolidated into three major partnerships.

Portland supplied quality brownstone from New York and Boston to San Francisco, and employed over 1,500 people during the 1850's. More than 25 ships transported the stone to major population centers in the United States, Canada and even England.

Many local businesses were tied into the quarry-works industry. Shipbuilding, transportation, animal husbandry (caring for oxen and horses used in the quarries), blacksmithing and millwork. As the industry grew, so did the local community, and with it all the businesses one might expect: retailing, construction, farming, medicine, and law. Churches were raised, and schoolhouses provided. The increase of wealth resulted in the building of large, comfortable homes. By the 1850's, the economic center of town shifted toward the shipbuilding, Gildersleeve area.

Other mines proliferated throughout the area, as the hills and valley of Portland were found to be a geologist's dream. Mica contributed to the war effort in the middle of the twentieth century. Semi-precious stones attracted shovels and picks from across the country.

Tobacco farming also took hold, covering river-valley fields with shade-netting and migratory workers.

The market for brownstone declined at the turn of the 20th century. Brownstone could not compete with less expensive and more versatile construction materials, like concrete. In 1936, the river flooded into the quarry sites, effectively ending the brownstone industry. This quickly marked the decline of the shipbuilding industry as well, and the Town of Portland underwent an economic transformation. Residents of Portland found employment elsewhere and dedicated their community efforts to quality of life. In other words, the cultural focus became more civic and family oriented, making Portland an all-around great place to live.

Today, the scenic quarries, located just off Main Street in the central business district, are recognized as historically significant, and a potential destination point for educational purposes and heritage tourism.

The quarries remain as a scenic and recreational natural resource, reminiscent of Portland's past. Ship-building has been replaced by marinas. Geological mining sites are now preserved within a beautifully sculpted 18-hole golf course. Surnames of immigrant quarry workers, tobacco

farmers, ship-builders, and early entrepreneurs still populate the area, living remnants of Portland's history.

The town was first known as East Middletown, maintaining its ties across the river. It became incorporated as Chatham in 1767, which included what is now known as East Hampton and Middle Haddam. When these three districts gained distinct characters of their own, separation again occurred, each taking their present-day names. The name Portland was borrowed from Portland in the English county of Dorset, which was famous for its quarry industry. The Town of Portland was incorporated in 1841.

Municipal water (supply sources: Metropolitan District Commission and a municipal well) serves approximately 3,000 users through 40 miles of water mains, primarily to locations within the downtown area, Brownstone Industrial Park, and the most densely developed areas of Portland.

Portland supplies a sanitary sewer system to approximately 1,500 users within the downtown, industrial park, and areas adjacent.

Primary transportation is provided by State and local highways. The Town owns a handicapped accessible van for special programs. Freight delivery is available through rail into the industrial park area. The Connecticut River is also available for transportation. There is an effort underway to study the feasibility of developing a critical segment of a multi-use trail loop through Middletown and Portland. This trail loop would connect the current end of Airline Trail in Cobalt with the Farmington Canal Heritage Trail in Cheshire, a future trail would also incorporate the Arrigoni Bridge, the Mattabesset Trolley Trail system in Middletown, and the Quinnipiac Trail in Meriden. [1]

The highway network consists of approximately 75 miles of roadways, 59.1 miles of which are owned by the Town. The remaining 15.24 miles are State owned. Rt. 66 runs through the southern portion of Town in an east-west direction. Rt. 17 overlaps Rt. 66 for 2.42 miles, and then runs north toward Glastonbury. Rt. 17A consists of Main Street, running from the Arrigoni Bridge to where it meets up with Rt. 17 (at the "Four Corners"). Rt. 9 North, in Middletown, connects to Rt. 91, which leads to Hartford and Massachusetts, or south toward New Haven. Going south on Rt. 9 brings one to the shoreline area, with connections to Rt. 1 and Interstate 95. Rt. 9 North leads to Interstate 84.

Figure 2.2 shows land cover in Portland.

[1] https://www.rivercog.org/cctloopstudy

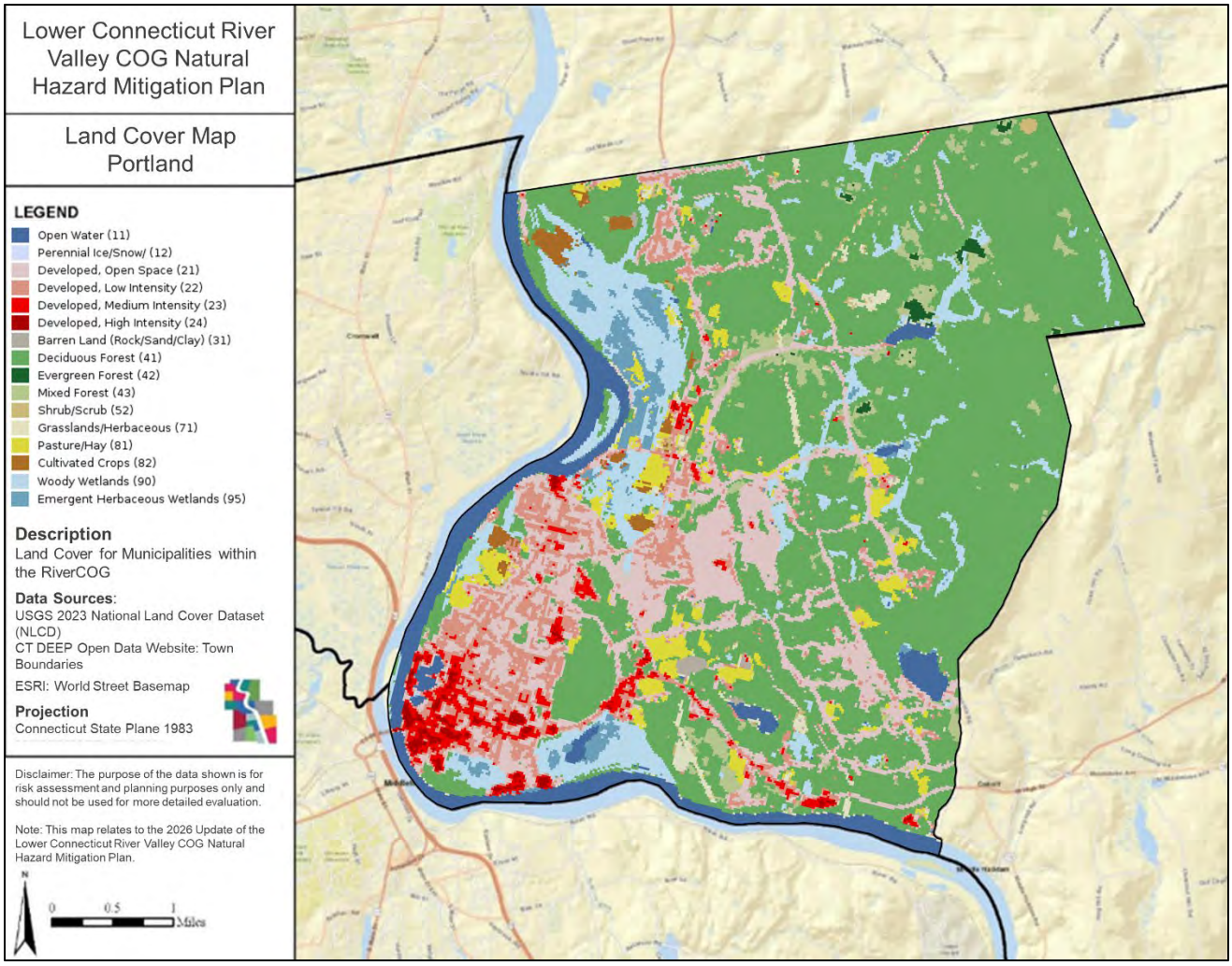


Figure 2.2. Portland Land Cover

According to the 2023 American Community Survey (ACS) the population of Portland, Connecticut is 9,421, an increase of 1.1% from 2019.[2]

Population Demographics

The population density was 403 inhabitants per square mile (433.4/km^2). There were 2,286 housing units at an average density of 463.4 per square mile (179.0/km^2). The racial makeup of the Census Designated Place (CDP) was 93.89% White, 3.22% Black or African American, 0.22% Native American, 0.54% Asian, 0.05% Pacific Islander, 0.56% from other races, and 1.52% from two or more races. Hispanic or Latino of any race were 2.29%.

Of the 2,225 households 29.8% had children under the age of 18 living with them, 51.4% were married couples living together, 11.4% had a female householder with no husband present, and

[2] https://s3-us-west-2.amazonaws.com/cerc-pdfs/2025/Portland.pdf

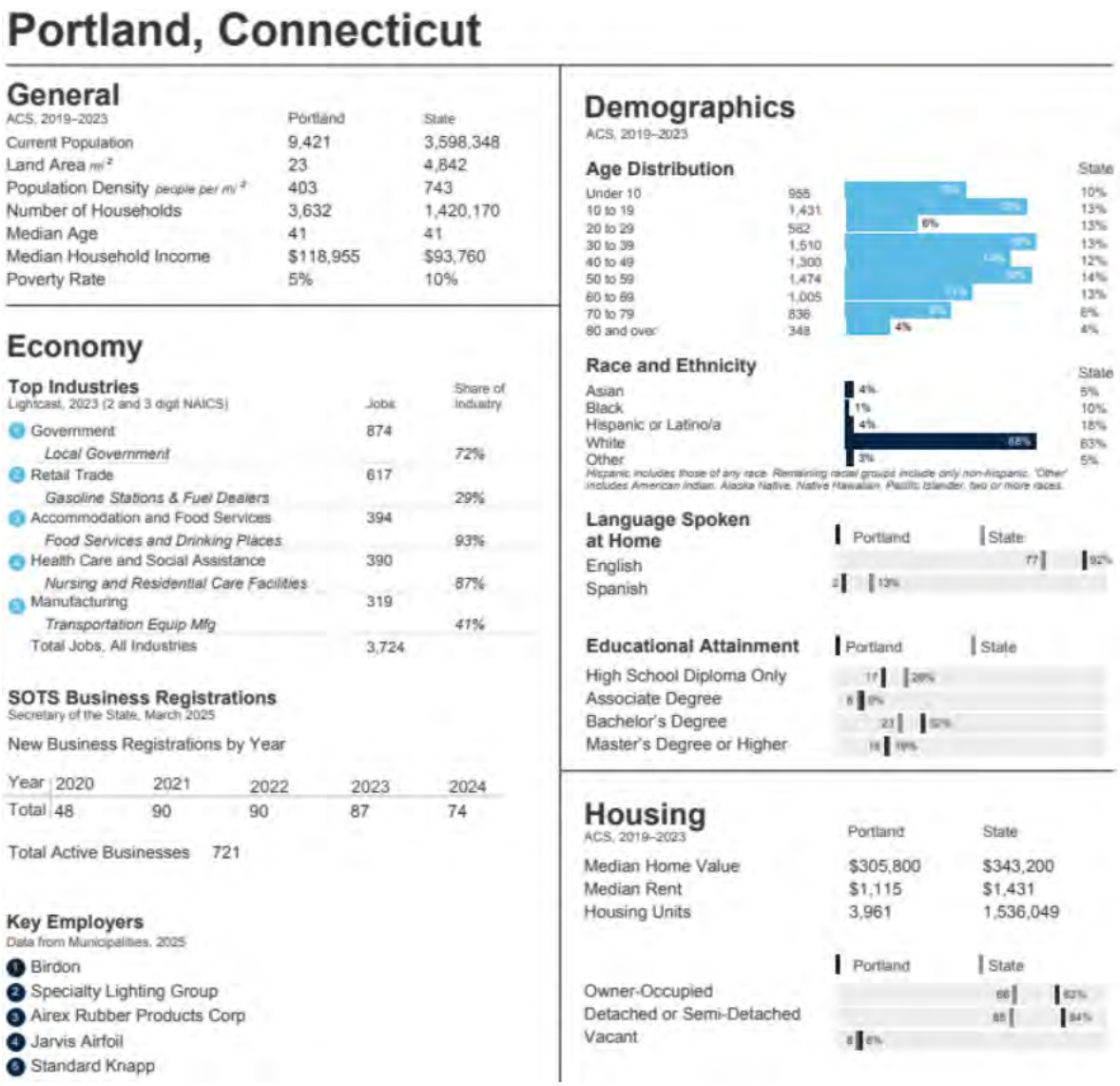
32.8% were non-families. 28.3% of households were one person and 13.0% were one person aged 65 or older. The average household size was 2.39 and the average family size was 2.94.

The age distribution was 23.7% under the age of 18, 5.1% from 18 to 24, 29.5% from 25 to 44, 23.9% from 45 to 64, and 17.9% 65 or older. The median age was 40 years. For every 100 females, there were 92.7 males. For every 100 females age 18 and over, there were 87.6 males.

The median household income was $55,949 and the median family income was $66,686. Males had a median income of $46,163 versus $30,402 for females. The per capita income for the CDP was $26,240. About 4.1% of families and 6.7% of the population were below the poverty line, including 5.8% of those under age 18 and 11.8% of those age 65 or over.

Figure 2.3 provides a demographic profile for Portland.[3]

[3] - Published on Town of Portland, CT *(Source: Connecticut Data Collaborative)*



Portland, Connecticut

General

ACS, 2019–2023

	Portland	State
Current Population	9,421	3,598,348
Land Area mi^2	23	4,842
Population Density *people per mi^2*	403	743
Number of Households	3,632	1,420,170
Median Age	41	41
Median Household Income	$118,955	$93,760
Poverty Rate	5%	10%

Economy

Top Industries
Lightcast, 2023 (2 and 3 digit NAICS)

	Jobs	Share of Industry
1 Government	874	
Local Government		72%
2 Retail Trade	617	
Gasoline Stations & Fuel Dealers		29%
3 Accommodation and Food Services	394	
Food Services and Drinking Places		93%
4 Health Care and Social Assistance	390	
Nursing and Residential Care Facilities		87%
5 Manufacturing	319	
Transportation Equip Mfg		41%
Total Jobs, All Industries	3,724	

SOTS Business Registrations
Secretary of the State, March 2025

New Business Registrations by Year

Year	2020	2021	2022	2023	2024
Total	48	90	90	87	74

Total Active Businesses 721

Key Employers
Data from Municipalities, 2025

1. Birdon
2. Specialty Lighting Group
3. Airex Rubber Products Corp
4. Jarvis Airfoil
5. Standard Knapp

Demographics

ACS, 2019–2023

Age Distribution

		State
Under 10	955	10%
10 to 19	1,431	13%
20 to 29	562	13%
30 to 39	1,510	13%
40 to 49	1,300	12%
50 to 59	1,474	14%
60 to 69	1,005	13%
70 to 79	836	6%
80 and over	348	4%

Race and Ethnicity

		State
Asian	4%	5%
Black	1%	10%
Hispanic or Latino/a	4%	18%
White	88%	63%
Other	3%	5%

Hispanic includes those of any race. Remaining racial groups include only non-Hispanic. 'Other' includes American Indian, Alaska Native, Native Hawaiian, Pacific Islander, two or more races.

Language Spoken at Home

	Portland	State
English	77	82%
Spanish	2	13%

Educational Attainment

	Portland	State
High School Diploma Only	17	28%
Associate Degree	6	9%
Bachelor's Degree	23	32%
Master's Degree or Higher	16	19%

Housing

ACS, 2019–2023

	Portland	State
Median Home Value	$305,800	$343,200
Median Rent	$1,115	$1,431
Housing Units	3,961	1,536,049

	Portland	State
Owner-Occupied	66	62%
Detached or Semi-Detached	65	64%
Vacant	8	8%

Figure 2.3. Town of Portland Demographics

2.2. Climate

Average weather data in Portland was sourced from the Weather Spark website (weatherspark.com).

In Portland, the summers are warm and humid, the winters are very cold and wet, and it is partly cloudy year-round. Over the course of the year, the temperature typically varies from 21°F to 83°F and is rarely below 6°F or above 91°F.

The warm season lasts for 3.5 months, from May 31 to September 15, with an average daily high temperature above 74°F. The hottest day of the year is July 20, with an average high of 83°F and low of 66°F. The cold season lasts for 3.3 months, from December 1 to March 11, with an average daily high temperature below 46°F. The coldest day of the year is January 29, with an average low of 21°F and high of 36°F.

The wetter season lasts 4.7 months, from March 26 to August 17, with a greater than 28% chance of a given day being a wet day. The chance of a wet day peaks at 34% on May 30. The drier season lasts 7.3 months, from August 17 to March 26. The smallest chance of a wet day is 22% on January 29. Rain falls throughout the year in Portland. The rain falls most during the 31 days centered around October 3, with an average total accumulation of 3.8 inches.

The snowy period of the year lasts for 5.0 months, from November 11 to April 9, with a sliding 31-day liquid-equivalent snowfall of at least 0.1 inches. The most snow falls during the 31 days centered around January 26, with an average total liquid-equivalent accumulation of 0.9 inches. The snowless period of the year lasts for 7.0 months, from April 9 to November 11.

The windier part of the year lasts for 5.8 months, from October 28 to April 22, with average wind speeds of more than 5.5 miles per hour. The windiest day of the year is February 26, with an average hourly wind speed of 7.1 miles per hour. The calmer time of year lasts for 6.2 months, from April 22 to October 28. The predominant average hourly wind direction in Portland varies throughout the year. The wind is most often from the north for 1.4 weeks, from March 29 to April 8, with a peak percentage of 32% on March 30. The wind is most often from the west for 2.7 weeks, from April 8 to April 27 and for 5.8 months, from October 3 to March 29.

2.3. Government Style

The Town of Portland's chief executive official is the First Selectman. The First Selectman is elected by the people every two years in odd numbered years, along with the six-member Board of Selectmen, which is responsible for fiscal management. Town meetings are held to decide special issues.

2.4. Development Trends

During the 2021 plan update, Portland reported that a new park was developed off Route 17 for passive recreation. A new development was approved on the site of the former Elmcrest Psychiatric Hospital. It has since been built as a multi-use, primarily apartment complex. It is not in the floodplain or a hazardous location. A new canoe and kayak launch was approved and construction started in 2025. There have been a number of new developments approved since 2021, most small and not in flood zones. New projects included doubling the size of the Oakwood Soccer Facility on Rt. 17. There is a new solar array (17 acres) planned at the transfer station, at Sandhill Road. The new location of Portland Fairground is in a floodplain but is less flood prone than the previous location.

Portland Fairground and the new canoe and kayak launch, while in the floodplain, are appropriate uses of flood prone property and are not anticipated to increase vulnerability. The other new developments and planned developments noted are not in areas identified as vulnerable to natural hazards. All new development will be built to NFIP, stormwater, building code, and other standards.

2.5. Town-Specific Hazard Concerns

Municipal staff reported several specific hazard concern issues, which are listed below. The information below is intended to supplement the hazard-specific analysis completed in Section 2, of Volume I of this plan. Not all hazards identified in Volume I as impacting Portland are included in this annex.

A note: To preserve the reader's ability to align RiverCOG-Level and town-level hazard identification and risk analysis, the order of the following hazards aligns with the order of hazards in Volume I. Individual towns have ranked these hazards differently. This town-level ranking can be found in Section 3.3 Hazard Risk Ranking.

2.5.1. Severe Winter Weather

Winter storms are one of the three most significant hazards for the Town of Portland. Wind and snowstorms do occur regularly; but the results are not as catastrophic as hurricanes. Roof collapse is a major concern during snow events. A major ice storm can cause trees and tree limbs to fall and result in major road closures and power outages. There were at least four roof collapses in Portland during the 2011 winter season, mostly on industrial buildings along Airline Avenue and a marina building on Indian Hill Avenue. Debris was an issue during the 2015 Winter Storm. The only large winter storms since the last plan update were two large snowfall events during the 2025/2026 winter. No significant damages were reported from those events.

2.5.2. Flooding

Flooding - Riverine and Inland Flooding

The most vulnerable areas to flooding are located within the mapped, low-lying flood plains of the Connecticut River. The Town of Portland has structures in or adjacent to flood hazard areas. The structures are primarily residential with several being seasonal as opposed to year-round.

The old fair grounds is subject to closing due to minor flooding of the Connecticut River. In addition, Main Street residential dwellings and businesses in Portland are at risk to flood damage due to an aging drainage system. Portland has experienced flooding at the Sr. Center basement due to flash flooding during high intensity short duration flooding events in 2023. The downtown area surrounding the Sr Center and other government facilities was studied as a Resilience Opportunity Area (ROAR) under the CIRCA Resilient CT program and is addressed in the 2026 mitigation strategy.

Sea Level Rise

The Connecticut River is tidally influenced in Portland. Sea level rise will have long-term consequences to tidal water surface elevations of the Connecticut River and associated wetlands. In the long term, changes to flood water surface elevations could be noticed. Researchers[4] in

[4] Robert Thorson, UConn, via presentation at the UConn Law School in April 2026

Connecticut believe that Connecticut River communities should plan for about half of the vertical sea level rise projected for Long Island Sound. In other words, the State-mandated planning threshold of 20 inches by 2050 could translate to ten inches of vertical flooding added to tidal flooding along the Connecticut River by 2050. Nevertheless, over the five-year timeframe for this plan, changes in horizontal flood extents associated with this vertical increment are not likely to be noticeable.

Flash Flooding

There have been damages to the Middle School, Senior Center, and police station due to flash flooding and undersized drainage infrastructure. Water comes up through the foundations during flash flooding. There is a kettle pond (Job's Pond) with no outlet. Water surface elevations rise with groundwater fluctuation. In 2024 the pond reached above the BFE. Twenty-three homes are at risk and have received flooding. Most are not in the FEMA mapped floodplain. The pond had to be pumped into the Connecticut River. This happened previously in the 1980s. The pond is privately owned. Route 17a floods most springs impeding traffic, between Indian Hill Avenue and Rte. 17. This is a state-owned highway.

2.5.3. Dam Breach

Dams, due to both the risk of their failure and their inability to operate effectively during flood conditions due to poor maintenance, are of concern to the Town. Dam breach and risk of inundation to dwellings and businesses in Portland are of concern during significant rain events. The Town of Portland has a total of 3 significant to high hazard dams according to the USACE National Inventory of Dams (NID). Of the three, one is listed as having high hazard potential and is owned by the Town of Portland along Reservoir Brook. The reservoir is now disconnected from the water supply system but is considered an emergency source if needed. Connecticut DEEP's dam registration database lists a total of 10 dams in Portland, including the three listed in the NID. Figure 2.4 shows the location of all dams within Portland. Moderate, Significant, and high hazard-class dams are presented in Table 2.1. A full list of dams is provided in Appendix B.

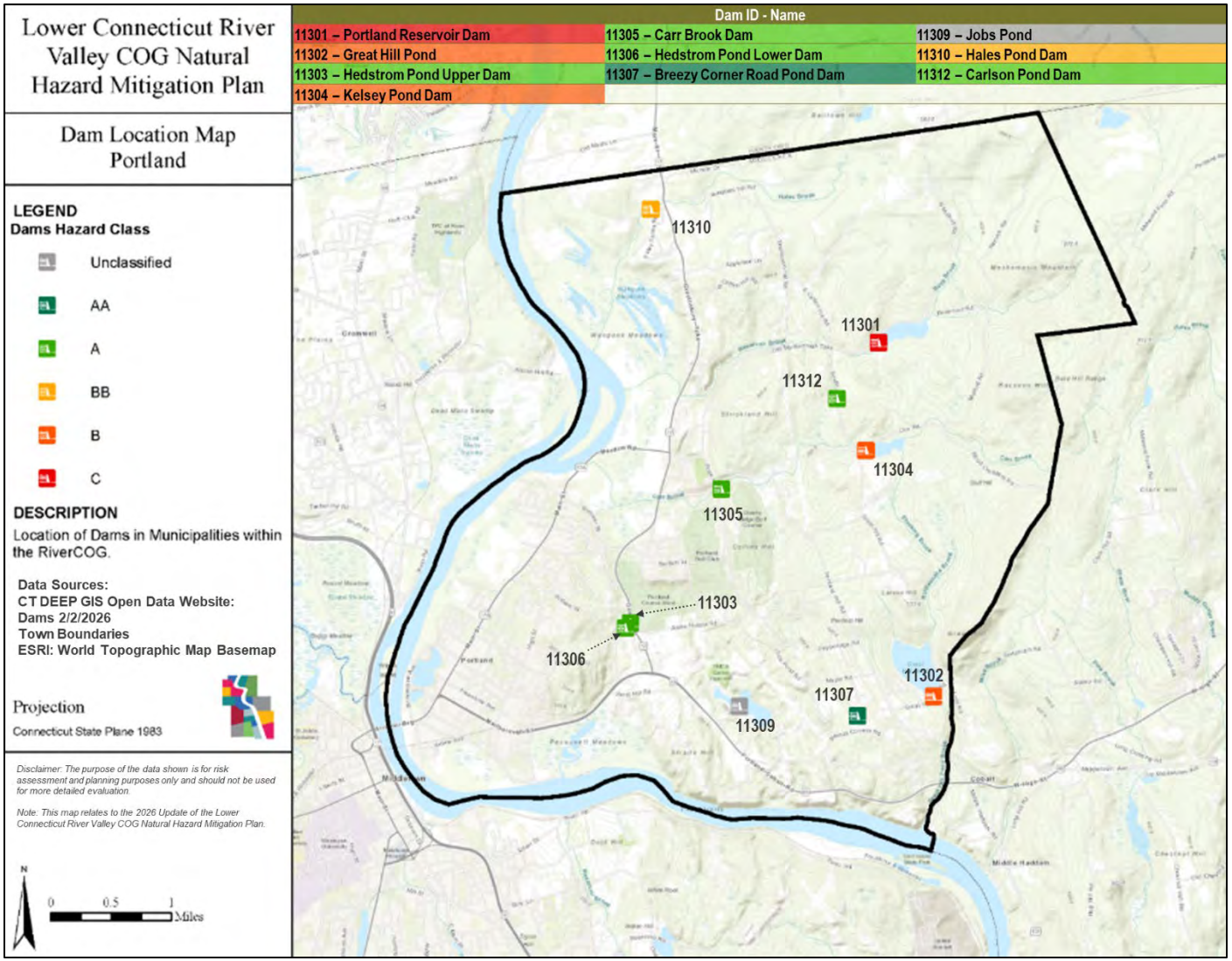


Figure 2.4. Location of Dams, Portland, CT

Table 2.1. Moderate, Significant and High Hazard Dams, Portland, CT

CT Dam #	Dam Name	Hazard Class	Owner
11310	Hales Pond Dam	BB - Moderate	George Cook & Burt Door, Jr.
11302	Great Hill Pond Dam	B - Significant	Connecticut DEEP
11304	Kelsey Pond Dam	B - Significant	McBConstance Rien
11301	Portland Reservoir Dam	C - High	Town of Portland

At the January 2026 Local Planning Team meeting the town reported the following information on dams:

- Portland Reservoir Dam has an EAP
- Uncertain if Great Hill Pond Dam has an EAP (subsequently determined it does)
- The owners of Kelsey Pond Dam are under order by CT DEEP to create an EAP
- There is a beaver dam on private property that has been breached on multiple occasions including 2022 and 2023 on Rattlesnake Brook. It is currently owned by a land trust. They are not interested in mitigation. During breaches, there is damage to Great Hill Pond Road and flooding comes close to multiple homes.

The subject plan update seeks approval under Element G of the Local Plan Review Tool, for potential HHPD eligibility. One high hazard dam is located in Portland: the Portland Reservoir Dam. This dam was introduced and described in the multi-jurisdiction document. The Emergency Action Plan (EAP) was obtained and reviewed to understand the people, critical facilities, and community assets in the dam failure inundation area.

Portland Reservoir Dam

The Town of Portland owns this dam. An EAP was prepared and accepted by DEEP. Reservoir Brook flows from the reservoir and dam. According to the EAP, a "major flood caused by a breach is estimated to inundate 73 homes, 11 businesses, and five roadways. These homes are located along Old Marlborough Turnpike, and businesses along Glastonbury Turnpike." According to the map, several side streets along Old Marlborough Turnpike are also affected. Glastonbury Turnpike is State Route 17. Route 17 is a major north-south arterial connecting Portland to Glastonbury. Closure of this road due to a dam breach would require re-routing significant traffic that uses Route 17.

2.5.4. Hurricanes and Tropical Storms

Hurricanes and Nor'easters pose the most catastrophic damage potential of any natural disaster phenomenon. Along with hurricanes comes strong winds which result in power outages and fallen trees and debris that causes blocked roads. Hurricane damage is not as localized as flooding. Generally, the effects are town wide. Wet hurricanes also create flooding problems. The threat of hurricane and severe wind is of concern. Along with severe storms come strong winds which result in power outages and fallen trees and debris that causes blocked roads.

2.5.5. Tornado

Although relatively rare in CT, the threat of tornadoes could cause significant damage to life and property in the Town of Portland. Overall, residents throughout Portland are equally susceptible to the chance of a tornado occurrence. However, a strong tornado would likely cause more damage in the more densely developed areas.

2.5.6. Earthquakes

The entire town could be affected by an earthquake in this region; however, impacts could vary locally. In Portland and the surrounding region, recorded impacts have been limited to shaking to the extent that things were knocked off shelves and people were alarmed. Structural damage has been limited to building components such as chimneys and buildings in poor repair; but failing structures have caused property damage in nearby towns. Anything higher than a "minor" earthquake is very unlikely in Portland; however, the potential does exist. Most structures in Portland are wood framed, which perform better in earthquakes.

2.5.7. Drought and Wildfire

Portland is small enough that a drought would most likely be town wide. When they do occur, the most at-risk populations are those residents with shallow wells. Dangerously low water company reservoirs put everyone on those systems at risk. Droughts can also exacerbate wildfire conditions. Municipalities and water companies often ask for the public's help in conserving water during dry periods to prevent the depletion of water supplies. The threat of wildfires for people living near wild land areas or using recreational facilities in wilderness areas is real. Dry conditions at various times of the year increase the potential for wildfires.

One area of concern is the potential for wildfire in large forest tracks. According to the State of Connecticut Department of Energy and Environmental Protection (DEEP), Connecticut traditionally experiences high forest fire danger during the Spring from mid-March through May. In Portland and East Hampton is the Meshomasic State Forest, encompassing 9,118 acres. Dry conditions at various times of the year increase the potential for wildfires. Although there have been no major wildfire activities since 2021 in Portland, Neighboring Middletown recently experience the Lamentation Mountain wildfire, raising awareness in the area. Portland does not have a fire pond and has added one hydrant since the last plan update. Water can be drawn from the Connecticut River for fire suppression.

2.5.8. Extreme Temperature

Extreme cold spells do occur periodically, typically between the months of December and March. Although cold temperatures are normal during the winter months, occasionally temperatures can drop below freezing for extended periods, sometimes as low as 0ºF. Low-income housing residents and the elderly in homes without adequate heat sources are particularly vulnerable. Town officials have planned and continue to update the accommodations of shelters. One classification of

shelters is warming centers, to be used by those that either have insufficient heat sources or for times of power outages.

Extreme heat and heat waves are a possibility during the summer months, particularly between June and August. A heat wave in Connecticut defined as a period where the high temperature reaches at least 90ºF for three consecutive days. The elderly in homes without air conditioning are vulnerable. Town officials have identified cooling centers for those desiring a place to go to cool off.

2.5.9. Aquatic Invasive Species

Hydrilla is an issue for boaters on the Connecticut River. Portland has launchable boats for maintenance, since there is potential for interference with emergency rescue operations. Great Hill Pond was treated for Fanwort and Curleyleaf Pondweed in 2024 and 2025.

2.5.10. Other Hazards

Emergency Access

Flooding on Rte. 17 and Tyron Street in the northwest corner of town, in floodway, causes a diversion of traffic into Glastonbury to get around. The Hartford Yacht Club and Glastonbury Yacht Club are impacted along with some residential homes along the street.

3. Hazard Risk

3.1. Historical Events

Table 3.1 includes Presidentially declared disasters from 2003 to present that have impacted Portland, along with damage assessments. There have been no Presidential disaster declarations since the adoption of the 2021 plan update.

Table 3.1. Portland Natural Hazard Events

Type of Event	Date	Preliminary Damage Assessment
Snow Event (DR-3176)	03/11/2003	$31,394.99
Snow Event (DR-3200)	02/17/2005	$44,432.19
Wind - Hurricane Event (DR-4023)	02/09/2011	$97,426.64
Snow Event (DR-4046)	11/17/2011	$1,070,189.82
Wind – Hurricane Event (DR-4046)	11/17/2011	$269,003.45
Wind - Hurricane Event (DR-4087)	10/30/2012	$27,076.79

Type of Event	Date	Preliminary Damage Assessment
Severe Storm - Snow Event (DR-4106)	03/21/2013	$58,265.60
Tropical Storm Isaias (DR-4580)	1/12/2021	$261,440.55

3.2. Recent Events

There have been only two major disaster events since the 2014 plan update.

- Portland was reportedly lucky compared to neighboring communities during the September of 2018 flooding event and received only minimal damage.
- There were debris issues during the 2013 winter storm and Portland received FEMA Public Assistance for debris removal.

Public assistance is often provided by FEMA after Presidentially declared disasters. Funding is typically for extraordinary expenses incurred by the community such as public safety and public works overtime, certain equipment and contracted resources and debris cleanup.

Total PA reimbursements to the community were as follows:

- Flood Events: $0 ($0 annually)
- Hurricane (Wind) Events: $385,945 ($14,294 annually)
- Winter (Snow) Storm Events: $403,096 ($14,929 annually)

Table 3.2 and Table 3.4 list PA reimbursements in Portland.

Table 3.2. Hurricane Wind Event PA Reimbursements, Portland, CT

Disaster #	4023	4087	4580
Incident Dates	Aug-Sept 2011	Oct-Nov 2012	Jan 2021
Declaration	09/02/2011	10/30/2012	1/12/2021
Entity	FEMA PA Reimbursement	FEMA PA Reimbursement	FEMA PA Reimbursement
State	$		
Municipal	$		
Nonprofit	$0		
Total	$97,427	$27,077	$261,441
Annualized	$3,608	$1,003	$9,683

Table 3.3. Winter Storm PA Reimbursements, Portland, CT

Disaster #	3176	3200	4046	4106
Incident Dates	Feb 2003	Jan 2005	Oct 2011	Feb 2013
Declaration	3/11/03	2/17/05	11/17/2011	3/21/13
Entity	FEMA PA Reimbursement	FEMA PA Reimbursement	FEMA PA Reimbursement	FEMA PA Reimbursement
State	$	$		$
Municipal	$	$		$
Nonprofit	$0	$0		$0
Total	$31,395	$44,432	$269,003	$58,266
Annualized	**$1,163**	**$1,646**	**$9,963**	**$2,158**

3.3. Hazard Risk Ranking

Portland participated in the regional hazard ranking conducted by the Hazard Mitigation Planning Team. Table 3.5 shows the scoring for the various ranking parameters that were used. The probability of each hazard is determined by assigning a level, from unlikely to highly likely, based on the likelihood of occurrence from historical data. The total impact value includes the affected area, primary impact, and secondary impact levels of each hazard. Level of Community Concern reflects the perceived risk of each hazard as indicated by respondents to question 6 of the community survey. This question asks, "How concerned are you about each of the following hazards impacting your home, business, community, or organization?" and received 157 responses.

Each of these five criteria are assigned weights, as well as point values for each of their responses. Each level's score is reflected in the matrix. The total score for each hazard is the probability score multiplied by its importance factor times the sum of the impact level scores multiplied by their importance factors. Based on this total score, the hazards are separated into three categories based on the hazard level they pose to the communities: Significant, Moderate, Limited. Table 3.5. Hazard Ranking Parameters provides a summary of the categories used to rank the hazards and their weighted values for the Composite Hazard Risk Index.

Table 3.4. Hazard Ranking Parameters

Criteria	Weight	1 Point	2 Points	3 Points	4 Points
Hazard Probability	2.0	**Unlikely** Less than 1% probability in next 100 years or has a recurrence interval of	**Somewhat Likely** Between 1 and 10% probability in next year or has a	**Likely** Between 10 and 100% probability in next year or has a recurrence	**Highly Likely** Near 100% probability in next year or happens every year.

Criteria	Weight	1 Point	2 Points	3 Points	4 Points
		greater than every 100 years.	recurrence interval of 11 to 100 years.	interval of 10 years or less	
Impact – Affected Area	0.8	**Isolated** Less than 1% of area affected	**Small** Between 1 and 10% of area affected	**Medium** Between 10 and 50% of area affected	**Large** Between 50 and 100% of area affected
Impact – Primary Impact	0.7	**Negligible** 1 to 10% of people or property	**Limited** 10% to 25% of people or property	**Critical** 25 to 50% of people or property	**Catastrophic** >50% of people or property
Impact – Secondary Impact	0.5	**Negligible** No loss of function, downtime, and/or evacuations	**Limited** Minimal loss of function, downtime, and/or evacuations	**Moderate** Some loss of function, downtime, and/or evacuations	**High** Major loss of function, downtime, and/or evacuations
Level of Community Concern	1.0	**Low Concern**	**Moderate Concern**	**High Concern**	-

The hazard risk ranking generated from this exercise, along with consideration of available data, was used to prioritize the level of effort assigned to further analysis of each hazard in the vulnerability analysis and lost estimation sections. All the participating communities agreed upon the results of the hazard ranking for the overall region. Based on the results of the exercise, the hazards were ranked as follows in Table 3.6. Hazard Ranking Parameters. Portland endorsed the ranking as accurate for the Town.

Table 3.5. Summary of Potential Hazard Impacts.

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
Aquatic Invasive Species	Semi-quantitative, supplemented by state and municipal figures, recommend survey	Highly Likely - 4	Large - 4	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant
Terrestrial Invasive Species	Semi-quantitative, supplemented by state and municipal figures, recommend survey	Highly Likely - 4	Large - 4	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant
Tree Infestation	Semi-quantitative, supplemented by state and municipal figures, recommend survey	Highly Likely - 4	Large - 4	Critical - 3	Moderate - 3	High Concern - 3	17.8	Significant
Hurricanes	Hazus for wind	Likely - 3	Large - 4	Critical - 3	Moderate - 3	High Concern - 3	15.8	Significant
Winter Storms (Snow, Ice, Wind, including Nor'easters)	Historic analysis for probability and annualized damages	Highly Likely - 4	Large - 4	Negligible - 1	Moderate - 3	Moderate Concern - 2	15.4	Significant

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
Flood – Riverine and Inland Flooding (Riverine, Flash, Drainage)	Hazus, SLR Overlay, FS Model Overlay, Historic data and damages for additional probability	Likely - 3	Medium - 3	Limited - 2	Moderate - 3	High Concern - 3	14.3	Significant
Extreme Heat and Cold	Qualitative based on historic	Likely - 3	**Large - 4**	Negligible - 1	Limited - 2	High Concern - 3	13.9	Moderate
Severe Weather (thunderstorms, downbursts, hail, lightning)	Historic analysis for probability and annualized damages	**Highly Likely - 4**	Small - 2	Negligible - 1	Limited - 2	Moderate Concern - 2	13.3	Moderate
Wildfire	Historic analysis for probability and annualized damages	Likely - 3	Small - 2	Critical - 3	Moderate - 3	Moderate Concern - 2	13.2	Moderate
Drought	Historic analysis for probability and annualized damages - some qualitative	Likely - 3	Medium - 3	Negligible - 1	Limited - 2	High Concern - 3	13.1	Moderate

Hazard	Data Sources	Probability (2)	Impact: Affected Area (0.8)	Impact: Primary Impact (0.7)	Impact: Secondary Impacts (0.5)	Level of Community Concern (1)	Total Score	Hazard Planning Consideration
Tornadoes	Historic analysis for probability and annualized damages - pulling in surrounding counties	Likely - 3	Isolated - 1	**Catastrophic - 4**	Limited - 2	Moderate Concern - 2	12.6	Moderate
Earthquakes	Hazus, 3 scenarios	Somewhat Likely - 2	Small - 2	**Catastrophic - 4**	**High - 4**	Low Concern - 1	11.4	Limited
Flooding from Dam Failure	Dam Inundation areas, Historic analysis for probability and annualized damages	Unlikely - 1	Small - 2	Limited - 2	Moderate - 3	Moderate Concern - 2	8.5	Limited

3.3.1. National Flood Insurance Program (NFIP) Participation

Portland has participated in the NFIP since 1978. There are currently 51 active policies in place, providing just under $10 million in coverage. Total losses paid have equaled just over $1.3 million.

Substantial improvements and substantial damages occur infrequently in town. All new construction and substantial improvements located within the 100-year floodplain must conform to minimum elevation requirements and construction standards so as to minimize flood damage. Substantial improvements are defined as any combination of improvements, the cost of which equals or exceeds 50% of the market value before improvement started. The floodplain manager (building official) is responsible for administering the substantial improvement and substantial damage provisions codified in the floodplain management regulations. This is typically done in close coordination with the land use office. In the event of a major disaster, resulting in a number of substantially damaged buildings that would overwhelm town staff, the town would reach out to the state NFIP coordinator's office for assistance in training additional staff.

Repetitive Loss Property Detail

There are six (6) Repetitive Loss properties in Portland. These properties have cumulatively experienced 18 claims. There is one Severe Repetitive Loss property. It has had five claims totaling more than $400,000 in damages. The Town may be interested in acquiring that property for open space if funding is available and the owner is willing to sell. These properties are located along the CT River and Inland streams (all residential).

4. Capability Assessment

This section discusses capabilities and operational procedures that Portland undertakes that contribute to or have the potential to contribute to hazard mitigation. It also notes deficiencies in those capabilities that could be addressed to strengthen resilience.

4.1. Critical Facilities

Public and private utility facilities are vital to maintaining or restoring normal services to areas of town before, during, and after a natural disaster.

Figure 4.1 shows the location of critical facilities in Portland which are identified at the regional level.

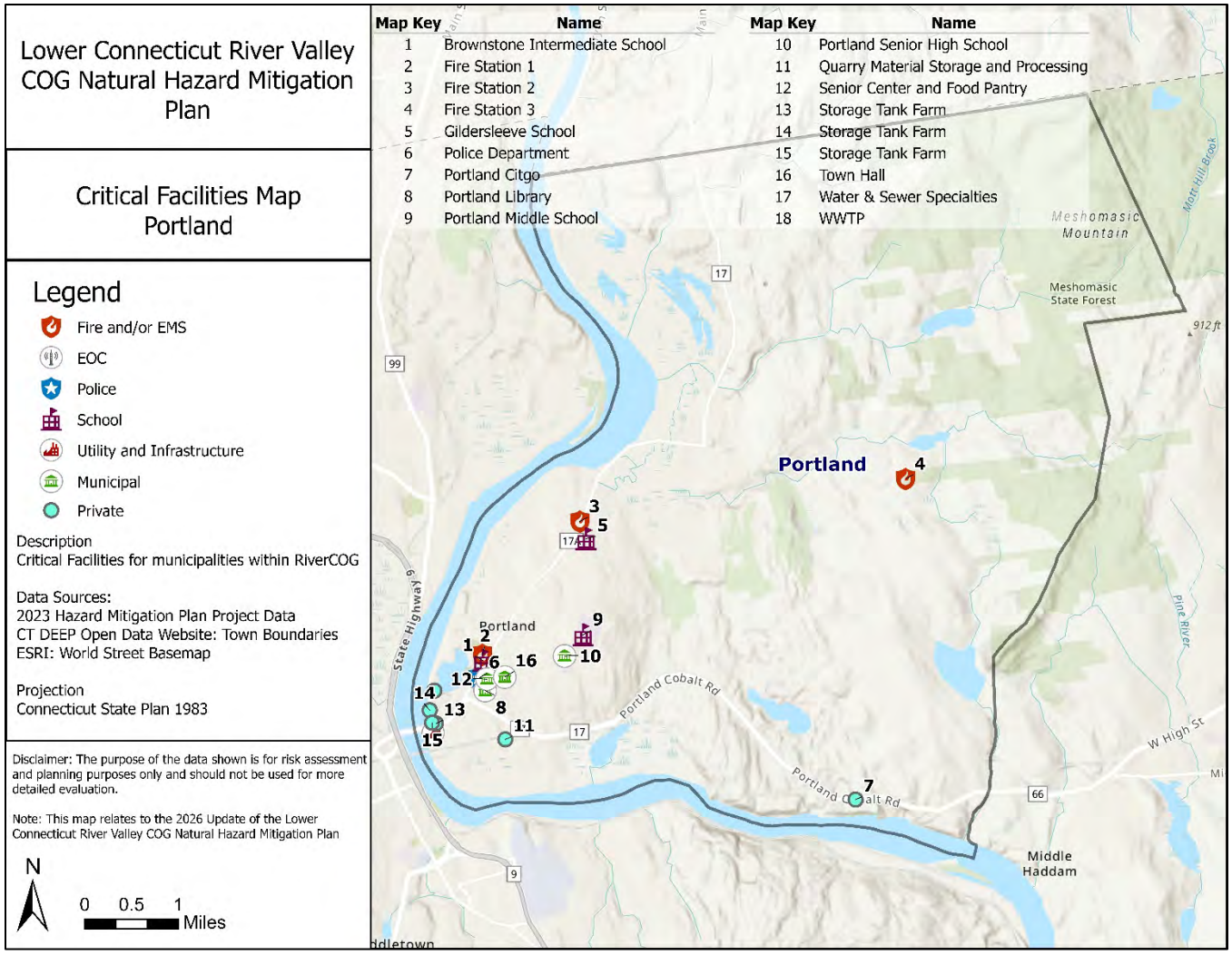


Figure 4.1. Location of Critical Facilities in Portland

* Municipal solid waste, care-related facilities, and a gas station with a generator are included in the State list of critical facilities. They are mapped here but were not identified as critical facilities by the town in the following table.

Table 4.1 lists critical facilities identified by the Town.

Table 4.1. Critical Facilities

Facility	Type	Address	Flood Zone	Generator	Notes
Town Hall	Municipal	33 East Main Street	No	X	
Senior Center and Food Pantry	Municipal	7 Waverly Ave	No	X	
Police Department	EMS/Municipal	265 Main Street	No	X	
Portland Library	Municipal	20 Freestone Ave	No		Library is a warming center

Facility	Type	Address	Flood Zone	Generator	Notes
					and needs a generator
Fire Station 1	EMS	7 Middlesex Ave	No	X	
Fire Station 2	EMS	594 Main Street	No	X	
Fire Station 3	EMS	169 Great Hill Road	No	X	
Gildersleeve School	Municipal	565 Main Street	No		Street number changed
Portland Middle School	Municipal	93 High Street	No		
Portland Sr. High School	Municipal	63 High Street	No	X	
Brownstone Intermediate School	Municipal	314 Main Street	No		
Portland Citgo	Private	1633 Portland Cobalt Road	No	X	Gas Station with Generator
Storage Tank Farm	Private	22 Brownstone Ave	500-Year (0.2 PCT Annual Chance Flood Hazard)		POL Terminal; B&B
Storage Tank Farm	Private	56 Brownstone Ave	500-Year (0.2 PCT Annual Chance Flood Hazard)		POL Terminal; Safety-Kleen Systems, Inc.
Storage Tank Farm	Private	28 Brownstone Ave	500-Year (0.2 PCT Annual Chance Flood Hazard)		POL Terminal; Baillargeon
Quarry Material Storage and Processing	Private	65 Airline Ave	No		Tilcon Inc.
Water & Sewer Specialties	Utility	131 Brownstone Ave	500-Year (0.2 PCT Annual Chance Flood Hazard)	X	Water Utility Company
Pumping Station	Municipal	Bartlett Street	Zone AE, 100-year, and 500-year/Partial 0.2 PCT Annual Chance Flood Hazard	X	Water System Pumping Station
Reservoir Water Treatment Plant	Municipal	336 Old Marlborough Turnpike			

Facility	Type	Address	Flood Zone	Generator	Notes
Future New Town Well	Municipal	New Town Park on 301 Gospel Lane			

The following changes in critical facilities since the last plan or items deemed notable by the local planning team are below:

- During the 2021 plan update it was noted that the Library and Senior Center both needed generators. Both facilities now have them.
- The Police Department now has a generator.
- A previously listed storage facility at 248 Brownstone Avenue has been razed and is now vacant land. It has been removed.
- Fire Company 3 has a new generator, Companies 1 & 2 need new generators.
- Two new Critical Facilities were added to the list:
    - Regional Water Treatment Plan on Old Marlborough Turnpike
    - Future new town wells at New Town Park, 301 Gospel Lane

4.2. Municipal Capabilities

The Town of Portland has a variety of natural hazard mitigation capabilities, including local regulations and ordinances, operational protocols, and emergency response capabilities. Following is a list of some highlighted capabilities identified by municipal staff.

- Drills are conducted regularly to improve the ability of Portland residents to prepare and respond to approaching severe weather.
- Debris – A location has been selected for debris management.
- Red Technologies is a large waste transportation and disposal company located in Portland. They use the rail bridge across the CT River to move waste and should be considered a valuable stakeholder in the planning process as they could play a key role post-disaster.
- The tree infestation problem is not as bad in Portland as in more rural neighboring communities.
- Winter – Portland has shifted since the last plan update, to treating with salt only and no sand which is resulting in fewer drainage issues
- Public Works has a program that cleans 1500+catch basins each year.
- Fire – 46% of Portland has public water supply.
    - There are 256 fire hydrants
- Portland owns the old brownstone quarry, which provides adequate water for pumping for fire suppression.

- There is one subdivision with its own 10,000-gallon pumping tank.
- There is one dry hydrant system off Route 66 by Butler.
- Have mutual aid compact with neighboring communities for three levels of tankers and up to 6000 gallons.
- New ordinance that requires pumping tanks in areas with no hydrants for over XX number of buildings.
- Annual tree removal budget is still $25k.

4.2.1. Regulations and Ordinances

The Town of Portland participates in the National Flood Insurance Program (NFIP). The Town of Portland uses the State Building Code for code compliance to ensure safe structures which withstand 110 mph wind speed and appropriate snow load. Portland has a stormwater management plan, dated 2017. Portland follows their Plan of Conservation and Development for managing infrastructure and open space and commercial and industrial development.

4.2.2. Capital Improvements

Capital Improvement Plan (CIP) addresses municipal improvements including: rights-of-way, land, housing, infrastructure, or utilities for public purposes. Mitigation actions from this NHMP should be included in the CIP. Larger items such as bridge and culvert replacements and elevation of roads are included in the 5-year CIP. The CIP should be reviewed often so that it can include new mitigation action items each time the NHMP is updated. This is a good way for the town to prioritize mitigation items. Use Capital Improvement Program to set aside funds for infrastructure improvements to reduce loss of life and property during natural hazard events.

4.2.3. Plan Integration with Other Planning Mechanisms

The town of Portland uses the mitigation plan to inform its 5-year capital improvement plan and associated annual budgets. Portland staff reported that the plan has not been formally incorporated into other planning documents. There is new legislation (P.A. 25-33) that now requires cities and towns to incorporate climate vulnerability (specifically including flooding) and resilience strategies into Plans of Conservation and Development (POCDs). Portland plans to comply with that new requirement during the next POCD Update. Further, communities are now required to develop and maintain affordable housing plans. The mitigation plan will help inform siting criteria within that plan.

4.2.4. Outreach, Education, Communication, and Warnings

Municipal responsibility to the public:

- People in vulnerable areas should monitor Hazard Warnings.
- People with structures in vulnerable areas; specifically, in floodplains should have a flood evacuation plan and participate in the National Flood Insurance Program. They should flood proof their buildings
- Portland will post storm info on its websites including proper preparations and warnings. DPH and DEMHS seasonally post info on their websites.

- Portland uses the mass notification system Everbridge to manage communications with the public during disasters.

4.2.5. Other Capabilities

Table 4.2, Table 4.3, and Table 4.4 list legal, regulatory, technical, administrative and financial capabilities that support hazard mitigation.

Table 4.2. Legal and Regulatory Capability

Table 4.2.a. Codes, Ordinances & Requirements

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Building Code	Yes	Yes	No	Yes	All municipalities enforce the State Building Code
Zoning Code	Yes	No	No	No	
Subdivisions	Yes	No	No	No	
Post Disaster Recovery	No - addressed in EOP	No	No	No	
Real Estate Disclosure	Yes	No	No	Yes	State requirement
Growth Management	No	No	No	No	
Site Plan Review	Yes	No	No	No	
Special Purpose (flood management, critical areas)	Yes	Yes	No	Yes	In addition to the NFIP there are flood zone regulations distinct from NFIP - section 7.4 of zoning regs

Table 4.2.b. Planning Documents

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
POCD - Being updated currently	Yes	No	No	Yes	Current
Floodplain or Basin Plan	No	No	No	No	
Stormwater Plan	Yes	No	No	Yes	MS4 Community
Capital Improvement Plan	Yes	No	No	No	
Habitat Conservation Plan	No	No	No	No	

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Economic Development Plan - POCD	Yes	No	No	No	Regional Comprehensive Economic Development Strategy
Emergency Response Plan	Yes	No	No	Yes	LEOP templates provided by DEMHS
Shoreline Management Plan	No	No	No	No	
Post Disaster Recovery Plan	No - elements in EOP	No	No	Yes	LEOP templates provided by DEMHS

Table 4.3. Administrative and Technical Capability

Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Planning & Zoning
Engineers or professionals trained in building or infrastructure construction practices	Yes	Public Works
Planners or engineers with an understanding of natural hazards	Yes	Planning & Zoning, Public Works, Support from RiverCOG
Staff with training in benefit/cost analysis	No	
Floodplain manager	Yes	Building Official
Surveyors	No	Contracted as needed.
Personnel skilled or trained in GIS applications	Yes	RiverCOG
Emergency manager	Yes	Emergency Management
Grant writers	Yes	Municipal Staff

Table 4.4. Financial Resources

Financial Resources	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	Yes
Withhold Public Expenditures in Hazard-Prone Areas	Yes (State)

Financial Resources	Accessible or Eligible to Use?
State Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Other	N/A

5. Hazard Mitigation Action Plan

This section presents the progress made since the 2021 action plan and establishes new goals, objectives and actions identified for the 2026-2030 planning horizon.

5.1. Previous Mitigation Actions Disposition

During the process of developing the 2021 Portland Hazard Mitigation Plan, several hazard mitigation actions were identified to be pursued during the five-year planning horizon that followed. Table 5.1 presents the actions listed in that document, and the status of those actions.

Table 5.1. Status of Previous Mitigation Strategies and Actions

Action	Description	Status	Notes
01	Install Emergency Generators Install emergency generators for all critical facilities and essential town facilities including: Glastonbury Turnpike Water Supply Well Bartlett Street Water Pumping Station - done Portland Library - still needed Portland Senior Center - done Portland Transfer Station - remove Brownstone Intermediate School Valley View School Gildersleeve School	Carry Forward	Senior Center has been completed. Fire Company 1 and 2 need new generators installed.
02	Develop GIS Application Acquire asset management technology and develop a GIS application to assist personnel to capture damages during a disaster for future public assistance or mitigation grant applications.	Completed	
03	Engineering Studies to Assess Flooding Mitigation Options Engineering study needed to determine mitigation options and costs to accomplish drainage improvement throughout Portland, as follows: • Culvert east of Thompson Hill Road • Portland Police Department • Portland Senior Center • Old Marlborough Turnpike culverts • Rose Hill Road	Carry Forward	

Action	Description	Status	Notes
	• Collins Hill Road • Sage Hollow Road • Cox Road, east section • Main Street near intersection with Williams Street • Drainage system at YMCA Camp Ingersoll • 4 Freestone Avenue • 5 Edwards Road • Watercourse between Williams Street and Main Street • Watercourse between High School detention basin and Redberry Lane • 314 Main Street- Brown Intermediate School • Watercourse between Scenic Drive and Main Street • Main Street from Middlesex Avenue to bridge approach • Strongs Avenue near Route 17A • Isinglass Hill Road Bridge on Hales Brook • Old Marlborough Turnpike/East Cotton Hill Road on Reservoir Brook • Culverts on Cox Road • Cox Road Bridge by Kelsey Pond • Penfield Hill Road by Cox Road • Rose Hill Bridge on Carr Brook • Riverview Street near Yankee Boat Yard • Riverview Street at Grove Street • Bartlett Street at Route 17 • Strickland Street at Route 17 • Indian Hill Avenue at FC#2 picnic grounds • Tryon Street on the Connecticut River • Access Road to Coe Ave Sewer Pump Station • Route 17A between Indian Hill Avenue and Route 17 • Riverview Street • Extension Street		
04	Ice Jam Planning Develop and implement a plan to prevent roads flooding throughout the town due to ice jams	Deleted	
05	Earthquake Planning	Carry Forward	

Action	Description	Status	Notes
	Develop an Earthquake Recovery Plan to repair broken water and sewer lines, and building or road damage in the event of a large earthquake		
06	Wildfire Planning Develop and implement a wildfire protection plan	Carry Forward	
07	Install Water Storage Tanks Install water storage tanks adjacent to state forest to ensure ample water supply during a large fire	Deleted	To be replaced with dry hydrant strategy.
08	Mitigate Severe Repetitive Loss/Repetitive Loss Properties Research grant options to acquire Severe Repetitive Loss and Repetitive Loss properties and convert to open space and implement if possible.	Carry Forward	

5.2. Updated Mitigation Goals, Objectives, and Strategies

As noted in Section 3 of Volume 1, all the RiverCOG participating communities, including Portland, participated in setting regional goals and objectives. Portland has confirmed these goals and objectives valid for the Town's annex. The three goals and objectives are as follows:

Goal 1: Promote implementation of sound flood management and other natural hazard mitigation principles on a regional and local level. Note: Covers future development through policy, planning, regulation, emergency services, and environmental strategies.

- **Objective for Goal 1:** To promote the development, improvement and implementation of programs, policies, regulations, and emergency services that result in the reduction of long-term risks to life and property.

Goal 2: Implementation of effective natural hazard mitigation projects at the regional and local level. Note: Covers infrastructure and building related projects – the existing built environment.

- **Objective for Goal 2:** To enhance the ability of RiverCOG, other regional entities, and local communities to reduce or eliminate risks to life and property from natural hazards through cost-effective hazard mitigation projects, including avoidance.

Goal 3: Increase research, planning and outreach activities for the mitigation of natural hazards on a regional and local level. Note: Covers the people component of mitigation via outreach and education, and integration with other planning and continuous improvement through increased research.

- **Objective for Goal 3:** To increase general awareness of the region's natural hazards and encourage State agencies, local communities, and the public to be proactive in taking actions to reduce long-term risk to life and property.

The local planning team of Portland reviewed these goals and objectives during meetings in June of 2025 and acknowledged that they are still aligned with the priorities of the town.

5.2.1. Prioritization of Mitigation Strategies

In considering which projects, processes, and other measures to undertake in the upcoming plan period, municipal and regional officials evaluated the need to address problems and vulnerabilities in their communities against the communities' resources and capabilities. To prioritize mitigation strategies, a set of criteria commonly used by public administration officials and planners was applied to each proposed strategy. The method, called STAPLEE, is outlined in FEMA planning documents such as Developing the Mitigation Plan (FEMA 386-3) and Using Benefit-Cost Review in Mitigation Planning (FEMA 386-5). STAPLEE stands for the "Social, Technical, Administrative, Political, Legal, Economic, and Environmental" criteria for making planning decisions. Benefit-cost review was emphasized in the prioritization process. Criteria were divided into potential benefits (pros) and potential costs (cons) for each mitigation strategy. The following questions were asked about the proposed mitigation strategies:

Social:

- Benefits: Is the proposed strategy socially acceptable to the community?
- Costs: Are there any equity issues involved that would mean that one segment of the community could be treated unfairly? Will the action disrupt established neighborhoods, break up voting districts, or cause the relocation of lower-income people? Is the action compatible with present and future community values?

Technical:

- Benefits: Will the proposed strategy work? Will it reduce losses in the long term with minimal secondary impacts?
- Costs: Is the action technically feasible? Will it create more problems than it will solve? Does it solve the problem or only a symptom?

Administrative:

- Benefits: Does the project make it easier for the community to administrate future mitigation or emergency response actions?
- Costs: Does the community have the capability (staff, technical experts, and/or funding) to implement the action, or can it be readily obtained? Can the community perform the necessary maintenance? Can the project be accomplished in a timely manner?

Political:

- Benefits: Is the strategy politically beneficial? Is there public support both to implement and maintain the project? Is there a local champion willing to see the project to completion? Can the mitigation objectives be accomplished at the lowest cost to the community (grants, etc.)?
- Costs: Have political leaders participated in the planning process? Do project stakeholders support the project enough to ensure success? Have the stakeholders been offered the opportunity to participate in the planning process?

Legal:

- Benefits: Is there a technical, scientific, or legal basis for the mitigation action? Are the proper laws, ordinances, and resolutions in place to implement the action?
- Costs: Does the community have the authority to implement the proposed action? Are there any potential legal consequences? Will the community be liable for the actions or support of actions or for lack of action? Is the action likely to be challenged by stakeholders who may be negatively affected?

Economic:

- Benefits: Are there currently sources of funds that can be used to implement the action? What benefits will the action provide? Does the action contribute to community goals such as capital improvements or economic development?

Costs: Does the cost seem reasonable for the size of the problem and the likely benefits? What burden will be placed on the tax base or local economy to implement this action? What proposed actions should be considered but be tabled for implementation until outside sources of funding are available?

Each proposed mitigation strategy presented in this plan was evaluated and quantitatively assigned a "benefit" score and a "cost" score for each of the seven STAPLEE criteria as outlined below:

- For potential benefits, a score of "1" was assigned if the project will have a beneficial effect for that criterion or a "0" if the project would have a negligible effect or if the questions were not applicable to the strategy.
- For potential costs, a score of "-1" was assigned if the project would have an unfavorable impact for that criterion or a "0" if the project would have a negligible impact or if the questions were not applicable to the strategy.
- Technical and Economic criteria were double weighted (multiplied by two) in the final sum of scores.
- The total benefit score and cost score for each mitigation strategy was summed to determine each strategy's final STAPLEE score.

Although a community may implement recommendations as prioritized by the STAPLEE method, an additional consideration is important for those recommendations that may be funded under the FEMA mitigation grant programs. To receive federal funding, the mitigation action must have a benefit-cost ratio (BCR) that exceeds a value of 1.0. Calculation of the BCR is conducted using FEMA's Benefit Cost Analysis

(BCA) toolkit. The calculation method may be complex and vary with the mitigation action of interest. Calculations are dependent on detailed information such as property value appraisals, design and construction costs for structural projects, and tabulations of previous damages or NFIP claims. The BCR scoring system used is outlined in Table 5.2.

Table 5.2. BCR Scoring System

Scoring	Benefits	Costs
Low: 0-1 points	Few would benefit; the impacts being addressed are not severe; benefits may be short term	Likely to be done by existing personnel with little impact on budget; not complicated to accomplish. Costs to implement is likely to be under $10,000.
Medium: 2-3 points	Benefits may be felt by many in the community; the action may solve a problem or otherwise benefit the community for several years	May need additional funding or studies; may require change in practices; costs to implement may be between $10,000 and $100,000
High: 4-5 points	Benefits would accrue to many in the community; benefits may accrue to the most vulnerable or those not able to recover on their own; benefits would be long term and may permanently protect from damages	Likely to cost over $100,000 and require obtaining funding outside of operating budget; complicated, lengthy process to implement

The STAPLEE method accounts for cost-benefit considerations both directly (through the "Economic" category) and indirectly (through general consideration of costs and benefits of actions). Additionally, the range of estimated costs of each strategy are included in the STAPLEE table. The assumed costs of projects and generalized presentation of the benefits accruing from them are not based on specific detailed cost estimates as that level of analysis is not appropriate for this type of planning effort. For some projects, such as routine or recurring operations that are established practices and conducted with municipal general operating funds and existing staff, the STAPLEE results can be the only explicit comparison of costs and benefits. For projects for which bonding and/or grant funding will be sought, more in-depth evaluations of costs and benefits will be required. As project scopes are detailed, benefits and costs can be identified with more precision, and the benefit-cost ratio which results from a full benefit-cost analysis may differ from the planning-level STAPLEE results presented here.

It should be noted that higher BCRs do not necessarily correspond to high priorities, nor do low BCRs or BCRs under 1.0 correspond to low-priority projects. An important project with a high priority to the community may have a lower BCR because of its complexity, assumed high expense, and other costs. Communities should not be discouraged or deterred from further consideration of projects that have low BCRs or BCRs less than 1.0 until additional, more specific evaluations of the costs and benefits have been undertaken.

5.2.2. 2021-2026 Prioritized Hazard Mitigation Actions

In addition to the regional mitigation actions endorsed by Portland and outlined in Section 3 of Volume 1 of the regional plan, the Town identified or carried over from the last update, ranked and evaluated the actions in Table 5.3. For each identified action, the goal and objective it addresses is noted. Additionally, a description, lead agency, indication of costs and potential funding sources and an estimated timeline for completion is included. Also included are the hazards addressed by a specific action.

Figure 5.1 shows the locations of the projects listed in Table 5.3 with spatial elements that have been carried forward or are new additions. There are no completed projects with a spatial element in Portland. Projects carried forward and new projects are identified by their activity number (from Table 5.3).

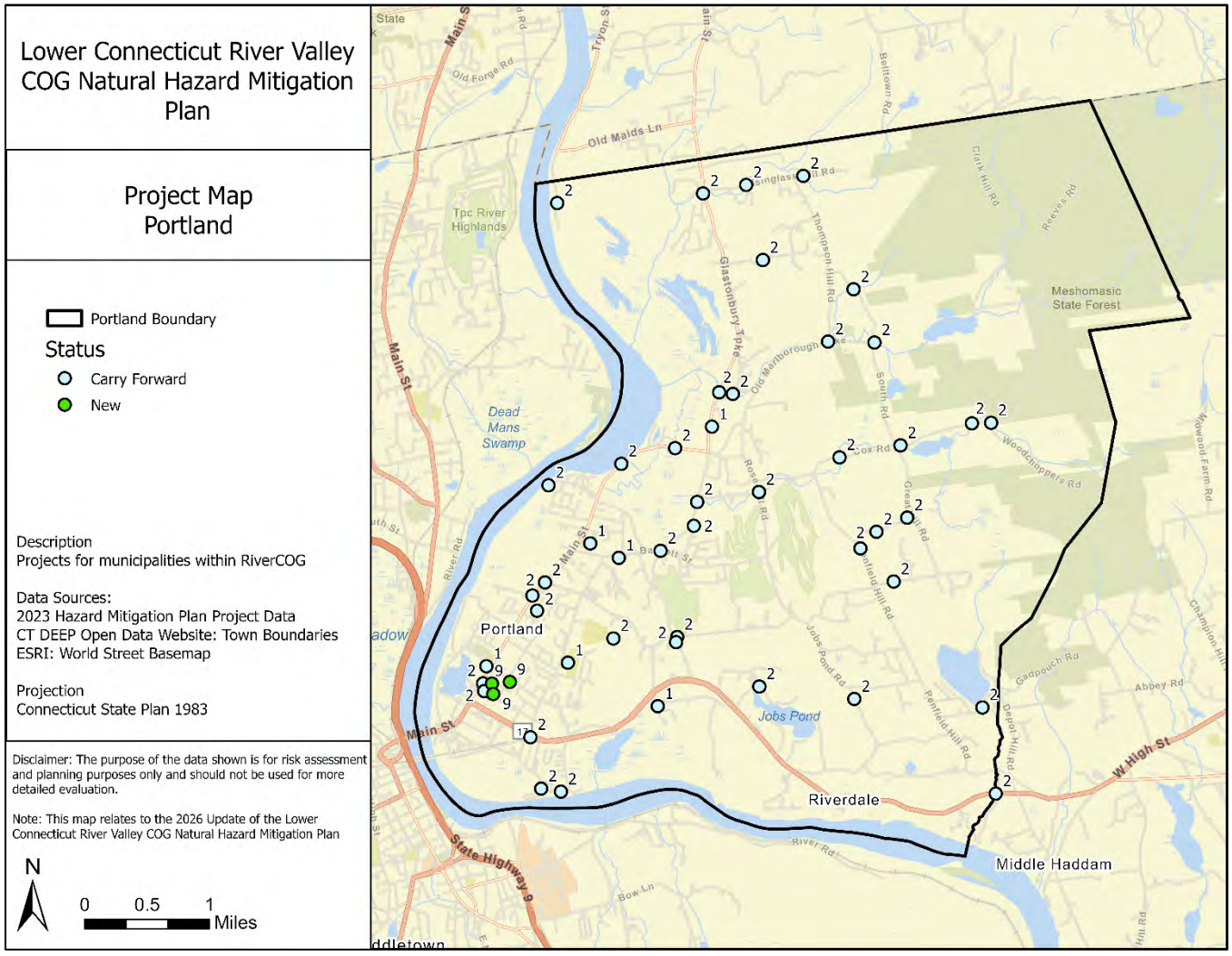


Figure 5.1. Carried Forward and New Projects in Portland

Table 5.3. Portland Hazard Mitigation Strategies and Prioritization

KEY: SW= Severe Weather, TW = Tornado/Wind, ET = Extreme Temperatures, WS=Winter Storm, F = Flood, TI = Tree Damage and Invasive Species, WF = Wildfire, D = Drought, E = Earthquake, CC = Climate Change

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
1 mod	1-1	Install Emergency Generators Install emergency generators for all critical facilities and essential town facilities including: Library Glastonbury Turnpike Water Supply Well Bartlett Street Water Pumping Station Portland Transfer Station Brownstone Intermediate School Valley View School Gildersleeve School Fire Companies 1 & 2	PW EM	$50,000 - $100,000	FEMA HMA, CIP	Evaluate Annually and prioritize through 2030 Sr. Center and Library are first priority.	All	1	0	0	0	0	0	1	1	0	0	1	1	0	0	7/H

2	2-1	Engineering Studies to Assess Flooding Mitigation Options Engineering study needed to determine mitigation options and costs to accomplish drainage improvement throughout Portland, as follows: • Culvert east of Thompson Hill Road • Portland Police Department • Portland Senior Center • Old Marlborough Turnpike culverts • Rose Hill Road • Collins Hill Road • Sage Hollow Road • Cox Road, east section • Main Street near intersection with Williams Street • Drainage system at YMCA Camp Ingersoll	PW, BOS, BOF	$100,000+ annually	FEMA HMA, CIP, OP	Evaluate Annually and prioritize 2026-2030	F	1	0	1	1	0	0	1	1	0	0	0	0	0	0	7/H

		• 4 Freestone Avenue • 5 Edwards Road • Watercourse between Williams Street and Main Street • Watercourse between High School detention basin and Redberry Lane • 314 Main Street-Brown Intermediate School • Watercourse between Scenic Drive and Main Street • Main Street from Middlesex Avenue to bridge approach • Strongs Avenue near Route 17A • Isinglass Hill Road Bridge on Hales Brook • Old Marlborough Turnpike/East Cotton Hill Road on Reservoir Brook																				

		• Culverts on Cox Road • Cox Road Bridge by Kelsey Pond • Penfield Hill Road by Cox Road • Rose Hill Bridge on Carr Brook • Riverview Street near Yankee Boat Yard • Riverview Street at Grove Street • Bartlett Street at Route 17 • Strickland Street at Route 17 • Indian Hill Avenue at FC#2 picnic grounds • Tryon Street on the Connecticut River • Access Road to Coe Ave Sewer Pump Station • Route 17A between Indian Hill Avenue and Route 17 • Riverview Street • Extension Street																				

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
3	1-1, 3-1	Earthquake Planning Develop an Earthquake Recovery Plan to repair broken water and sewer lines, and building or road damage in the event of a large earthquake	PW, BOS, EMD, OF	$10,000 - $20,000	CIP, OP	2030	E	1	0	0	0	1	1	0	0	0	0	0	0	0	0	3/L
4	1-1, 3-1	Wildfire Planning Develop and implement a wildfire protection plan	FM, Fire Dept., BOS	$20,000 - $30,000	CIP, OP	2028	WF	1	0	0	0	1	1	0	0	0	0	0	0	0	0	3/L
5 mod	2-1	Add dry hydrants at Great Hill Lake, Kelsey Pond, and the Reservoir. Investigate alterative locations for more	FM, Fire Dept., BOS	$15,000 - $30,000	FEMA HMA CIP, OP	2030	WF, D	1	0	0	0	0	0	1	0	0	0	1	1	1	0	7/H
6	2-1	Mitigate Severe Repetitive Loss/Repetitive Loss Properties Research grant options to acquire Severe Repetitive Loss and Repetitive Loss properties and convert to open space and implement if possible.	EMD	$100,000- $200,000	FEMA HMA, FMA, HMGP, BRIC, HUD-CDBG-DR, CIP	2026-2030	F, CC	1	0	0	0	0	0	1	1	1	1	0	1	1	0	9/H

Activity #	Goal/Objective	Activity Description	Lead Agency	Est. Cost*	Potential Funding Sources	Timeframe for Completion	Hazard (s) Addressed	Weighted STAPLEE Criteria														Total STAPLEE Score/Priority
								Social Benefit	Social Cost	Technical Benefit	Technical Cost	Administrative Benefit	Administrative Cost	Political Benefit	Political Cost	Legal Benefit	Legal Cost	Economic Benefit	Economic Cost	Environmental Benefit	Environmental Cost	
7	2-1	Study alternatives for mitigating flooding at Route 17 and Tryon Street. Portions of town and businesses are interrupted	PW	$50,000 - $100,000	FEMA HMA, CIP	2028	F, CC	1	0	0	0	0	0	1	0	0	0	1	1	1	0	7/H
8	2-1	Work with CIRCA to develop scope of work for study and concept design in the WWTP Resilience Opportunity Area (ROAR) and apply to appropriate funders to advance the recommendations of the study/concepts or advance recommendations to the design phase.	BOS, PW, P&Z		FEMA HMA, DEEP DCRF	2026-2028	F, ET	1	0	0	0	0	0	1	1	1	1	0	1	1	0	9/H
9	2-1, 3-1	Work with CIRCA to advance the study and concept design for the Critical Facilities ROAR in the Town Hall, Sr. Center and Library area to full design and funding	BOS, PW, P&Z		FEMA HMA, DEEP DCRF	2026-2028	F, ET	1	0	0	0	0	0	1	1	1	1	0	1	1	0	9/H