13 Enfield

Community Overview

The Town of Enfield encompasses 33.4 square miles with an estimated population of approximately 44,600 people. Enfield is located along the Massachusetts border and is in both the Connecticut River mainstem watershed (eastern drainage) and the Scantic River watershed which drains to the west. Elevation is approximately 154 feet above sea level. The main watercourses include Grape, Pierce and Terry Brook as well as the Connecticut and Scantic River. Parks in Enfield include: Powder Hollow Park, Scantic River State Park, Lafayette Park, and Hazardville Historic District.

Interstate 91 travels north-south in Enfield while other main transportation routes are 190, 192 and 220. Major industries include insurance, manufacturing of a variety of products, warehousing and distribution of toys, clothing, and pharmaceuticals, processing of food and dairy products, vegetable and tobacco farming, and ice cream production. New development since adoption of the 2014-2019 Capitol Region Natural Hazards Mitigation Plan Update ("2014 HMP") includes two "flex" buildings at zero King Street, the Mayfield apartment complex of 34 buildings with 10 apartments each, and the Villages subdivision with 34 houses.

Critical Facilities

Critical facilities throughout the Capitol Region are listed in Appendix B. In Enfield these include the Town Hall, Police Station, EMS facility, DPW campus, Water Pollution Control Facility, Sewer Pumping Stations, six fire stations, schools, senior housing, medical facilities, and State Prisons.

Table 13-1: Critical Facilities, Enfield

Facility	Shelter	Generator
Town Hall (Backup EOC)		X
Police Station (EOC)		X
EMS Facility		2 Portable
DPW Campus (building & yard)		
6 Fire Stations		X
Water Pollution Control Facility		X
Sewer Pumping Stations		
JFK Middle School	Primary	X
Enfield High School	Partial	X
6 Elementary Schools		
7 Private Schools		
St Joseph's Home for the Elderly		X
Parkway Pavilion Health & Rehabilitation Center		
Allied Rehabilitation Centers Home for Adults with Developmental Disabilities		
Community Health Resources Group Home for Adults with Chronic Mental Illness		
5 State Prisons		

JFK Middle School, the Town's primary emergency shelter, has an aged boiler that is failing and needs to be replaced. The Town is considering designating the High School as the primary shelter until this is addressed. Currently, the High School is developing a memorandum of agreement (MOU) with St. Joseph Home for the Elderly to use the High School as a "stop-over" shelter when necessary. The High School building has been expanded since the previous HMP.

Enfield also recognizes three apartment complexes as high risk areas due to their high population density; these are Mayfield, Georgetown, and Foxhill.

Capabilities

Hazard mitigation is incorporated, to some degree, as a specific element in Enfield's Plan of Conservation and Development.

The Town adopted a Flood Hazard Mitigation Plan (FHMP) in 2000 to assist the community in identifying localized flood prone areas, flood hazards and risks, and strategies for preventing the loss of life and reducing property damages. The Town updated and incorporated its FHMP into the 2008 Capitol Region Natural Hazards Mitigation Plan, and maintains its currency. The Town of Enfield has several structural and regulatory flood mitigation tactics currently in place. The Town requires flood compensation on all applications.

The Town has completed, or is currently working on, most of the planned mitigation projects included in the 2000 FHMP, including drainage system improvements, dredging, catch basin cleanings, GIS implementation, and property acquisitions among other things. Equally important to these structural and property remedies are the education and outreach efforts that Enfield has made. All-hazard workshops are offered twice a year for emergency management personnel and non-profit organizations, and flood insurance policy seminars are available for homeowners.

The Town of Enfield has pursued a number of approaches to help reduce the community's vulnerability to flooding and prepare for emergencies. Examples of such actions by the Town in recent years include, but are not limited to the following accomplishments:

- Implemented a GIS system which both citizens and staff can access. This database provides detailed information, including wetlands.
- Continued its comprehensive road resurfacing/rebuilding program which was initiated in 2000. Any street contemplated for improvement under this program is also assessed for flooding problems, and corrected where such action is feasible.
- Implemented an erosion control effort for areas of Town vulnerable to rapid slope deterioration, particularly the area along the west bank of the Scantic River with its escarpment soils. One location in particular – Cloud Street has several residential properties threatened due severe erosion from rainfall runoff. An extensive slope stabilization project was implemented and completed in 2010 to save these properties.

- Conducted extensive stream clearing and bank stabilization work in Beeman's Brook which flows through a heavily development residential neighborhood.
- Trained over 150 Town of Enfield employees in the Red Cross Shelter Worker program.
- Established a local television station – E-TV to broadcast emergency alerts with a scrolling banner, commonly referred to as "Chy-Alerts."
- Implemented the Everbridge phone/message alert system to inform citizens of emergency situations in Enfield.
- Established and actively share important information with citizens through social media. Enfield Emergency Management *Facebook* wall presently has over 1,200 "likes."
- Established a Community Emergency Response Team (CERT), whose primary mission is shelter operations, with a secondary mission of providing emergency support such as HAM radio operations.
- Hosted the Capitol Region Full Scale Exercise in May 2010 which simulated an active shooter/hostage situation in a public school. Students (Grades 6, 7, and 8) actively participated in the exercise. This was the second time Enfield has hosted a full-scale exercise for the Capitol Region within 5 years, the first one occurring in May 2005.
- Completely revised its *Inland Wetlands and Watercourses Regulations* in March 2011.
- Continue to reduce the volume of storm-water entering the Town's Water Pollution Control's sanitary sewage system by systematic elimination of infiltration and inflow. Progress in recent years has not been as substantive as in prior time periods due to reduced funding.
- Totally reorganized its land-use review and regulation structure by creating a Development Services Department which is comprised of Planning, Zoning Enforcement, Inland Wetlands, Conservation Commission, Blight Enforcement, Building Code Inspection, Housing Code Enforcement, Economic Development and Community Development (CDBG). Tasked assigned to Development Services is the Assistant Town Engineer who also serves as the Town's NFIP Administrator.

Enfield has a tree warden responsible for tree trimming and maintenance. Most work is contracted out.

New Capabilities

Enfield is undertaking a significant overhaul to its Water Pollution Control Facility. This project includes measures to improve the resiliency of the site, which is adjacent to the Connecticut River. The Town worked closely with the State on this project.

Since the 2014 HMP, Enfield has acquired emergency generators for its two shelters, developed a Vehicle Replacement Plan to guide upgrades of its Public Works fleet, and offered flood policy seminars to homeowners.

Challenges

Challenges Overview

Flooding is the most significant hazard affecting Enfield . Water bodies that pose potential flood hazards include Beemans Brook, Waterworks Brook, Grape Brook, Freshwater Brook, Jawbuck Brook, Shaker Lake, Terry Brook, Boweyns Brook, Buckhorn Brook, and the Connecticut River. Freshwater Brook flooding affects the mall and the High Street Neighborhoods.

The Town experienced significant flooding in October 2005, when the area received two significant rainfalls in a one-week period. Interstate 91 in Enfield was flooded and closed. Parts of Route 5 and the Enfield Square Mall, as well as numerous residential areas, suffered severe flooding. The closure of the Interstate and flooding on Route 5 resulted in serious traffic congestion and hindered emergency response. FEMA eventually awarded the Town disaster aid to help cover the costs of repairs to municipal infrastructure.

Hazard Losses

The economic losses faced by Enfield from natural hazards can be estimated by reviewing historic, and modeling future, loss figures. Loss estimates are summarized below.

Historic FEMA Payments

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.

The NFIP has paid 57 property damage claims in Enfield totaling $301,225 to-date. Enfield has had fifteen Repetitive Loss (RL) Property claims to-date on six properties totaling $169,140.

Total PA reimbursements to the community were as follows:

- Flood Events: $314,488 ($16,552 annually)
- Hurricane Events: $92,135 ($4,849 annually)
- Winter Storm Events: $7,324,344 ($385,492 annually)

These are summarized in the tables below.

Table 13-2: Flood Event PA Reimbursements, Enfield

Incident	Sep 1999	Oct 2005
Declaration	9/23/1999	12/16/2005
Disaster No.	1302	1619
Entity	FEMA PA Reimbursement	
State	$2,071	$2,568
Municipal	$10,925	$282,315
Nonprofit	$0	$16,608
Total	**$12,997**	**$301,491**
Annualized	**$684**	**$15,868**

Table 13-3: Hurricane Wind Event PA Reimbursements, Enfield

Incident	Aug - Sep 2011 (T.S. Irene)
Declaration	9/2/2011
Disaster #	4023
Entity	FEMA PA Reimbursement
State	$25,199
Municipal	$66,936
Nonprofit	$0
Total	**$92,135**
Annualized	**$4,849**

Table 13-4: Winter Storm PA Reimbursements, Enfield

Incident	Mar 2003	Dec 2003	Jan 2005	Feb 2006	Jan 2011	Oct 2011	Feb 2013
Declaration	3/11/03	1/15/04	2/17/05	5/2/06	3/3/11	11/17/11	3/21/13
Disaster #	3176	3192	3200	3266	1958	4046	4106
Entity	FEMA PA Reimbursement						
State	$43,934	$39,222	$67,211	$74,640	$72,283	$290,259	$143,617
Municipal	$86,000	$99,932	$120,327	$139,620	$118,955	$5,746,641	$208,294
Nonprofit	$0	$0	$0	$0	$0	$73,408	$0
Total	**$129,934**	**$139,154**	**$187,539**	**$214,260**	**$191,238**	**$6,110,308**	**$351,911**
Annualized	**$6,839**	**$7,324**	**$9,870**	**$11,277**	**$10,065**	**$321,595**	**$18,522**

National Centers for Environmental Information Losses

The table below summarizes events in the National Centers for Environmental Information (NCEI) severe storm database that were specifically noted as having impacted Enfield since 2012.

Table 13-5: NCEI Database Losses since 2012, Enfield

Date	Event	Property Damage
8/5/2012	Thunderstorm Wind	$3,000
9/18/2012	Thunderstorm Wind	$15,000
7/1/2013	Tornado	$25,000
7/2/2014	Thunderstorm Wind	$3,000
7/27/2014	Lightning Thunderstorm Wind Hail	$50,000 $15,000 $0
7/28/2014	Thunderstorm Wind	$20,000
2/25/2016	Thunderstorm Wind	$5,000
8/11/2016	Thunderstorm Wind	$6,000
Total		**$142,000**

NCEI losses under other event categories (such as drought, high wind, flooding, and winter storms) were not specifically noted as impacting Enfield, though they did impact Hartford County and nearby towns. NCEI losses are reported in Section II of this Plan.

HAZUS-MH Losses

CRCOG used FEMA's Hazus-MH model to analyze the risks that the community might face from flooding, hurricanes, and earthquakes. The model estimates economic losses to the town due to damage to buildings and building contents, as well as other economic disruptions. Both residential and commercial structures are addressed. Losses from different hazards are summarized below. Where available, estimates from the previous and current versions of the HMP are provided side-by-side; differences between the two may have been caused by a combination of the following:

- Changes in methodology: such as hazard zone mapping
- Changes in data: such as population and property values
- Changes in the model: this HMP utilized Hazus-MH version 4.0 rather than 2.1
- Other factors: inherent in a complex software like Hazus-MH

More details are available in the Multi-Jurisdictional HMP. Ultimately, changes in the loss estimates reflect the reality that small differences in hazard event features can have a significant impact on losses incurred.

Table 13-6: Estimated Damages to Enfield from a 1% Annual-Chance Flood

Loss Type	2014 Results	2018 Results
Households Displaced	1,197	368
People Needing Shelter	578	502
Buildings at Least Moderately Damaged	135	0
Economic Losses		
Residential Building & Content Losses	$39,020,000	$16,688,745
Other Building & Content Losses	$51,720,000	$38,597,555
Total Building & Content Loss	**$90,740,000**	**$55,286,300**
Total Business Interruption Losses	**$45,000**	**$2,231,189**
TOTAL	***$91,120,000**	**$57,517,488**

* The "TOTAL" figure is extracted from the HAZUS model, not calculated as the sum of the other figures presented here; for that reason, this figure may not be equal to the sum of the other figures presented.

Table 13-7: Estimated Damages to Enfield from a 1% Annual-Chance Hurricane

Loss Type	2014 Results (1938 event)	2018 Results (1% track)
Buildings at Least Moderately Damaged	1,509	4
Buildings Completely Damaged	89	1
Total Debris Generated (tons)	57,113	12272
Truckloads (at 25 tons/truck) of building debris	756	491
Economic Losses		
Residential Building & Content Losses	$131,700,000	$28,484,330
Other Building & Content Losses	$30,400,000	$1,410,805
Total Building & Content Loss	**$162,100,000**	**$29,895,135**
Total Business Interruption Losses	**$21,200,000**	**$1,306,855**
TOTAL LOSSES	**$183,300,000**	**$31,201,990**

Losses were calculated from a modeled probabilistic earthquake (1% annual-chance of occurrence), as well as for four specific scenarios with epicenters around Connecticut.

Table 13-8: Estimated Damages to Enfield from a Probabilistic Earthquake

Loss Type	2018 Results
Wage Loss	$6,178
Rent Loss	$5,639
Relocation Loss	$9,069
Income Loss	$4,429
Inventory Loss	$653
Total Business Disruption	**$25,968**
Structural Loss	$18,639
Non-Structural Loss	$54,654
Total Building Loss	**$73,293**
Total Content Loss	**$21,389**
TOTAL LOSSES	**$120,650**

Table 13-9: Estimated Damages to Enfield from Modeled Earthquake Scenarios

Epicenter Location	Magnitude	Estimated Total Losses
East Haddam	6.4	$234,506.61
Haddam	5.7	$48,686.62
Portland	5.7	$101,948.14
Stamford	5.7	$10,770.58

Average Annualized Losses

Average Annualized Loss (AAL) figures are useful tools for comparison of the risks faced from different hazards with different likelihoods of occurring in a given time period. AAL estimates were prepared for Enfield based on the methodologies discussed in Section II of the Multi-Jurisdictional HMP. Dam failure, drought, tornado, and wildfire losses were sourced from the 2014 Connecticut Natural Hazard Mitigation Plan Update, with dam failure data supplemented by the National Performance of Dams Program and the Connecticut Department of Energy & Environmental Protection. Earthquake and hurricane losses were calculated in HAZUS-MH. Losses for flooding came from NFIP claims, for winter storms from Public Assistance Reimbursements, and for thunderstorms from the NCEI database. These are presented in the table below in dollars per year. Note that Hurricanes and Tropical Storms represent the largest share of total annualized losses.

Table 13-10: Average Annualized Losses, Enfield

Dam Failure	Drought	Earthquakes	Flooding	Hurricanes and Tropical Storms	Severe Winter Storms	Thunderstorms	Tornadoes	Wildfires	Total
$80	$0	$120,650	$24,479	$2,799,295	$385,492	$5,931	$655,158	$6,184	$3,997,267

Losses Summary

A review of the above loss estimates demonstrates that the Town of Enfield has experienced significant expenses as a result of natural hazards, and is at risk for additional losses if some of the less-frequent events were to occur. These actual and potential losses justify hazard mitigation actions to reduce losses in the future.

Mitigation Strategies and Actions

Status of Previous Mitigation Strategies and Actions

The Town of Enfield reviewed the mitigation actions proposed in the 2014 HMP and determined the status of each. That information is included in the table below.

Table 13-11: Status of Previous Mitigation Strategies and Actions, Enfield

Action #	Action	Notes	Status
GOAL: REDUCE LOSS OF LIFE AND PROPERTY AND NEGATIVE ECONOMIC CONSEQUENCES OF FLOODING.			
Objective 1: Implement flood hazard mitigation projects identified in the 2000 Flood Hazard Mitigation Plan and subsequent hazard planning efforts.			
1.1	Continue to pursue funding opportunities to implement remaining projects.	Denied twice but now have a grant for Freshwater Brook. Under contract for dredging the pond and developing an action plan for the dam.	Carry Forward with Revisions
1.2	Maintain currency of the Flood Hazard Mitigation Plan.	Existing capability / ongoing activity.	Capability
Objective 2: Ensure that future development does not increase flood risk.			
2.1	Continue to review development applications broadly, with administration's input.	Existing capability / ongoing activity.	Capability
GOAL: REDUCE LOSS OF LIFE AND PROPERTY AND ECONOMIC CONSEQUENCES OF OTHER NATURAL HAZARDS.			
Objective 1: Ensure adequate protection of all residents.			
1.1	Continue to involve the Visiting Nurses Association, the Housing Authority, and social service agencies in planning and training efforts.	Existing capability / ongoing activity.	Capability
1.2	Continue to maintain a list of special needs population.	Existing capability / ongoing activity.	Capability
1.3	Monitor implementation of Reverse-911 system and use to its greatest potential.	Existing capability / ongoing activity.	Capability
GOAL: REDUCE POWER OUTAGES AND ENSURE SAFETY OF PROPERTY AND LIFE AS A RESULT OF NATURAL HAZARDS.			
Objective 1: Establish effective tree maintenance program for town right-of-way.			
1.1	Fund and institute routine maintenance of trees in town right-of-way either through town staff or private contractor.	Contractors are funded for tree maintenance work.	Capability
Objective 2: Ensure access to power for residents in emergency situations.			
2.1	Obtain generators for shelters.	Shelters have generators.	Completed
2.2	Educate residents on emergency preparedness and services available in the event of an emergency through town website and workshops.	Town previously offered biannual workshops for emergency management workers. Flood policy seminars are available to homeowners.	Capability
2.3	Modify the Town of Enfield zoning & planning codes and ordinances to require group homes to have an emergency generator to provide power for essential home utilities, i.e. heat, refrigerator, lighting, etc. during power outages, thus enabling the residents to "shelter in place."	Zoning regulations do not allow new group homes; group homes that do exist in Town were grandfathered in, and such a regulation would not apply to them. Action would not be effective.	Drop
GOAL: ENSURE CAPACITY OF TOWN TO REMOVE SNOW.			
Objective 1: Maintain an adequate staffing and fleet of trucks and equipment to clear roads in a timely manner.			
1.1	Upgrade and replace public works fleet.	Vehicle Replacement Plan developed. Currently lacking funding to implement.	Carry Forward with Revisions

Action #	Action	Notes	Status
1.2	Fund adequate staff and private labor.	Town has adequate staff for most scenarios and maintains an on-call list of private contractors to assist with snow removal and other hazard response/recovery activities.	Capability

Active Mitigation Strategies and Actions

The Town proposed to initiate several new mitigation actions for the upcoming five years. Additionally, a number of actions from the previous planning period are being carried forward or replaced with revised actions. These are listed below.

Each of the following actions has been prioritized based on FEMA guidelines, listed from highest to lowest priority, and numbered.

Action #1	
Enter the Sustainable CT program through Registration and review actions that can be undertaken to pursue Certification. Make progress with the actions related to hazard mitigation.	
Goal	4. Increase the use of natural, "green," or "soft" hazard mitigation measures, such as open space preservation and green infrastructure.
Category	Natural Resources Protection
Lead	Planning
Cost	$0 - $10,000
Funding	Town Operating Budget
Timeframe	01/2019 - 12/2019
Priority	High

Action #2	
Implement Vehicle Replacement Plan to upgrade and replace public works fleet.	
Goal	7. Improve the emergency response capabilities of the region and its communities
Category	Preparedness & Emergency Response
Lead	Public Works
Cost	More than $100,000
Funding	Town Operating Budget
Timeframe	07/2022 - 06/2023
Priority	High

Action #3	
Conduct outreach to local small businesses with the aim of preventing the accidental release and pollution from chemicals stored and used at their facilities during or following natural hazard events.	
Goal	6. Improve public outreach, education, and warning systems
Category	Education & Awareness
Lead	Planning, in coordination with DEEP
Cost	$0 - $10,000
Funding	Materials & Resources Provided by CT DEEP
Timeframe	01/2019 - 12/2019
Priority	Medium

Action #4	
Coordinate with NEMO and CRCOG to share resources and gain technical support for hazard mitigation actions involving stormwater management and public outreach, which have parallel benefits related to MS4 stormwater permit compliance.	
Goal	1. Minimize the impact of natural hazards on physical buildings and infrastructure
Category	Prevention
Lead	Public Works
Cost	$0 - $10,000
Funding	Town Operating Budget
Timeframe	01/2020 - 12/2020
Priority	Medium

Action #5	
Participate in EMI courses or the seminars and annual conference held by the Connecticut Association of Flood Managers.	
Goal	3. Improve institutional awareness and understanding of natural hazard impacts and mitigation within municipal governments and other decision-making bodies
Category	Education & Awareness
Lead	Planning
Cost	$0 - $10,000
Funding	Town Operating Budget
Timeframe	07/2019 - 06/2024
Priority	Medium

Action #6	
Complete and implement Freshwater Brook dam action plan to mitigate flooding on I-91 and Route 5.	
Goal	1. Minimize the impact of natural hazards on physical buildings and infrastructure
Category	Structural Projects
Lead	Public Works
Cost	More than $100,000
Funding	Grants / CT DEEP
Timeframe	07/2022 - 06/2024
Priority	Medium

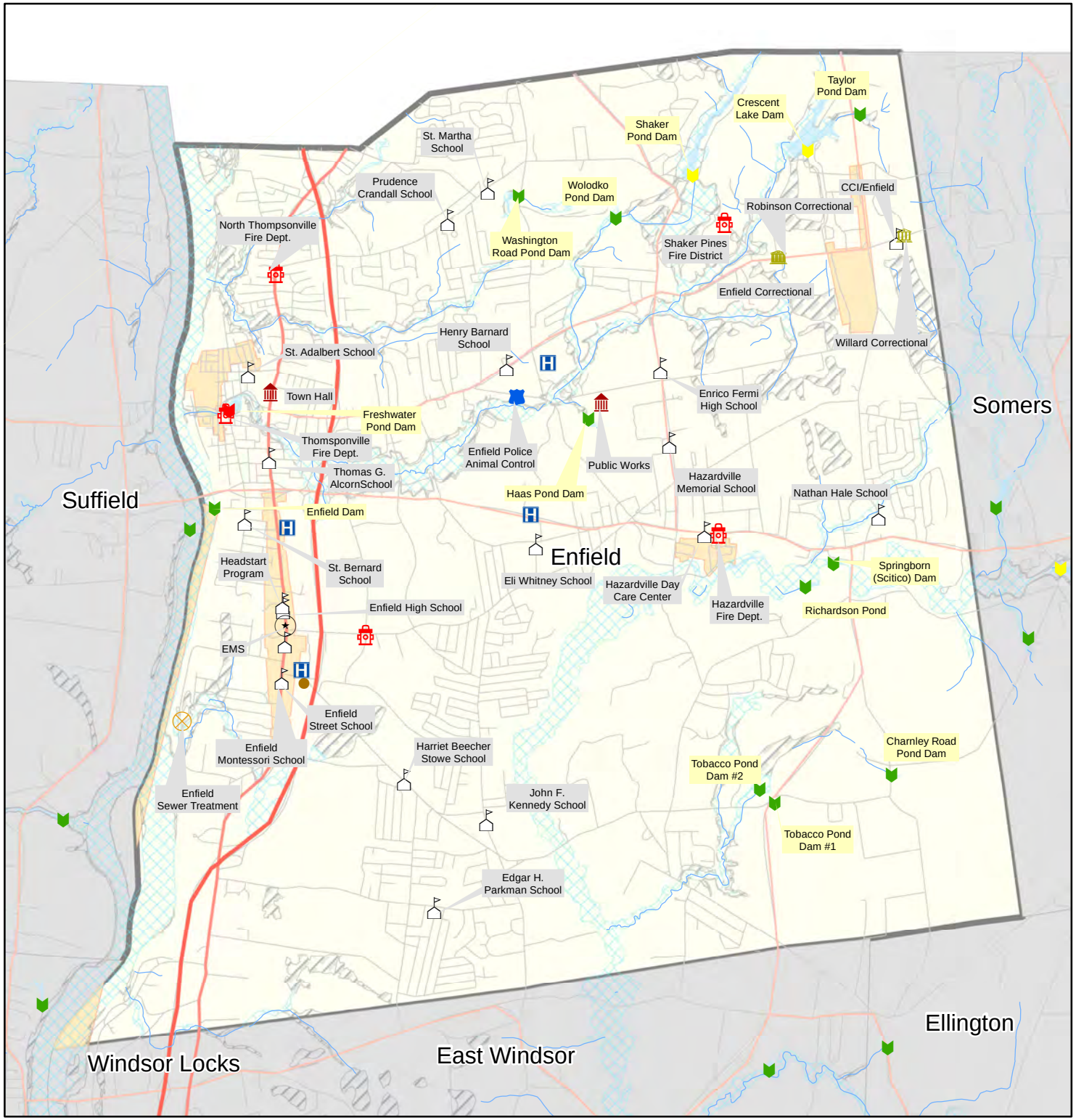
Action #7	
Pursue opportunities to bury utilities in appropriate locations and scenarios, such as during a road reconstruction.	
Goal	5. Improve the resilience of local and regional utilities and infrastructure using strategies including adaptation, hardening, and creating redundancies.
Category	Prevention
Lead	Public Works
Cost	More than $100,000
Funding	Grants
Timeframe	07/2022 - 06/2024
Priority	Medium

Action #8	
Contact the owners of Repetitive Loss Properties and nearby properties at risk to inquire about mitigation undertaken and suggest options for mitigating flooding in those areas. This should be accomplished with a letter directly mailed to each property owner.	
Goal	1. Minimize the impact of natural hazards on physical buildings and infrastructure
Category	Property Protection
Lead	Planning
Cost	$0 - $10,000
Funding	Town Operating Budget / DEMHS
Timeframe	07/2021 - 06/2022
Priority	Low

Action #9	
Coordinate with CT SHPO to conduct historic resource surveys, focusing on areas within natural hazard risk zones (such as flood or wildfire hazard zones and areas near steep slopes), to support identification of vulnerable historic properties and preparation of resiliency plans across the state. This action leverages existing resources and best practices for protection of historic and cultural resources through an ongoing statewide initiative by CT SHPO.	
Goal	8. Ensure community character and social equity are addressed in mitigation activities
Category	Property Protection
Lead	Planning, in coordination with SHPO
Cost	$10,000 - $25,000
Funding	SHPO
Timeframe	07/2021 - 06/2023
Priority	Low

Action #10	
Work with CT DEEP to complete a formal validation of the Repetitive Loss Property list and update the mitigation status of each listed property.	
Goal	1. Minimize the impact of natural hazards on physical buildings and infrastructure
Category	Property Protection
Lead	Planning
Cost	$10,000 - $25,000
Funding	Town Operating Budget / CT DEEP / DEMHS
Timeframe	07/2021 - 06/2023
Priority	Low

Action #11	
Send information to residents about emergency preparedness and services available in the event of an emergency by mailing out a newsletter and including information in tax bills.	
Goal	6. Improve public outreach, education, and warning systems
Category	Education & Awareness
Lead	Emergency Management
Cost	$10,000 - $25,000
Funding	Town Operating Budget
Timeframe	01/2021 - 12/2023
Priority	Low



Capitol Region Natural Hazards Mitigation Plan Update

Enfield, Connecticut

Flood Plains, Dams & Critical Facilities

Dam Hazard Class

- BB, A, AA OR Unclassified
- Class B - Significant Hazard
- Class C - High Hazard

Critical Facilities

- Fire Station
- Police Station
- School
- Healthcare Facility
- State Facility
- Town Facility
- Waste Water Facility
- Emergency Center
- NRHP Buildings/Sites
- NRHP Districts/Areas

FEMA Flood Hazard Area

- 100 Year Flood Zone
- 500 Year Flood Zone

Data Sources: FEMA, National Register of Historic Places, CT DEEP, CRCOG, ESRI

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