

**Town of Old Saybrook
&
Borough of Fenwick
Natural Hazards
Mitigation Plan Update, 2014**



Prepared by
Lower Connecticut River Valley Council of Governments

Prepared for
**Old Saybrook Planning Commission and
Borough of Fenwick Board of Warden and Burgesses**

Adopted April 7, 2013 by
Borough of Fenwick, Connecticut
Adopted May 13, 2014 by
Town of Old Saybrook, CT

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Local and Regional Points of Contact

The Natural Hazard Mitigation Plan is updated every five years and input from the public to help in this effort is important to insure the plan addresses the needs of potentially affected areas, businesses and residents. Questions, comments or suggestions concerning the Plan or future updates to it may be sent at any time to any of the following staff of the Town, Borough or RiverCOG.

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Executive Summary

The primary purpose of a Natural Hazard Mitigation Plan is to identify natural hazards and risks, existing capabilities, and activities that can be undertaken by a community to prevent loss of life and reduce property damages associated with identified hazards. The Disaster Mitigation Act of 2000 requires local communities to have a Federal Emergency Management Agency (FEMA)- approved mitigation plan in order to be eligible to receive Pre-Disaster Mitigation Program grants and Post-Disaster Hazard Mitigation Grant Program funds under the Hazard Mitigation Assistance program. This Plan was prepared by the Lower Connecticut River Valley Council of Governments (RiverCOG) in conjunction with the Town of Old Saybrook. It is an update of a NHMP first developed by the Connecticut River Estuary Regional Planning Agency (CRERPA) in 2006. Significant revisions were made throughout to meet new FEMA requirements.

The town considers critical facilities to be those that serve the town on a day-to-day basis as well as during an emergency situation. The facilities include but are not limited to the Old Saybrook High School (emergency shelter), Police Department, Town Hall (location of EOC), Public Works Garage, Fire Department, and other schools. This list also includes facilities that house elderly and disabled people, such as Apple Rehab and Gladeview Nursing Home. The critical facilities are necessary to support emergency response before, during, and after natural hazard events.

Transportation is essential in any major event. The town of Old Saybrook has a variety of transportation options. The town is served by two major limited access highways, Interstate 95 and Route 9, as well as major arterials such as U.S. Route 1, CT Route 154 and Route 166. Smaller town roads act as collectors to bring people to larger roads. The town is also served by several bus routes of the 9 Town Transit District, as well as a train station which offers a stop on both Amtrak's Northeast Regional service and the Shore Line East Railroad.

This plan details natural hazards present in the town and steps that the town can take to mitigate long lasting effects from each hazard type. The Comprehensive Mitigation Action Item list is provided in Section III: Mitigation. This table includes the item, project status, the party responsible for carrying out the action item, and other pertinent information. The most prominent hazard in any of the towns within the region is flooding, and significant discussion is devoted to how best to mitigate flooding events. Other hazards discussed include high winds and tornadoes, hurricanes and tropical storms, sea level rise, and drought and wildfire. Each hazard type has a list of mitigation action items that the town could implement, some being a higher priority than others. For each of the hazard types presented in the plan, historic events are presented along with the probability of that event occurring again. The town's specific impacts from each event are also noted.

The overall goal of this Natural Hazard Mitigation Plan Update, 2014 is: *Reduction or elimination of injury or loss of life and damage to property and natural environments and reduction in the associated economic impacts from natural hazards.*

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I. **PLANNING PROCESS**

A. **Purpose & Benefits (C.3)**

The Old Saybrook and Fenwick Natural Hazard Mitigation Plan Update, 2014 (NHMP) provides information about the types of natural hazards that may affect the Town and Borough and its residents and identifies specific mitigation actions to eliminate and lessen threats to life and property.

The Town and Borough periodically update the NHMP for two reasons: first, to keep abreast of changes to the physical environment, social fabric, and demographic composition of its people, as well as changes to ongoing efforts to mitigate the effects of natural hazards; second, to remain eligible for Federal funds for ongoing and future mitigation actions.

The purpose of the Town and Borough's NHMP is to:

- identify natural hazards that could potentially occur and the geographic areas most likely affected by the occurrence of those natural hazards;
- assess potential threats from the occurrence of those natural hazards to natural resources, public infrastructure, private property and people;
- review existing actions and capabilities of the region and its towns to mitigate threats from natural hazards;
- recommend additional actions to improve or expand actions and capabilities that further prevent loss of life and reduce property damages associated with the occurrence of natural hazards; and
- update plans to remain eligible at the time a community applies for and when the Federal/State agencies award funds for hazard mitigation actions.

The benefits of an up-to-date hazard mitigation plan include:

Home and business owners have information to help them make better decisions about protecting their properties.

Planners and local officials better understand the risks of natural hazards and may improve local planning actions.

Builders and developers have access to more accurate information for making decisions on where and how to build.

Emergency management can use this information to better prepare for response made by police, fire, public health, and town officials, as well as organize efforts as a part of the cycle of recovery from occurrences of natural hazards.

B. Authority (C.1)

Federal: The Robert T. Stafford Disaster Relief and Emergency Assistance Act (Public Law 93-288), as amended by the Disaster Mitigation Act of 2000, provides the legal basis for State, local, and Indian Tribal governments to undertake a risk-based approach to reducing risks from natural hazards through mitigation planning. *The Federal Emergency Management Agency (FEMA) coordinates mitigation planning nationwide and provides funding for State-level natural hazard mitigation planning.*

State: FEMA requires State, Indian Tribal, and local governments to develop hazard mitigation plans as a condition for receiving certain types of non-emergency disaster assistance, including funding for mitigation projects. The requirements and procedures for State, Tribal and Local Mitigation Plans are found in the Code of Federal Regulations (CFR) at Title 44, Chapter 1, Part 201 (44 CFR Part 201). *The State of Connecticut Departments of Energy & Environmental Protection (DEEP) and Emergency Services and Public Protection (DESPP) administer the federal funds by providing grants and technical assistance to the regional planning organizations (RPOs) to write the hazard mitigation plans for each regional planning area and the municipalities within each.*

Region: The Connecticut General Statutes (§8-35a.(d)) require the regional planning organization to assist the municipalities within its region in developing and carrying out any plans of regional importance. *The Lower Connecticut River Valley Council of Governments (RiverCOG) intends that this plan stand alone so that the Town and Borough may adopt it as a section or supplement to their local Plan of Conservation & Development.*

Municipal: The Connecticut General Assembly delegates certain powers of the state to its municipal subdivisions (city, town, borough, or special district), specifically that a municipality has the authorities in finance, public safety, and health that are necessary to effectuate the goals of this Plan (CT General Statutes §7-148). *The Natural Hazards Mitigation Committee, a subcommittee of the Old Saybrook Planning Commission, reviewed and edited the draft plan. Committee members included: Robert Missel, Janis Esty, and Cathryn Flanagan, Planning Commission; John Talbott, Zoning Commission; Jerry Brophy, Conservation Commission; Thomas Stevenson, Board of Finance; and Steven Gernhardt, Board of Selectmen. The Committee approved the final draft version as a recommendation to the Old Saybrook Planning Commission for adoption by the Board of Selectmen and the Board of Warden and Burgesses.*

C. **Plan Development (A & D)**

1. **Funding & Technical Assistance**

FEMA Region 1 provided guidance to the Lower Connecticut River Valley Council of Governments (RiverCOG) in following federal guidelines for natural hazard planning, particularly subsequent to Tropical Storm Irene, Storm Alfred and Superstorm Sandy in August 2011, October of 2011 and October 2012 respectively.

The Connecticut Department of Energy & Environmental Protection (DEEP) awarded a Hazard Mitigation Assistance (HMA) grant to RiverCOG to assist member towns update their Natural Hazard Mitigation Plans. Under this grant, Jay Northrup and J.H. Torrance Downes, Senior Regional Planners, helped prepare this update to the original 2006 Plan; and Janice Ehle-Meyer, Community Outreach Planner provided technical assistance with analyzing U.S. Census data.

The Town of Old Saybrook provided significant in-kind contributions from its Land Use Department staff, including Christine Nelson, Town Planner; Christina Costa, Zoning Enforcement Officer; Sandy Prisloe, Environmental Planner, who also provided Geographical Information System (GIS) support and analysis; and Joanne Rynecki, Land Use Clerk. The Borough of Fenwick also contributed to the creation of this NHMP, particularly through the Borough Warden, Ethel Davis.

2. **Preparation (A.1 & D.2)**

The Old Saybrook Planning Commission, which is responsible for the town's NHMP, established a special Natural Hazards Mitigation Committee to guide updating the existing NHMP. The Committee included its chairman, Bob Missel, as well as Janis Esty, and Cathy Flanagan, all from the Planning Commission; John Talbot from the Zoning Commission; Jerry Brophy of the Conservation Commission; Steven Gernhardt of the Board of Selectmen; and Thomas Stevenson from the Board of Finance. The committee, with assistance from RiverCOG and Land Use Department staff, interviewed officials of the Town, many of whom regularly attended and participated in the meetings of the Committee, including: Don Lucas, Building Official; Donn Dobson, Fire Marshal; Chief Michel Spera, Emergency Management Director; and Larry Bonin, Public Works Director. First Selectman, Carl Fortuna, attended, as well, to discuss funding of the Plan's eventual implementation. Ethel Davis, Borough Warden was also consulted in the creation of this NHMP.

Adam Whelchel, Director of Conservation Programs, at The Nature Conservancy's Coastal Resilience Program, directed technical support in analyzing the impacts of sea level rise through its Future Scenarios on-line mapping tool. The Coastal Resilience program provides forward-looking

sea-level rise information that aided the committee to evaluate potential future flood scenarios arising from various categories of hurricane events.

The Committee held 20 meetings over a period of a year. All meetings were open to the Public. Between the months of September 2011 and February 2012, the Committee met twice monthly. From March through October 2012, the Committee met once per month. See Appendix IV for minutes from all Committee meetings. All minute show the attendance for each meeting.

Committee Meeting Dates				
2011		2012		
9/14	10/26	1/11	3/14	7/11
9/21	11/9	1/25	4/11	8/8
9/28	11/30	2/8	5/9	9/12
10/5	12/14	2/22	6/13	10/24

3. Agency Involvement (A.2)

The Planning Commission was purposeful in including in its committee make-up representatives of local agencies most likely to be involved in the plan’s eventual implementation other than itself: the Board of Selectmen, the Board of Finance, the Zoning Commission, and the Conservation Commission.

Additionally, the Committee solicited input from local officials about ongoing implementation and maintenance of the Plan, information about recent experiences, adequacy of recommended infrastructure improvements, and need for additional and ongoing in-house expertise.

The RiverCOG provided inter-municipal coordination of the Plan update and technical assistance in preparing the Plan elements and served as the liaison to DEEP, FEMA and neighboring towns.

4. Public Involvement (A.2, A.3)

All meetings of the Natural Hazards Mitigation Committee were open to the public with notice to the Town Clerk, as well as the Town’s website (residents can subscribe to automatic delivery of agendas and minutes via email). The Chairman of the Committee reported to the full Planning Commission at its twice-monthly regular meetings and asked the Committee members serving from other boards / commissions to do likewise at each of their regular meetings. Although the Land Use Department received a few phone calls, only twice did residents attend a Committee meeting. (See Appendix IV – Public Meeting Notices & Minutes.)

The Draft NHMP was posted on a special Natural Hazard Mitigation page on the Town Website (See Appendix VII) and the Committee referred the draft Plan to neighboring towns in the regional planning area, the regional water company, and power provider. The Planning Staff along with RiverCOG created a Natural Hazard Mitigation Survey which was posted online between June 13, 2013 and June 26, 2013. Survey questions can be viewed in Appendix IV and results are located in Appendix V. The Committee invited Old Saybrook residents, officials, and business owners, as well as officials and residents from neighboring towns to participate in the survey.

A webpage on the town website was dedicated to the survey. Other websites and facebook pages throughout town as well as mass emails also announced the survey, see Appendix VI. The final draft Natural Hazard Mitigation Plan Update, 2014 was presented to the Planning Commission and the Borough Warden for approval prior to subsequent referral to the Board of Selectmen and Board of Warden and Burgesses for adoption.

Contact information was available on the RiverCOG and Town websites. Anyone wishing to comment on the Plan was able to do so.

a. Public Survey Results

A total of 163 responses were collected. Information was use to update the plan, add mitigation action items and better understand problem areas in town. Of the respondents, 87% were Old Saybrook Residents (this includes Borough of Fenwick Residents). Others included officials from neighboring towns, officials from Old Saybrook and owners of Old Saybrook based businesses. Overall, responses suggested that the Old Saybrook website is the best place to get hazard mitigation information. With regards to natural hazards, 62% of the respondents have suffered losses in the past due to hurricanes or tropical storms, while 75% are concerned about future sea level rise.

With regard to mitigation actions, 70% of respondents said that they would be willing to sell their home for open space along the shoreline in order to minimize losses in the future. Fifty-five respondents offered their input on mitigation measures the town could include. A vast majority of responses centered on retro-fitting existing homes along the shoreline, prohibiting new construction along the shoreline, and minimizing risks with mandatory evacuations when needed. Another focus of respondents was the removal of trees in order to reduce the chance for power outage during storms and burying utilities where feasible. For the full survey and its responses, please see Appendices V and VI. Action

Items and other information presented by survey respondents not already listed within the Plan were considered by the Town and many were incorporated into this Plan update.

5. **Incorporation of Existing Resource Materials (A.4)**


The Committee began the Plan update process by reviewing the 2006 Plan to familiarize itself with its implementation status. Additionally, the Committee acquired and analyzed current data regarding the environment and ecological resources, geography and land uses, demographics and critical facilities, as well as economics and cultural resources. An extensive GIS database that included the above data plus 2008 and new 2013 FEMA FIRMs, building footprints, assessor's data, locations of critical facilities, land surface elevation, and critical ecological data and sea-level rise data from DEEP was assembled to support GIS risk analyses conducted as part of the Plan update. From this information, the Committee incorporated elements of the original 2006 "Natural Hazard Mitigation Plan, Town of Old Saybrook, Individual Town Mitigation," into the Plan update. The Committee also reviewed "Connecticut's 2010 Natural Hazard Mitigation Plan Update" to insure consistency between the town and state plans. See Appendix I - **Existing Plans, Studies, Reports & Technical Information**.


D. **Plan Adoption (ELEMENT E)**


The Board of Selectmen, as the "governing" body of the Town and the Board of Warden and Burgesses, as the governing body of the Borough [CFR § 201.6(c)(5)] officially adopted the Plan at their regular meetings. See Appendices VII and VIII for Adoption Certificates.

E. **Plan Implementation (ELEMENT D)**

For the purpose of this Plan, unless otherwise specified, the references to "Old Saybrook" or "town" include both the Town and the Borough of Fenwick as it is wholly located within the Town. The Plan prescribes specific mitigation actions and assigns priorities, responsibilities, and resources for each. The Plan uses three broad categories of actions:

 **physical improvements:** rights-of-way, land, housing, or utilities for public purposes;

 **programs:** outreach, stewardship, or services;

 **standards:** road specifications, zoning regulations, fire/building code, or the local flood ordinance.

Some recommendations require regional or inter-town cooperation and are included in Section III **MITIGATION (ELEMENT C)**.

1. **Priorities**

Based on the planning process, this Plan suggests assignments of priority for implementation. Those agencies and officials to whom the Plan assigns responsibility will fine-tune these priorities based on availability of resources.

2. **Responsibilities**

The Plan specifies those agencies and officials responsible for implementing the prescribed actions. The Town and Borough will track progress to ensure consistent and on-going implementation, as well as to update the Plan more readily. Each mitigation action item has a responsible party listed. Some actions have more than one party listed, for those items, the first party listed is the primary party.

3. **Resources (C.6)**

The Town and Borough must allocate sufficient resources to implement the actions prescribed by the Plan, as well as to maintain the Plan through regular updates (every 5 years). Officials/agencies identified as having responsibility for specified actions need to establish and maintain operating or capital budgets with which to fund implementation (and continual maintenance).

These budgets are also necessary to leverage opportunities for Federal and State grants, which typically require a “match” in funding commitment (funds and in-kind services). All of the grants described below require an approved Natural Hazards Mitigation Plan at the time of application and must have an approved plan at time of award.

The following sources of external funding are available to the region and its towns on a limited and often competitive basis:

a. **Hazard Mitigation Grant Program (HMGP)**

The HMGP provides grants to States and local governments to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the HMGP is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. The HMGP is authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. This grant is administered by the Connecticut Department of Emergency Services and Public Protection (DESPP), Division of Emergency Management and Homeland Security (DEMHS).

b. Flood Mitigation Assistance (FMA)

The National Flood Insurance Reform Act (NFIRA) of 1994 (42 U.S.C. 4101) created the FMA program with the goal of reducing or eliminating claims under the National Flood Insurance Program (NFIP).

FEMA provides FMA funds to assist States and communities implement measures that reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insured under the National Flood Insurance Program. This grant is administered by the Connecticut Department of Energy and Environmental Protection (DEEP).

Three types of FMA grants are available to states, regions and towns:

- **Planning Grants** to prepare Flood Mitigation Plans. Only NFIP-participating communities with approved Flood Mitigation Plans can apply for FMA Project grant
- **Project Grants** to implement measures to reduce flood losses, such as elevation, acquisition, or relocation of NFIP-insured structures. States are encouraged to prioritize FMA funds for applications that include repetitive loss properties; these include structures with 2 or more losses each with a claim of at least \$1,000 within any ten-year period since 1978.
- **Management Cost Grants** for the State to help administer the FMA program and actions. Up to ten percent (10%) of Project grants may be awarded to States for Management Cost Grants.

c. Pre-Disaster Mitigation Grant (PDM)

The PDM program provides funds to states, territories, Indian tribal governments, communities, and universities for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event. Funding these plans and projects reduces overall risks to the population and structures, while also reducing reliance on funding from actual disaster declarations. PDM grants are to be awarded on a competitive basis and without reference to state allocations, quotas, or other formula-based allocation of funds. This grant is administered by the Connecticut Department of Energy and Environmental Protection (DEEP).

F. Plan Maintenance Process (ELEMENT A)

The Town and Borough previously did not have an institutionalized process for ongoing review and maintenance of the 2006 Plan. To address this situation, the Planning Commission will implement the following steps which include both annual action items and a five-year update schedule as shown in Table 1 below. Meetings will be scheduled as they are needed according to the schedule.

- Ongoing Review of Mitigation Efforts & Plan Implementation** – The Planning Commissions of both the Town and Borough will monitor and evaluate progress in addressing action items in this Plan and include those accomplishments in their annual reports to the Town and Borough respectively. The updated NHMP will be posted on the Town’s website and an online comment form will be used to solicit public feedback concerning mitigation actions and progress. The Planning Commissions also will post their Annual Reports on the Town and Borough websites to inform and update the citizenry as a part of required ongoing citizen participation in Plan implementation and maintenance. All Planning Commission meetings are open to the public and public participation will be encouraged. In addition, anyone interested in being a part of the NHMP Process can contact any of the officials listed at the beginning of this Plan.
- 5-year Review & Update of Natural Hazard Mitigation Plan** – The Planning Commission will reconvene its multi-agency Committee every 5 years to update the Plan. The Planning Commission will post the Natural Hazard Mitigation Plan Update on the Town website to solicit participation in its planning efforts.

Town Fiscal Year (7/1 – 6/30)	Responsibility	2014 – 2015				2015 – 2016				2016 – 2017				2017 – 2018				2018 – 2019			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Quarter																					
Mitigation action item review	PC					x				x				x				x			
Mitigation action items progress meeting	PC					x				x				x				x			
Budget mitigation action items	BOF, BOS		x				x				x				x				x		
Establish committee for NHMP update	PC													x							
Begin 5 year update process	NHMPC													x							
Review updated NHMP	NHMPC																	x			
Adopt new NHMP	BOS																		x	x	

Table 1: Timeline for Plan review, maintenance and updating over the next 5-year cycle

Table 1 outlines the major activities that will occur on an annual basis and within which quarter of the fiscal year each activity will be initiated. The Planning Commission will take the lead on each of the major activities except in the case of budget preparation where the responsibility will fall on the department, board, commission or other town agency that has responsibility for any of the individual mitigation action items listed in Mitigation - Section III.

The Natural Hazards Mitigation Page will continually be updated on the Old Saybrook Website, and contact information is available there for anyone wanting to submit comments about the Plan or future updates.

The Planning Commission also will take the lead in updating the NHMP beginning with the creation of a committee in the first quarter of FY 2017 – 2018.

G. Agency Comment (Element A)

This Natural Hazards Mitigation Update, 2014 is substantially changed in from the original 2006 Plan. New sections have been added to cover a broader range of Natural Hazards and existing chapters were updated to include updated information regarding events that have taken place in the intervening years. In additions, significant portions of the Plan were re-written in order to meet updated FEMA requirements regarding the Plans contents.

New information regarding storm occurrences, intensity, impacts, and preparedness for each Natural Hazard included has been added.

In addition, this Plan Update has been written as a single Plan for the Town of Old Saybrook and Borough of Fenwick. The 2006 Plan was a large Regional Plan for the nine towns of the former CRERPA region.

II. RISK ASSESSMENT & HAZARD IDENTIFICATION (ELEMENTS B & D)

The 2006 Natural Hazard Mitigation Plan (NHMP) identified a number of natural hazards that could potentially impact the Town of Old Saybrook and Borough of Fenwick, including flooding, wind and tornado, drought and wildfire, winter storm, earthquake, hurricane, sea-level rise, and tsunami. This section acknowledges changes in local development since 2006 and its effects on natural hazard mitigation.

A. The Town & the Vulnerability of its Resources (ELEMENT B)

1. Geography & Land Use Patterns

Old Saybrook lies within Middlesex County, located in south-central Connecticut, along its shoreline with Long Island Sound. To the west, Old Saybrook is bordered by the town of Westbrook; to the north, by the town of Essex; and to the east, by the Connecticut River and the town of Old Lyme. The Borough of Fenwick is located wholly within the Town of Old Saybrook, occupying the southeastern portion of Town. *Although New York's Long Island serves as a barrier, Old Saybrook is susceptible to high winds and storms affecting Long Island Sound due to its geographic location.*

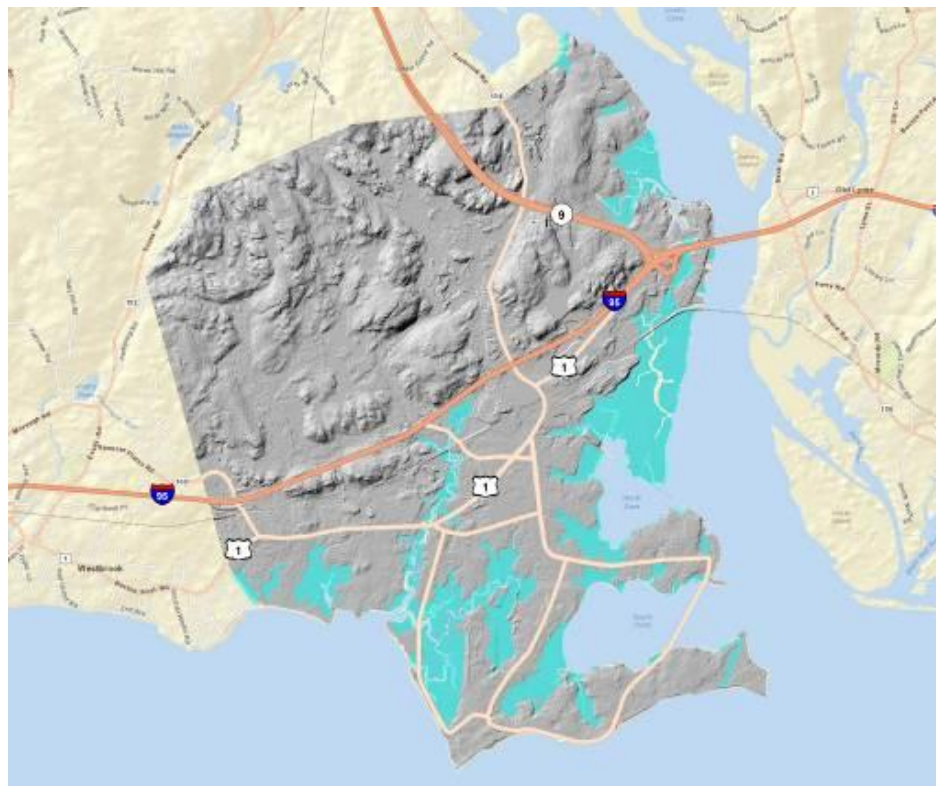


Map 1: **Old Saybrook** in Lower Connecticut River Valley region

Old Saybrook's total area of 15.2 square miles, excluding North and South

Coves, has a relatively low-lying coastal topography, which the FEMA Flood Insurance Study of Old Saybrook (January 1978) describes as “...mostly tidal marsh and coastal plain with scattered projections of hills and knolls.” Other than the Connecticut River, the most significant inland stream draining to the coast is the Oyster River with its tributary Fishing Brook, the only designated “floodway” in Old Saybrook. Rolling hills with a relatively thin veneer of glacial till amid ledge outcroppings typify upland areas north of Interstate 95. 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 storms affecting Long Island Sound or heavy rain events. *The topography throughout Old Saybrook limits development of land to these fragmented geographic areas, some of which natural disasters isolate from each other due to a lack or deficiency of infrastructure between them.*

Old Saybrook has over 23 linear miles of shorelands abutting Long Island Sound (6 miles) and the Connecticut River (17 miles). Some portions of the shoreline rise to an elevation of 20 to 25 feet above sea level to form a *protective barrier* for the quieter coves and marsh areas immediately to the north and along the Connecticut River. *Nautical maps identify North Cove as a harbor of safe refuge in which a vessel can navigate and safely moor because it is normally sheltered from heavy seas by land.*



Map 2: **General Topography** The shaded relief map depicts the land surface in Old Saybrook. The coastal area south of Route 1 is relatively flat with many tidal marshes shown in a teal color.

Residential use dominates developable land in Old Saybrook; totaling 42% of its total area (see Map 4, page 14). Most of the land south of I-95 is completely developed. Actual densities often exceed the level for which the Town currently zones for land use (½-acre zoning now restricts the beach neighborhoods along Long Island Sound) because these neighborhoods very often pre-exist the Town's adoption of zoning and wetlands law (1948 and 1972, respectively). Approximately 22% of the area of the town is vacant land, of which not all is buildable. It is primarily large tracts north of I-95 (one- to two-acre zoning characterizes the northern upland areas of town), which are subject to significant set-asides of open space land at the time of development for the purposes of drainage capacity, habitat conservation, cultural preservation or recreational use. *Similar to neighboring towns on Long Island Sound, relatively high-density residential development, both seasonal and year-round, exposes the town's residents, businesses and their properties to hazards associated with storms affecting Long Island Sound, and the winds and flooding that often accompany them.*

It is important to note that the Borough of Fenwick maintains its own Land Use Department and Building Department and Official. The Borough relies on the Town for all Emergency Services and Public Schools.

Since 2008, the Town has approved applications for few and relatively small subdivisions of land for new development; redevelopment of existing commercial and residential properties dominates the construction market in Old Saybrook. *Old Saybrook is in an area subject to hurricane force winds, so new construction or substantial reconstruction must now meet a 110-mile per hour wind load standard.*

In 2011, the Town eased the process for the conversion of seasonal properties to year-round residences by no longer considering the structure's non-conformity with lot size or bulk standards under current zoning regulations. If the structure remains as-is, then the duration of use may be extended from seasonal to year-round. The revised ordinance requires suitable water supply, septic system health code compliance and winterization of the structure. It is yet to be seen how an extended duration of use of the remaining seasonal dwellings will change the demographic make-up of any of the numerous beach communities throughout which they are scattered. *However, residents of these formerly seasonal cottages will now be exposed to year-round natural hazards.*

Commercial and industrial uses comprise approximately 12.6% of the total land area; and limited access highways and the Amtrak right-of-way, 3%. Influenced by the creation of early roads, then the railroad and, finally, I-95, Old Saybrook continues to function as the lower Connecticut River Valley's center of commerce. *The Town and Borough's most critical facilities are located along the principal routes of the Route 1 east-west corridor and the town's Main Street, which often border or traverse special*

flood hazard areas.

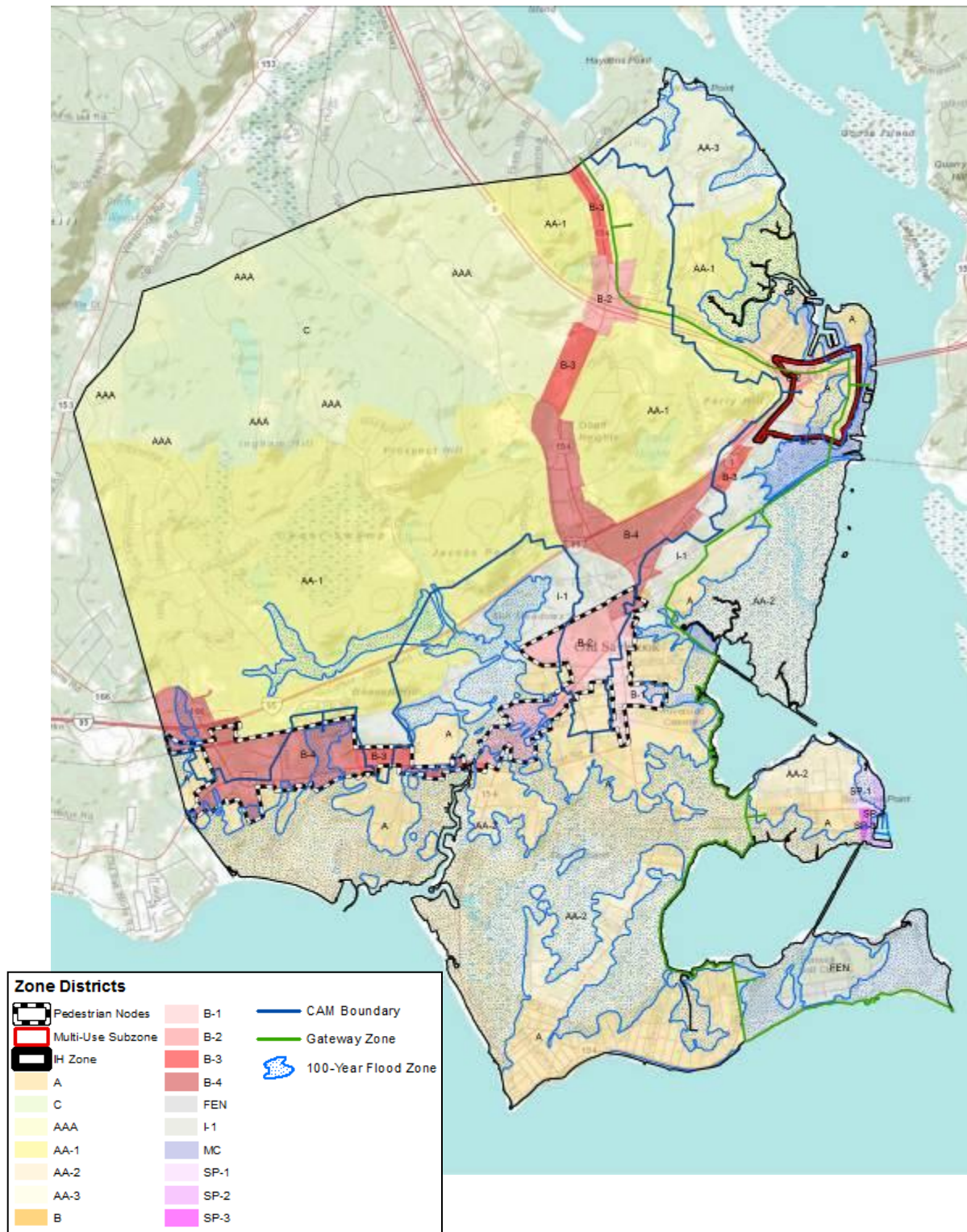
Open space exceeds 20% of the total land area of Old Saybrook. Open space lands include permanently protected conservation areas and municipal properties that serve many functions, including: recreation, drainage, natural habitats and natural communities, agriculture, or civic space. *Open spaces often act as a buffer to mitigate the force of any given natural hazard.*

The remaining area of the town is **vacant** land or bodies of **water**. Old Saybrook possesses an integral relationship with adjoining waters – extensive tidal marshes of Long Island Sound and coves and estuaries of the Connecticut River. *The Town and Borough both support acquisition of vacant land as open space to reduce areas at risk to loss of life or property damage from natural disasters.*

General Land Use	Acres	Percent of town
Residential	4116	42.1
Commercial & Industrial	1229	12.6
Transportation*	293	3.0
Open space	1999	20.4
Vacant	2139	21.9

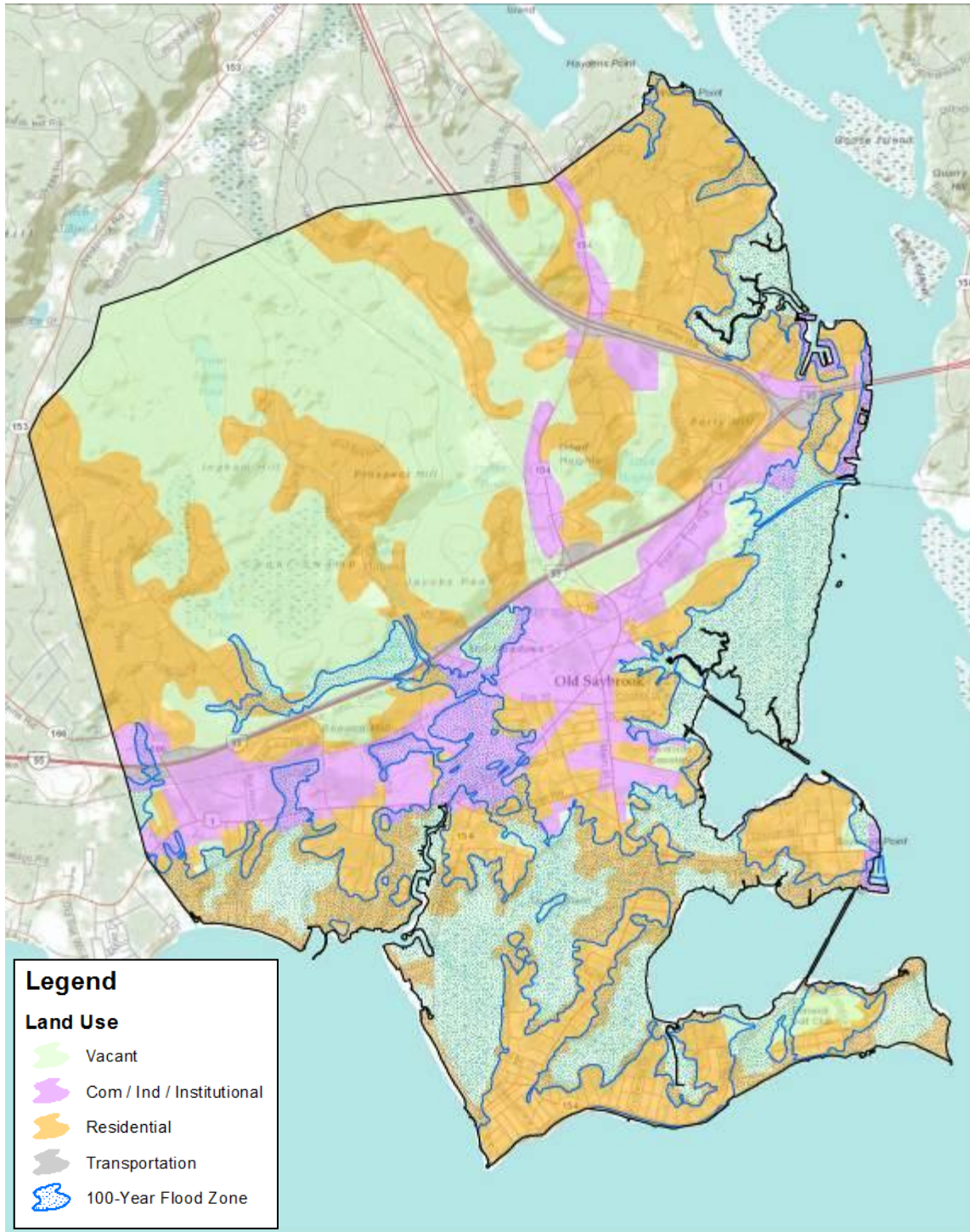
Table 2: General Categories of Land Use in Old Saybrook as of 2012.

* The transportation category includes the general rights-of-way for Routes 95 and 9 and the right-of-way for Amtrak but does not include rights-of-ways for other roads. These are included in the totals of the other general land use categories.



Map 3: **Zoning Districts** with Special Flood Hazard Area

This map depicts the relationships among Old Saybrook's Zoning Districts, the Coastal Area Management Zone, the CT River Gateway Conservation Zone and the 1% annual chance flood zone



Map 4: **General Land Use**

This map depicts generalized land use categories created through aerial photo interpretation. Each category represents the predominant land use or mix of uses in the area but may also include small sites of other land use classes. Vacant land includes areas that are committed open space as well as privately owned undeveloped land.

2. Demographics

The 2010 Census reported a town population of 10,242 people which represents a 1.2% decrease from 2000. This is in sharp contrast to the previous decade when the town population increased 8.5%. *Stagnation of population growth allows the Town to focus on factors in natural hazard mitigation's effects on population, such as its distribution and make-up.*

25.3% of Old Saybrook's 2010 population was over age 65 which is nearly twice the statewide average of 14%. The block-level data indicates that the majority of the over-65 population lives in areas south of I-95, much of which is flood-prone and subject to high winds from hurricanes. *Age-related dispositions and disabilities are a specific factor for the Town and Borough to take into account in mitigating against natural hazards.*

There are several group homes located in Old Saybrook that serve persons with disabilities of various natures (and ages). The U.S. Census Bureau defines disabilities as the following:

- **Sensory Disability** Conditions that include blindness, deafness, or a severe vision or hearing impairment.
- **Physical Disability** Conditions that substantially limit one or more basic physical activities such as walking, climbing stairs, reaching, lifting, or carrying.
- **Mental Disability** Because of a physical, mental, or emotional condition lasting 6 months or more, the person has difficulty learning, remembering or concentrating.
- **Self-care Disability** Because of a physical, mental, or emotional condition lasting 6 months or more, the person has difficulty dressing, bathing, or getting around inside the home.
- **Go-outside-home Disability** Because of a physical, mental, or emotional condition lasting 6 months or more, the person has difficulty going outside the home alone to shop or visit a doctor's office.
- **Employment Disability** Because of a physical, mental, or emotional condition lasting 6 months or more, the person has difficulty working at a job or business.

According to the 2010 census, 441 people - 4.3% of the total population - have disabilities. The distribution by age of these disabilities is:

<u>disability</u>	age 5-15	age 16-64	age 65+
sensory			22
physical		56	65
mental	7	76	21
self-care		25	10
go-outside-home		16	20
employment		123	
totals	7	296	138

Table 3: Number of People with Disabilities by Age Ranges

7.3% of Old Saybrook's 2010 population was characterized as non-English speaking. The largest percentage, 4.4%, speak Indo-European languages, the languages of Europe to southwest Asia. Next most common was Spanish or Creole spoken by 1.2% of the population. *Such a small population with a lack of concentration in one specific language makes it difficult to provide printed educational materials about the potential natural hazards in languages other than English or to be able to anticipate those languages for which the Town and Borough might provide translators at public meetings or at evacuation centers during natural disasters.*

The 2010 U.S. Census reported a total of 5,602 structures of which 4,247 (76%) are residential. Of the residential structures, 3,641 are "owner-occupied" leaving 552 structures that may or may not have tenants during all or portions of the year. *Tenants may be omitted inadvertently from ongoing education about natural hazards or may be difficult to contact through typical Town and Borough resources to warn of pending natural events.*

3. Critical Facilities

There are many definitions of critical facilities that range from physical infrastructure that provides vital services to support the functioning of a community to man-made structures that if they fail could cause property damage, disruption of vital services and loss of life. For the purposes of this plan, critical facilities include:

- Emergency services (medical, police, fire, emergency response, emergency operations center and shelters)
- Telecommunications infrastructure
- Electric power infrastructure
- Natural gas infrastructure
- Gasoline and oil storage and distribution infrastructure
- Transportation infrastructure
- Water supply infrastructure
- Government facilities (Town Hall, Borough Offices, Dept. of Public Works)
- Facilities that permanently or temporarily have large numbers of people (nursing homes, schools, etc.)
- Facilities that use or store hazardous materials
- Dams

The Borough of Fenwick relies on the Town for all emergency services, including Fire, Police, and EMS coverage.

An inventory of critical facilities was prepared for the NHMP (see Map 5) and is discussed below.

The Borough Offices and Public Works storage facility is located at 580 Maple Ave, within a Flood Hazard Area. The Town's police station, fire station, public works vehicle and equipment storage facility, and emergency operations center are located outside the 1% annual chance flood zone but the Old Saybrook Ambulance Association is within an AE flood zone. Old Saybrook uses many of its public buildings for minor natural hazard events, such as cooling centers during heat waves. The Town's principal emergency shelter is the Old Saybrook High School, 1111 Boston Post Road, which is outside special flood hazard areas; however, it is limited in capacity due to its current size, wind speed capacity, emergency generators, and ability to accommodate pets. Furthermore, the shelter could become isolated during an extreme flooding event due to flooding of access roads. *All, except the public works garage are partially or totally within the 500-year flood hazard area.*

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 inventoried and mapped. All gas stations in Old Saybrook are located along Route 1, which is accessible to most of the townspeople and businesses that may lose power and may seek gasoline to power emergency generators. After Storm Alfred and Tropical Storm Irene in 2011 and Superstorm Sandy in 2012, many residents of communities from nearby coastal towns and from further north in the state traveled to Old Saybrook since it was one of the few areas with electricity and 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.*

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 Route 1. *These areas are mostly outside of the 100-year floodplain.*

There are no hospitals in Old Saybrook, but there are two nursing homes, which are outside of the 1% annual chance flood zone. Residents of Apple Rehabilitation Services, which is within the 0.2% annual chance flood zone, recently were evacuated, somewhat chaotically, during Superstorm Sandy in October 2012. *These facilities are likely to contain occupants who may not be sufficiently mobile to avoid death or injury during a natural disaster.*

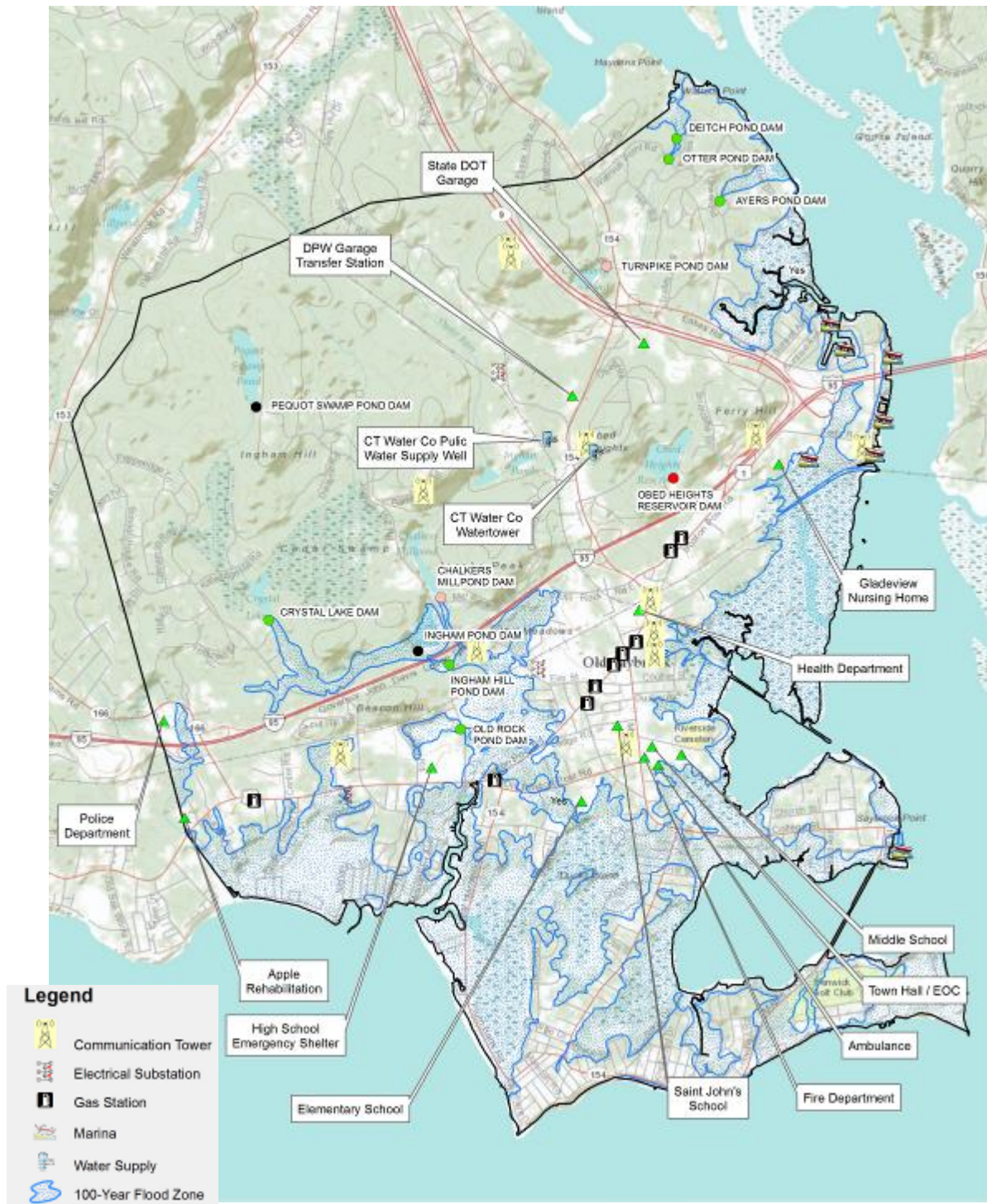
The Connecticut Department of Energy and Environmental Protection (DEEP) requires the registration of all dams over six feet in height. As of 2012, there were eleven such dams in Old Saybrook. The DEEP, through the Connecticut Dam Safety Regulations, classifies dams based on their hazard potential. The classes, definitions and numbers of dams in Old Saybrook include:

Class A – Low hazard potential (6 dams - Old Rock Pond Dam, Ingham Hill Pond Dam, Crystal Lake Dam, Ayers Pond Dam, Otter Pond Dam and Deitch Pond Dam) where failure could cause any of the following: damage to agricultural land; damage to unimproved roadways or minimal economic loss.

Class B – Significant hazard potential (2 dams – Chalkers Millpond Dam and Turnpike Pond Dam) where failure could cause any of the following: possible loss of life; minor damage to habitable structures, residences, hospitals, convalescent homes, schools, etc.; damage to or interruption of the use of service of utilities; damage to primary roadways and railroads; or significant economic loss.

Class C – High hazard potential (1 dam – Obed Heights Reservoir Dam) where failure could cause any of the following: probable loss of life; major damage to habitable structures, residences, hospitals, convalescent homes, schools, etc.; damage to main highways; or great economic loss.

There are 2 unclassified dams (Ingham Pond Dam and Pequot Swamp Pond Dam).



Map 5: **Critical Facilities** with Special Flood Hazard Area

Critical Facilities include facilities necessary to support emergency response before, during and after natural hazard events; utility infrastructure to support businesses and people; facilities that house populations of individuals who must evacuate prior to predicted extreme storm events; marinas; and dams.

Obed Heights Reservoir Dam, Class C, DEEP dam # 10601, is a privately owned earthen dam approximately 465 feet in length and 22 feet in height. It was constructed in 1880. The reservoir behind the dam is approximately 20 acres in size and under normal conditions impounds 175 acre feet of water. Its maximum storage capacity during a storm event is 250 acre feet. The dam was repaired in 1995. There is no emergency operations plan to go into effect in the event of a possible dam failure. *A catastrophic failure of this dam potentially could cause loss of life and destruction of portions of Interstate 95, local roads, a railroad, businesses and homes located downstream.*



Figure 1: 2012 Aerial Photo of area immediately downstream of Obed Heights Reservoir Dam.

Chalkers Millpond Dam, Class B, DEEP dam # 10606, is a relatively low earthen dam approximately 250 feet in length. The pond behind the dam is approximately 10 acres in size. Its depth is unknown. There is no emergency operations plan to go into effect in the event of a possible dam failure. *A catastrophic failure of this dam potentially could flood downstream properties and could cause loss of life and property damage to homes and local roadways.*



Figure 2: 2012 Aerial Photo of area immediately downstream of Chalkers Millpond Dam.

Turnpike Pond Dam, Class B, DEEP dam # 10602, is an earthen dam approximately 130 feet in length. The pond behind the dam is approximately 6 acres in size. Its depth is unknown. There is no emergency operations plan to go into effect in the event of a possible dam failure. *A catastrophic failure of this dam potentially could flood downstream properties and could cause loss of life and property damage to homes, businesses and local roadways.*



Figure 3: 2012 Aerial Photo of area immediately downstream of Turnpike Pond Dam.

4. Economics & Cultural Resources

The primary business and industry sectors in Old Saybrook are as follows:

<u>2005 sector</u>	% of total	
	establishments	employment
services	39.4%	34.9%
trade	28.5%	34.7%
const. and mining	10.1%	4.6%
finance, ins. & real estate	6.7%	4.9%
manufacturing	5.5%	6.8%
government	4.1%	9.0%
transportation & utilities	3.6%	4.5%
agriculture	<u>2.2%</u>	<u>0.7%</u>
	100%	100%

Table 4: Business Establishments and Employment

source: Connecticut Dept. of Economic and Community Development, 2010

As might be the case with many natural disasters and as was demonstrated during and after Tropical Storm Irene in 2011, the economic core of Old Saybrook is vulnerable to loss of electricity and communication services due to downed utility lines. While Old Saybrook was not as affected as many Connecticut towns, the unexpectedly severe Halloween Nor'easter in October 2011 resulted in many closed businesses and week-long school closings (and subsequent extension of the school year). *The potential for services, the largest business sector, to be shut down for an extended period will affect the economic viability of the town and a long lag time for to damage assessment and insurance adjustments can hinder rebuilding activities.*

<u>2011 grand list</u>	assessment	percentage
real estate	\$2,332,996,248	94%
personal property	54,298,520	2%
motor vehicle	<u>94,404,640</u>	<u>4%</u>
total grand list	\$2,481,699,408	100%

Table 5: 2011 Assessment Data (net after exemptions)

source: Old Saybrook Tax Assessor

After a far-reaching disaster with a prolonged recovery, the Town and Borough would be faced with reduced or delayed collection of taxes on land, improvements and personal property, which serves as the Town and Borough's revenue base, yet *the Town and Borough would expend a maximum output of a fixed annual budget to restore infrastructure:*

real estate uses		
residential	\$2,020,973,400	86%
commercial	244,953,100	10%
industrial	20,974,500	1%
public utilities	3,770,600	<1%
vacant land	52,244,500	2%
open space, farm, forestry	93,200	<1%
apartments	<u>1,689,200</u>	<u><1%</u>
total real estate	\$2,344,698,500	100%

Table 6: 2011 Assessed Values by Real Estate Categories

source: Old Saybrook Tax Assessor

Residential uses collectively provide the majority of tax receipts in Old Saybrook, including historic structures in and outside of the two local historic districts – North Cove and Fenwick – and one Federal historic district – South Green. However, the highest density of residential use lies within the special flood hazard area. *Thus, damage from a major coastal storm could result in a reduction in the assessed value of any building so damaged as to be removed; damaged buildings would realize a tax adjustment in the subsequent year and the Town and Borough’s grand list could decrease in value.*

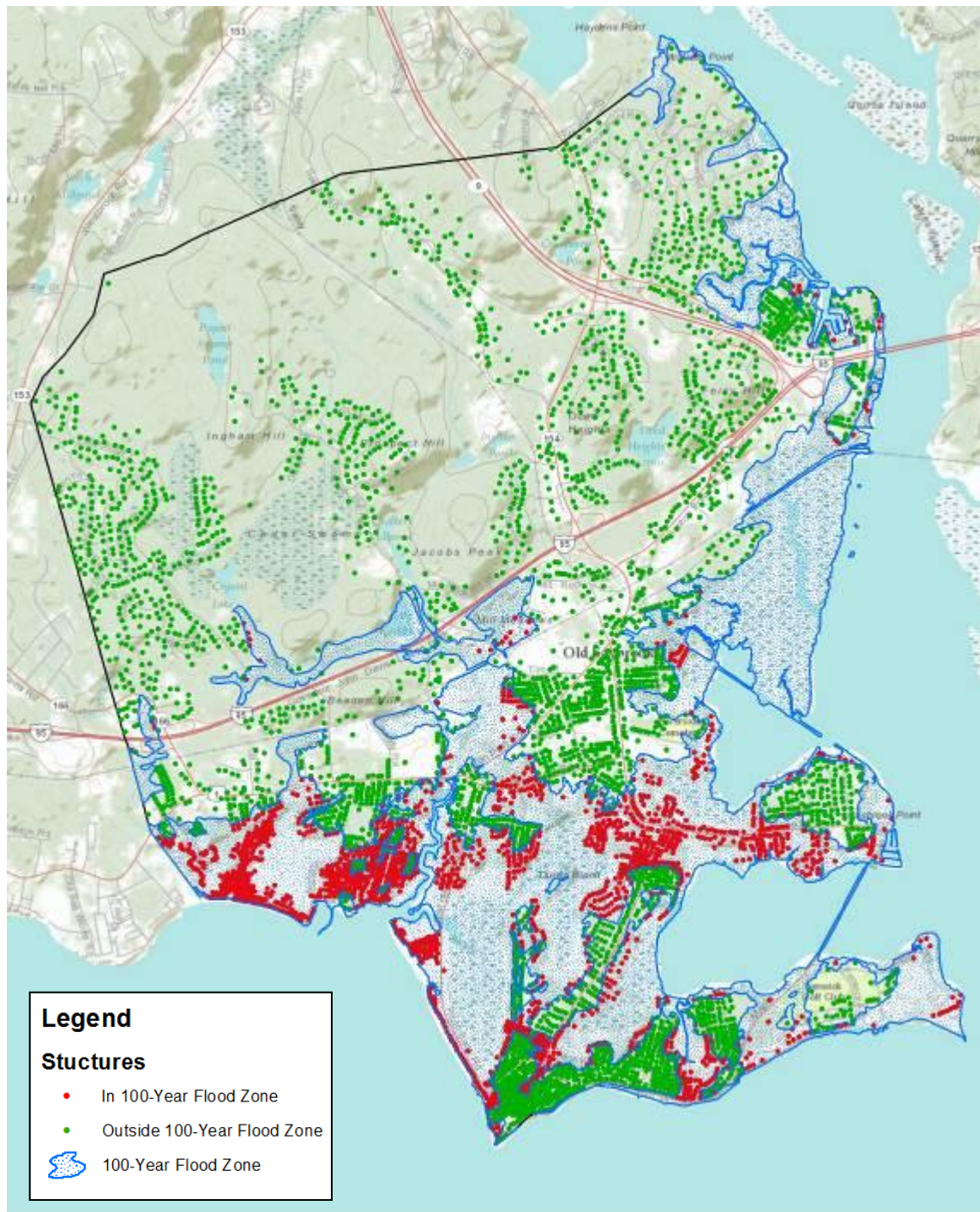
Based on assessed value, over half of the town’s residential properties fall within areas that could be affected by a hurricane. The table below summarizes potential exposure for category 1 to 4 hurricanes while Map 5 shows structures in the 1% annual chance flood zone.

storm category	structures	cumulative total	assessed value	cumulative value
1	367	367	\$148,093,300	\$148,093,300
2	880	1247	\$337,089,000	\$485,182,300
3	1022	2269	\$386,150,800	\$871,333,100
4	727	2996	\$324,601,600	\$1,195,934,700

Table 7: Number of Structures and Assessed Values by Hurricane Inundation Zone

source: Old Saybrook Tax Assessor and Land Use Department

Open space is not a significant generator of tax revenue, but may serve as a buffer to reduce storm effects and protect the value of nearby developed land. Therefore, *vacant land may have potential to similarly provide protection of developed properties if set aside as open space.*



Map 6: **At-Risk Structures** with Special Flood Hazard Area

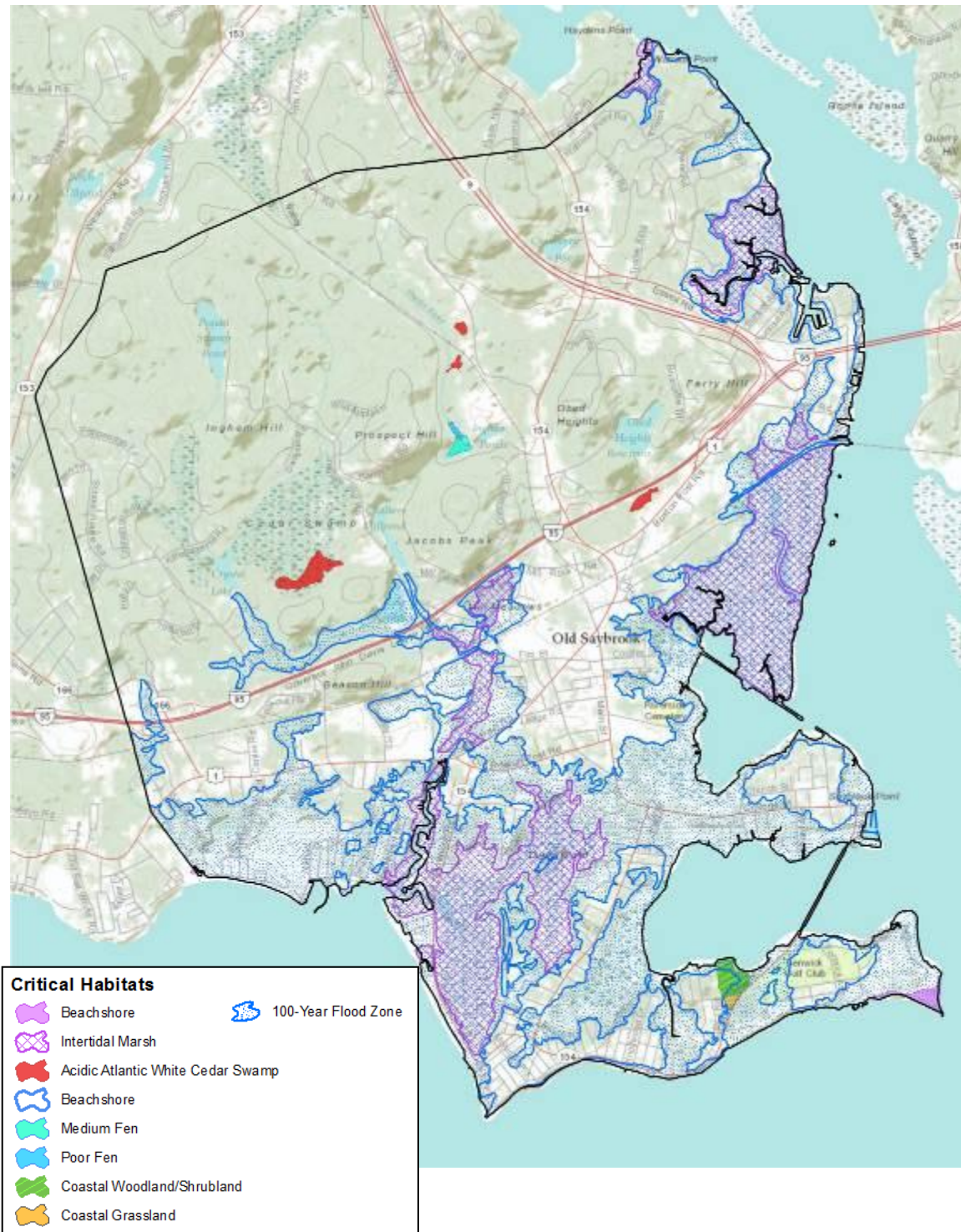
This map depicts principal buildings including residential houses, condominiums, offices, retail stores, schools, etc. Building locations were overlaid on the 2013 FEMA 1% annual chance flood zone map and each building was classified as being located either in (red) or out (green) of the flood zone.

5. Environment and Ecological Resources

Old Saybrook is endowed with many ecological and environmental assets. Beaches, dunes, tidal and inland wetlands, the Connecticut River shoreline and large tracts of uninterrupted forest are examples of some of the Town's valuable natural resources. The CT DEEP has created a statewide map of "Critical Habitats" that highlight ecologically significant areas and areas of species diversity (see Map 7). In Old Saybrook, aside from the fens and the Atlantic White Cedar swamps, *the remaining critical habitat sites periodically suffer damage from flooding, high winds and waves associated with storms affecting Long Island Sound.*

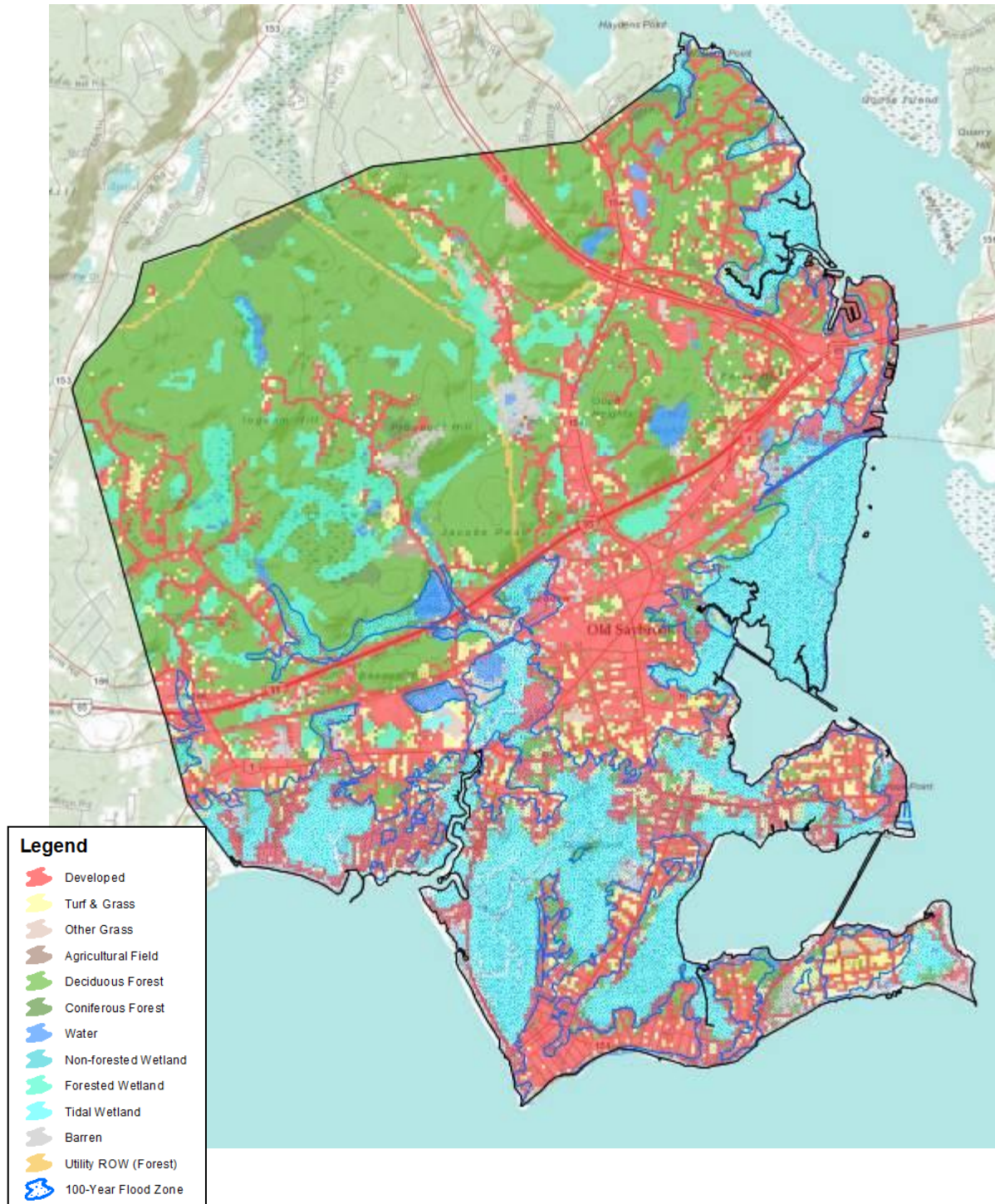
Of great concern is the impact from sea level rise. These critical habitat sites initially will have to deal with increased frequency and magnitude of flooding events but eventually may become permanently flooded – assuming that the rate of sea-level rise exceeds naturally occurring rates of accretion. Of greatest concern in Old Saybrook is the potential loss of the extensive intertidal marsh habitats. These marshes provide breeding areas for a wide variety of terrestrial and aquatic organisms and are important visual components that add to the character of the town. Of the two largest intertidal marsh systems, one is located around Plum Bank/Oyster River and abuts Long Island Sound and the other is located around Ragged Rock Creek and abuts the Connecticut River. Given their different geographic locations, the former is a salt marsh and the latter is a brackish tidal marsh, these intertidal marshes support very different plant and animal communities. These sites are all located within the 100-year floodplain, are well adapted to diurnal tidal flooding, and can tolerate periodic longer term flooding associated with storm events. *These plant communities are not capable of surviving permanent flooding and would "drown" from sea level rise or be forced to migrate up-grade.* However, in places where there are steep slopes, rocky outcrops, or other barriers along the wetland edges, *the tidal wetlands may simply die off.*

Similarly, the extent of the built environment surrounding Old Saybrook's tidal marshes will prevent them from migrating upland in response to sea level rise. This is unfortunate for the built areas, as well, because the buffering effect tidal wetlands provide from storm surges, wave action and flooding will be lost. *Engineered responses to natural hazards, such as sea walls, groins, etc., that "harden" the shoreline can have undesirable effects on natural processes and unintended consequences on storm energy by transferring associated damage to other portions of the shore.*



Map 7: **Coastal Critical Habitat** with Special Flood Hazard Area

Critical Habitats represent significant natural community types occurring in CT. These habitats are known to host a number of rare species including highly specialized invertebrates with very specific habitat associations. Critical Habitats also can be used to highlight ecologically significant areas and to target areas of species diversity.



Map 8: **Land Cover** with Special Flood Hazard Area

This map depicts land cover categories created through interpretation of satellite imagery. Each category represents the predominant land cover in the area but may also include small areas of other land cover types. Land cover indicates what the predominant landscape features are in an area, not how the land is being used. For example, low density residential forested areas would be classified as forest cover, not developed land.

B. Natural Hazards (ELEMENT B)

Old Saybrook is at risk from a variety of natural hazards, each occurring with different frequency, probability, and intensity of impact. The following tables summarize the types of damages associated with each hazard type, the geographic extent, recurrence frequency and damage magnitude.

Effects & Impacts	Natural Hazard Type								
	<i>Hurricane and Tropical Storm</i>	<i>Summer Storm</i>	<i>Winter Storm</i>	<i>High Wind and Tornado</i>	<i>Earthquake</i>	<i>Wildfire</i>	<i>Drought</i>	<i>Tsunami</i>	<i>Heat Wave</i>
Coastal Erosion (CE)	X	X	X	X				X	
Building Damage (BD)	X	X	X	X	X	X		X	
Downed trees & branches (DT)	X	X	X	X				X	
Flooding – Coastal (FC)	X	X	X	X				X	
Flooding – Dam Failure (FD)	X	X	X		X				
Flooding – Inland (FI)	X	X	X						
Flooding – Sea Level Rise (FSLR)	X	X	X						
Flooding – Storm Surge (FSS)	X	X	X						
Fire (F)		X	X	X	X	X	X		
High Wind (HW)	X	X	X	X					
Hail (H)		X							
Ice (I)			X						
Infrastructure Damage (ID)	X	X	X	X	X	X		X	X
Lightning (L)	X	X				X			
Power Failure (PF)	X	X	X	X	X	X		X	X
Road Closures & Isolation (RC)	X	X	X	X	X				
Snow (S)			X						
Water Rationing (WR)							X		

Table 8: Natural Hazard Effects & Impacts

The categories of impacts that may be caused by different types of natural hazards.

Natural Hazards affecting the Lower Connecticut River Valley Region		
DATE	NAME / TYPE	IMPACTS (codes from Table 8)
March 1936	Flood of 1936	FI
September 1938	Great New England Hurricane (Cat. 1)	CE, BD, DT, FC, FI, FS,HW, PF, ID
September 1944	Great Atlantic Hurricane (Cat. 1)	CE, BD, DT, FC, FI, FS,HW, PF, ID
August 30, 1954	Hurricane Carol (Cat. 2)	CE, BD, DT, FC, FI, FS,HW, PF, ID
September 1960	Hurricane Donna (Cat. 1)	CE, BD, DT, FC, FI, FS,HW, PF, ID
March 2-5, 1960	snowstorm	DT, HW, S
February 2-5, 1961	snowstorm	DT, HW, S
January 1978	winter rainstorm	FI
February 1978	Blizzard of '78	BD, DT, HW, PF, ID, S
June 1982	rainstorm	FI
August 1991	Hurricane Bob (Cat. 1)	CE, BD, DT, FC, FI, FS,HW, PF, ID
September 1985	Hurricane Gloria (Cat. 1)	CE, BD, DT, FC, FI, FS,HW, PF, ID
October 1991	Hurricane Grace "The Perfect Storm"	CE, BD, DT, FC, FI, FS,HW, PF, ID
December 1992	nor'easter	DT, HW, FC, PF
March 12-14, 1993	snowstorm	DT, HW, S
January 6-8, 1996	snowstorm	DT, HW, S
July 1996	remnants of Hurricane Bertha (tropical storm)	CE, BD, DT, FC, FI, FS,HW, PF, ID
February 15-18, 2003	snowstorm	DT, HW, S
October 2005	remnants of Hurricane Tammy	CE, BD, DT, FC, FI, FS,HW, PF, ID
April 2007	nor'easter	DT, HW, FC, PF
February 2011	Winter Storm Ella "Groundhog Day Blizzard"	DT, HW, S
February 7, 2011	winter rainstorm	FI
August 2011	Tropical Storm Irene	CE, BD, DT, FC, FI, FS,HW, PF, ID
October 2011	Storm Alfred	DT, PF, ID, S
October 2012	Superstorm Sandy	CE, BD, DT, FC, FI, FS,HW, PF, ID
February 2013	Winter Storm Nemo	DT, HW, S

Table 9: Natural Hazards Affecting the Lower Connecticut River Valley Region

This table is a chronological summary of natural hazard events that have caused significant damage in Old Saybrook and the surrounding region. The IMPACTS column lists the types of damages from each storm using codes from Table 8.

natural hazard type	geographic scope	frequency	damage magnitude
	1 – localized 2 – large area 3 – townwide	0 – extremely rare 1 – infrequent (< ten years) 2 – occasional (< annual) 3 – often (> annual)	1 – low 2 – medium 3 – high
<i>Hurricane and Tropical Storm</i>	3	2	3
<i>Summer Storm</i>	1-3	3	2
<i>Winter Storm</i>	3	3	2
<i>High Wind and Tornado</i>	2	1	2-3
<i>Earthquake</i>	3	0	2-3
<i>Wildfire</i>	1	0-1	1
<i>Drought</i>	3	0-1	1
<i>Tsunami</i>	2	0	3
<i>Flood</i>	2	2	3
<i>Heat Wave</i>	3	2	1*

Table 10: Natural Hazard Scope, Frequency & Magnitude

Natural hazard events can affect different parts of Old Saybrook, can range in occurrence from rare to often, and can cause varying degrees of damage. This table summarizes these differences among the types of natural hazards.

* physical infrastructure damage from heat waves typically is low; however, risks to health and mortality can be significant.

The following subsections describe for each natural hazard the geographic locations in Old Saybrook that may be impacted; past occurrences; the likelihood of recurrence; potential impacts; authorities, policies, programs and resources to deal with the hazard; and specific mitigation actions that have or will be taken. To assess potential impacts, the team used damage assessment data from recent storm experiences, GIS analyses using detailed local spatial data (e.g. building locations, 2013 1% annual chance flood zones, transportation networks, etc.) and Hazus-MH to model impacts from flooding, hurricanes and earthquakes.

1. **Flooding**

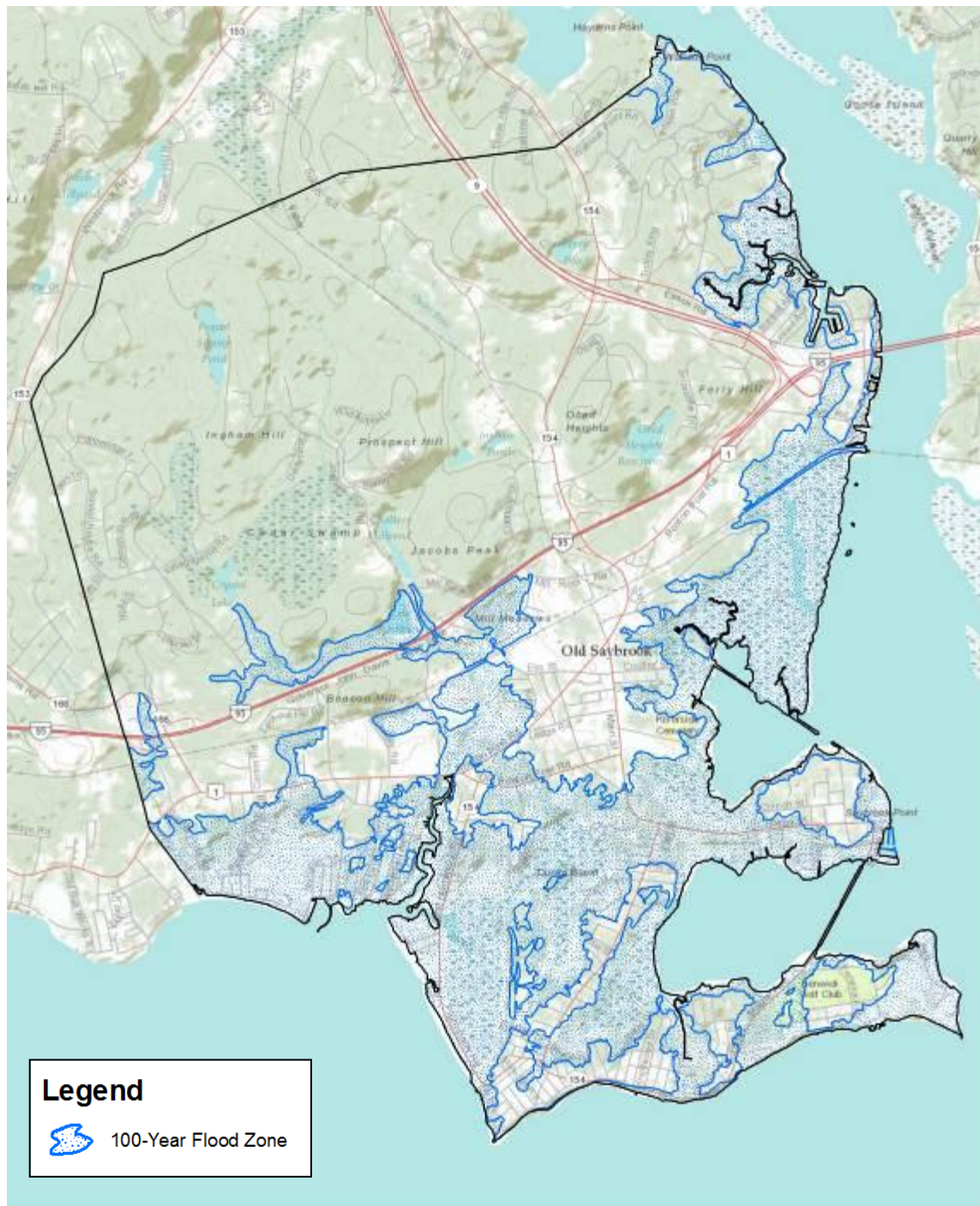
A flood, as defined by the National Flood Insurance Program, is a general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties from overflow of inland or tidal waters; unusual and rapid accumulation or runoff of surface waters from any source; or mudflow. A flood can also be a collapse or subsidence of land along the shore of a lake or similar body of water because of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels that result in a flood as defined above.

In Old Saybrook 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 relatively 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.

a. **Geographic Location (B.1)**

FEMA provides Flood Insurance Rate Maps (FIRMs) that delineate areas in Old Saybrook vulnerable to 100-year and 500-year flood events. 100-year floods have a 1% chance of occurring in any given year; 500-year floods a 0.2% chance. Map 9 shows the most recent FEMA special flood hazard area that officially was adopted by the Town in 2012, effective February 6, 2013. It covers approximately 2,800 acres or 29% of the Town. The majority of the 1% annual chance flood zone lies to the south of US Interstate 95 with a small area along the Connecticut River north of Interstate 95. The 1% annual chance flood zone is most susceptible to coastal flooding.

There is one floodway in Old Saybrook along Fishing Brook just north of Interstate 95.



Map 9: Special Flood Hazard Area

This map displays areas in Old Saybrook and Fenwick that have been mapped by FEMA as within the 1% annual chance flood zone which includes special flood hazard areas designated A, AE, AO and VE. These areas have a 1% chance of flooding in any given year. The 1% annual chance flood zone covers approximately 2,800 acres or 29% of the area of the town and is based on the FEMA FIRMs effective 2/6/2013.

b. **Occurrences (B.2)**

For a list of notable occurrences of this natural hazard, see Table 9, Natural Hazards Affecting the Lower Connecticut River Valley Region. Two recent coastal flooding events that caused significant property damage occurred in August 2011 - Tropical Storm Irene - and October 2012 - Superstorm Sandy.

The Town also experienced significant inland flooding from two rain events during the weeks of March 22 and March 29, 2010 when approximately 13" of precipitation fell in Old Saybrook.

c. **Probability of Occurring Again (B.2)**

Floods are a *highly likely* hazard in Old Saybrook. High-intensity localized storms can cause flooding of the relatively short coastal and upland watercourses; regional natural hazard rainfall events can cause flooding of the larger watershed of the Connecticut River; and tropical storms, hurricanes and nor'easters can cause significant coastal flooding.

d. **Potential Impacts (B.3)**

The impacts from flooding can range from localized nuisance flooding to much more widespread coastal flooding affecting entire neighborhoods or sections of the town.

Similar to nearby communities along Long Island Sound, the densest residential development in Old Saybrook is located in the beach communities directly adjacent to the Sound. Much of this development occurred in the early 20th century at a time when there were no standards for construction within areas subject to flood hazards. Some of the densest and most flood prone areas are located in the Chalker Beach, Indiantown and Saybrook Manor neighborhoods toward the southwestern part of Old Saybrook. Chalker Beach, in particular, is prone to damage as a result of a significant number of cottages being located directly on the beach with no seawall or protective dunes.

The Old Saybrook Land Use Office conducted an ArcGIS overlay analysis with the recently adopted 2013 FIRMs and a spatial database of building locations. It was determined that approximately 2,250 principal structures are within the SFHA. Compared to the older 2008 FIRMs, this represents an increase of over 500 principal structures within the SFHA at risk to damage from 100-year flood events. Additionally, there are a number of roads that are subject to nuisance flooding as well as to more significant coastal flooding. These include portions of Elm Street,

College Street near North Cove Road, Banbury Crossing, South Cove Causeway, Plum Bank Road and Salt Meadow Road near Cornfield Park, Sandy Point Road, Shetucket Trail, Fourth Avenue, Sunset Avenue, Old Post Road (eastern end), Owaneco Trail, Obed Trail, Nehantic Trail, Mohican Trail, RedBird Trail and the northeastern end of Maple Ave near its intersection at Main and College Streets.

Roadway flooding during any event in which Long Island Sound is affected with higher than normal water levels can create extremely dangerous conditions and can isolate significant areas of the town (see Map 10). This can prevent residents from fleeing flooding if they had failed to heed evacuation orders and can prevent emergency responders from accessing flood-isolated locations. A GIS analysis done by the Old Saybrook Land Use Department found that approximately 40% of residences in Town could be isolated during a 100-year flood event. This situation unfortunately was all-too-well demonstrated during Superstorm Sandy when the Old Saybrook Fire Department was unable, due to flooded roads and sand, to reach two houses that burned in the Chalker Beach neighborhood.

In some cases, flooding events are exacerbated by inadequate stormwater management infrastructure. In particular, the Elm Street underpass, previously mentioned, is such a point. At this location, the railroad overpass, constructed during the early part of the 1900's, dictated the elevation of the Elm Street roadway constructed beneath it. What resulted was a depression under the railroad overpass that often floods, even during relatively small rain events. The installation of a floodgate on the Oyster River immediately north of the overpass has improved the situation by reducing the flooding effects from the tidal Mill Marsh.

In the last several years, Old Saybrook experienced significant and costly coastal flooding from Tropical Storm Irene in August 2011 and from Superstorm Sandy in October 2012. Property damage from these two storms primarily was from flooding with Superstorm Sandy producing some of the worst flooding that this area has experienced in several decades or longer. Both storms also caused extensive and prolonged power outages due to downed trees and tree limbs that fell on power lines.

Estimated building damages from Tropical Storm Irene and Superstorm Sandy were tabulated by the Old Saybrook Building Department. 215 residences were damaged from Tropical Storm Irene and 347 were damaged from Superstorm Sandy. These structures were inspected and classified using FEMA damage assessment protocols and estimated costs for structural repairs

were calculated and are shown in Tables 10 and 11 below.

FEMA Damage Class	# Residences	Estimated Cost
Affected	195	\$192,000
Minor	15	\$225,000
Major	8	\$400,000
Destroyed	0	\$0

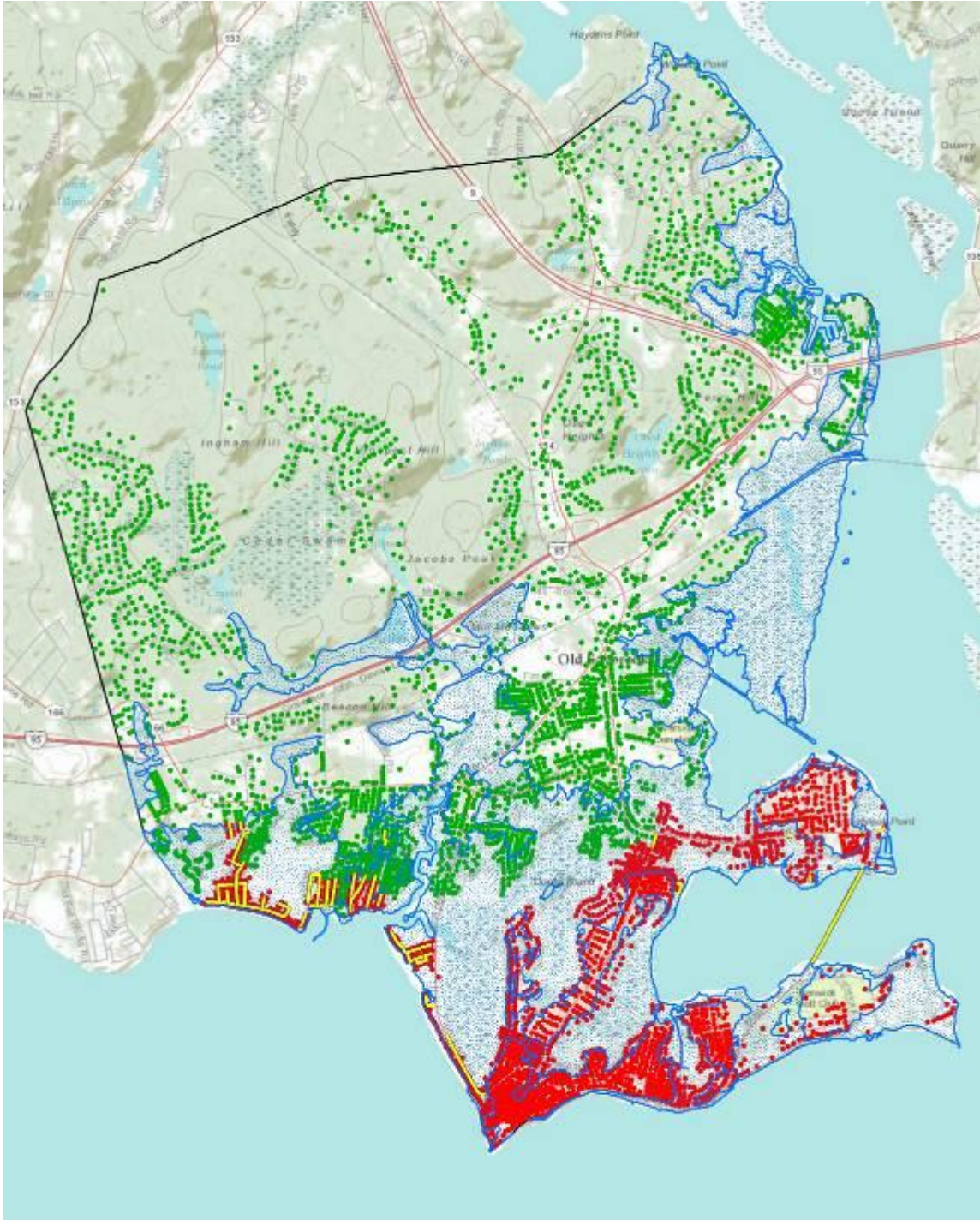
Table 11: Residential Losses from Tropical Storm Irene

FEMA Damage Class	# Residences	Estimated Cost
Affected	274	\$274,000
Minor	61	\$915,000
Major	8	\$400,000
Destroyed	4	\$600,000

Table 12: Residential Losses from Superstorm Sandy

Initial recovery costs to the Town as a result of these two storms were \$375,000 for Tropical Storm Irene and \$567,000 for Superstorm Sandy. These totals include personnel, material and subcontractor costs that are reimbursable to the Town through FEMA; not included are some costs reimbursable from other funding sources. Other significant Town reconstruction costs due to Superstorm Sandy include shoreline and seawall restoration in Cornfield Point and Knollwood (cost TBD) and the rebuilding of the Town’s miniature golf course at Saybrook Point (\$475,000).

FEMA’s Hazus-MH application was run to estimate losses from a 100-year flood. A complete report of the results of this analysis can be found in Appendix III. The Hazus-MH model predicts that for a 100-year flood approximately 851 building, nearly all residential, will suffer at least moderate damage. It also predicts that two schools will have moderate damage and that one school will experience loss of use. The model further estimates that 3,219 people will seek shelter in public shelters. This estimate seems rather high based on recent experiences with Tropical Storm Irene and Superstorm Sandy when fewer than 1,000 people used the Town’s High School for temporary shelter. The HAZUS-predicted economic loss from a 100-year flood event totals \$107,240,000 which is broken down into \$169,430,000 for building losses and \$1,260,000 for losses associated with business interruptions.



Map 10: **Potential Isolation Areas**

This map displays roads (yellow lines) subject to coastal flooding and those principal structures (red dots) that may become isolated as a result. There are more than 2,300 principal structures that could become isolated during extreme flooding events.

e. **Authorities, Policies, Programs and Resources (C.1)**

The Town of Old Saybrook and Borough of Fenwick both participate in the National Flood Insurance Program (NFIP). FEMA develops NFIP FIRMs through an engineering report called the Flood Insurance Study (FIS). FIRMs depict the limits of the floodwaters as special flood hazard areas within which “zones” establish the base flood elevation and, therefore, risk for flooding and flood-related damages.

Within the Old Saybrook Flood Plain Management Ordinance, 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 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 7.3 of the Borough of Fenwick Zoning Regulations defines the Special Flood Hazard. The same regulations are applied as those in the Town, with the Borough Building Official and Engineer being responsible for those structures built within Fenwick.

In 2008, the Town and Borough adopted revised FIRMs and amended Town Code Chapter 128 “Floodplain Management” choosing to adopt higher regulatory standards including:

- 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; and
- standards for use restrictions.

Since 2008, FEMA has conducted a new Flood Insurance Study for Middlesex County that includes updated factors on still water elevations, wave height analysis, wave breaking data, wave overtopping data, erosion, shoreline protection structures and development and new FIRMs.

On October 23, 2012, the Town and Borough adopted, effective February 6, 2013, the new FEMA FIRMs and changes to Town Code Chapter 128 "Floodplain Management" that added a requirement that construction, in the SFHA AE Zone seaward of the FEMA established line of *limit of moderate wave action* (LiMWA), must conform to NFIP construction standards for the SFHA VE Zone. Old Saybrook is the first town in Connecticut to adopt this higher standard. Additionally, structures in A and V zones must now have 1' of freeboard. Given Old Saybrook's high exposure to coastal flood damage, the Town will continue to adopt and enforce minimum NFIP standards as such standards evolve.

The NFIP collects data on repetitive losses in special flood hazard areas. Repetitive loss properties (RLP) are those with insurance claims for multiple events. There are close to 2,100 structures located within the A, AE and VE flood zones in Old Saybrook. Since the beginning of the NFIP in 1979, twenty-two (22) properties have been listed as RLPs with all twenty-two being located within the coastal zone along Long Island Sound and the Connecticut River. Since the 2006 Old Saybrook Natural Hazard Mitigation Plan, two of these properties have been demolished and rebuilt leaving 20 remaining RLPs as of September 30, 2011. Of the twenty properties, eighteen are located in areas directly impacted by flooding associated with Long Island Sound. Of those twenty, ten are located in Chalker Beach and three are located in neighboring Indiantown. Another three are located on Plum Bank Road opposite Long Island Sound in an area fronted by a concrete seawall. The only two non-Long Island Sound RLPs were a restaurant at Saybrook Point and a property on Main Street on the way to Saybrook Point. It is anticipated that as a result of damages from Tropical Storm Irene and Superstorm Sandy that the number of properties classified as RLPs will increase.

In addition to the NFIP, the building code and the Flood Plain Management Ordinance, the town also uses other authorities, policies, programs and resources to mitigate flood hazards. For example, the Inland Wetlands and Watercourses Commission, by policy, does not permit filling of inland wetlands that will reduce flood storage capacity. Similarly, through a rigorous site plan review process for new development or site redevelopment, the Zoning Commission promotes practices that mitigate increases in stormwater runoff thereby reducing downstream flooding problems.

From a public safety perspective, the Town also commits significant personnel and equipment resources in anticipation of forecast flooding events. During Superstorm Sandy, the Town's Emergency Operation Center established a first-of-its-kind Old Saybrook Storm Sandy webpage that posted critical information about potential flood conditions, evacuation notices, the Town's emergency shelter and other critical information. The goal of the website was to keep residents informed before, during and after the storm.

f. **Mitigation Specific to this Hazard (C.3, C.4)**

See Section III MITIGATION (ELEMENT C) for comprehensive mitigation strategy. The following are representative mitigation activities specific to this hazard:

Land Acquisition – Advance an assertive land acquisition plan to reserve vacant land subject to flooding. The Town's Land Acquisition Committee should regularly evaluate opportunities to acquire lands for municipal purposes, including floodplain protection and relocation of critical facilities.

Open Space Criteria – Consider adding sea level rise to the Town's considerations for preserving as open space those areas that flood waters will inundate.

Stormwater Infrastructure Inventory – Complete mapping and monitoring of catch basins, stormwater outfalls and related infrastructure.

Stormwater Infrastructure Maintenance – Provide for annual maintenance of stormwater infrastructure, including catch basins, detention basins and outfalls. DPW annually cleans catch basins.

Stormwater Management – Continue land use permitting that encourages stormwater retention within new and redeveloping areas (rain gardens, curb less roads, etc.). In 2010 the Town updated its Regulations for Public Improvements for roads to encourage pervious surfaces and sheet flow into stormwater swales.

Best Management Practices – Continue to use best management practices (BMPs) as described in the Connecticut DEEP Stormwater Management Guidelines on a site-by-site basis as advised by a professional engineer.

Road Elevation – Evaluate roads to develop plans for improvement or elevation for emergency access and evacuation.

Repetitive Loss Elevation Funding – Encourage RL property owners to obtain assistance from DEEP and FEMA to acquire hazard mitigation funds to elevate structures where appropriate. Town continues to educate RL and SL property owners in conjunction with regular one-on-one guidance in permitting. Town maintains a Floodplain Management heading under Town Initiatives on its website.



Existing homes. Mitigation of older homes vulnerable to coastal flooding and storm surge includes elevation of existing structures. This view shows one house recently elevated with another in the background, which needs to be elevated.



New home construction. New homes built in coastal areas of Old Saybrook must comply with current building code requirements for flood elevation and high winds and must comply with the Town's Flood Ordinance which now requires 1' of freeboard above the FEMA base flood elevation.

2. **High Wind & Tornado**

Straight-line winds, responsible for most thunderstorm wind damage, can exceed 100 mph. One type of straight-line wind, the downburst, is a small area of rapidly descending air beneath a thunderstorm. A downburst can cause damage equivalent to a strong tornado and can be extremely dangerous to aviation. A “dry microburst” is a downburst that occurs with little or no rain.

A tornado is a violently rotating column of air, pendant from a cumuliform cloud or underneath a cumuliform cloud, and often visible as a funnel cloud. High winds are typically 1-minute average surface winds of 40 mph or greater lasting for 1 hour or longer, or winds gusting to 58 mph or greater regardless of duration that are either expected or observed over land.

a. **Geographic Location (B.1)**

While tornadoes and downbursts impact relatively small geographic areas, they can occur anywhere in Old Saybrook.

b. **Occurrences (B.2)**

There are no records of tornadoes or downbursts having occurred in Old Saybrook. However, deadly and destructive tornados do occur in Connecticut. Of the 7 recorded to have occurred in Middlesex County, none touched down in Old Saybrook. Tornados have affected nearby towns on June 30, 1998 (F1 tornados, Killingworth and Lyme, and an F0 tornado, Chester) and on July 31, 2009 (F1 tornado, Madison).

c. **Probability of Occurring Again (B.2)**

Tornados and downbursts are unlikely to occur in Old Saybrook.

d. **Potential Impacts (B.3)**

Tornados and downbursts destroy vegetation and structures within the storm’s path. For example, “October 3, 1979: The Windsor Locks, Connecticut tornado, an extremely destructive F4 tornado, one of the worst in Connecticut history, killed 3 persons and injured 500 more in northern Hartford County. The tornado struck without warning, tearing through Bradley International Airport destroying more than a dozen airplanes, and narrowly missing a Boeing 727, which was attempting to land. About 100 homes were completely leveled. Most of the \$200+ million in damage was done in Windsor Locks and Suffield. This was the sixth-most damaging tornado in US history.” [Wikipedia, 2012]

The path and resulting impacts of a tornado are nearly impossible to predict other than warnings for an area that may be struck with a tornado. Table X below lists potential impacts based on the Enhanced Fujita Scale number of a tornado.

EF-Scale Number	Intensity	Wind Speed (mph)	Impact
EF-0	Gale Tornado	65-85	Some damage to chimneys; branches broken off trees; shallow-rooted trees knocked over; damage to sign boards.
EF-1	Moderate Tornado	86-110	Peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off the roads; attached garages may be destroyed.
EF-2	Significant Tornado	111-135	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated.
EF-3	Sever Tornado	136-165	Roof and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted.
EF-4	Devastating Tornado	166-200	Well-constructed houses leveled; structures with weak foundations blown off for some distance; cars thrown and large missiles generated.
EF-5	Incredible Tornado	201-240	Strong frame houses lifted off foundations and carried considerable distances to disintegrate; automobile-sized missiles fly through the air in excess of 100 meters; trees debarked; steel-reinforced concrete structures badly damaged.

Table 13: Enhanced Fujita Scale and potential impacts.

e. **Authorities, Policies, Programs and Resources (C.1)**

The Town and Borough enforce the Connecticut State Building Code that requires new construction in Old Saybrook to be able to withstand 110 mph wind loads. This requirement is effective in minimizing damage to structures during high wind events. Typical wind events in Connecticut do not have sustained wind speeds higher than 110 mph requiring a change for in design standards for Old Saybrook.

f. **Mitigation Specific to this Hazard (C.3, C.4)**

See Section III MITIGATION (ELEMENT C) for comprehensive mitigation strategy. The following are representative mitigation activities specific to this hazard:

Mandatory Wind Code Compliance. The state building code requires that all new and reconstructed buildings in Old Saybrook must meet 110 mph wind loads standards.

Underground Utilities. Require underground utilities for new development; require retrofitting during redevelopment of existing sites to bury utilities where appropriate to mitigate natural hazards.

Tree Trimming Program. Implement a tree hazard management program to encourage appropriate planting and maintenance practices to minimize future storm damage to buildings, utilities and streets.

Outreach. Use the Town and Borough websites and other media to alert people to the risk of high winds and tornadoes, how and where to take shelter and to register for CT Alert Emergency Notification System.

3. Drought & Wildfire

A drought is defined as a period of dry weather: a long period of extremely dry weather when there is not enough rain for the successful growing of crops or the replenishment of water supplies. A wildfire is any uncontrolled fire in combustible vegetation that occurs in the countryside or a wilderness area. A wildfire differs from other fires by its extensive size, the speed at which it can spread out from its original source, its potential to change direction unexpectedly, and its ability to jump gaps such as roads, rivers and fire breaks. Wildfires are characterized in terms of the cause of ignition, their physical properties such as speed of propagation, the combustible material present, and the effect of weather on the fire.

a. Geographic Location (B.1)

As with all the towns in the region, Old Saybrook and Fenwick are small enough that a drought would be townwide. Under extreme drought conditions, areas of concern for wildfire include the deciduous forest located in the northern areas of town and areas of dried marsh vegetation in coastal tidal marshes. Drought also can exacerbate the potential for small wildfires and hinder the ability of the town to control outbreaks.



Homes near coastal wetlands, Old Saybrook

Large areas of *Phragmites australis* (common reed) located near coastal structures have the potential to catch fire during times of severe drought.

b. Occurrences (B.2)

Below is a table of historic data for drought that includes coastal Connecticut. [Northeast Regional Climate Center (**NRCC**) in the [Department of Earth and Atmospheric Sciences](#) at Cornell University]

Coastal Climate Division --		
Drought Periods	Duration	Lowest PDSI
1/1901 - 2/1901	2 months	-3.79 in 2/1901
8/1910 - 7/1911	12 months	-4.30 in 7/1911
7/1913 - 9/1913	3 months	-3.68 in 8/1913
12/1924 - 6/1925	7 months	-3.64 in 6/1925
4/1930 - 3/1931	12 months	-4.26 in 9/1930
11/1949 - 1/1950	3 months	-3.13 in 12/1949
9/1964 - 1/1965	5 months	-4.16 in 11/1964
3/1965 - 2/1967	24 months	-5.19 in 12/1965
3/1985 - 4/1985	2 months	-3.84 in 4/1985
8/1995 - 9/1995	2 months	-3.61 in 8/1995
7/1999 - 8/1999	2 months	-3.50 in 7/1999
1/2002 - 4/2002	4 months	-3.67 in 2/2002

Table 14: Record of Historic Droughts computed by the National Climatic Data Center. Period of record: January 1895 through June 2012

In the spring of 2012 headlines on the local network television stations such as, “Mar 28, 2012 – Brush fires have been reported in East Haddam, East Windsor and Fairfield,” were common. “The largest of the fires consumed more than 50 acres in Devil’s Hopyard State Park in East Haddam and fire officials made the decision to let the fire burn.” [NBC Connecticut website, March 28, 2012] “Brush fires are not uncommon[,] since 2009 there has been 130 brush fires in Connecticut, fortunately none have been terribly large other than that 60 + acre fire in remote Salisbury that fire fighters had a tough time getting to last year.” [WXedge.com, Connecticut Brush Fire 101, Brandon Gervais (a 22 year old Environmental Science senior at the University of New Haven) on March 19, 2012]

c. Probability of Occurring Again (B.2)

Drought and wildfire are both unlikely to occur in Old Saybrook.

d. **Potential Impacts (B.3)**

Because they are not often severe, response to droughts in the region most often have begun with voluntary water conservation. Under severe drought conditions, water use restrictions may be mandatory.

A significant portion of the population in Old Saybrook relies on ground water for domestic water supply. Under extreme and prolonged drought conditions, these water sources could be affected. Public water supplies can be reduced and private wells could become dry. Widespread drought can result in food shortages as a result of weakened crop yields in addition to an economic hardship to those that rely on crops for livelihood.

With an intricate network of wetlands and watercourses in Old Saybrook there are more natural breaks that would contain fire than in other parts of the country. That being said, a brushfire can still threaten houses and other structures. The greatest risk of wildfire lies in the marshlands, where phragmites can become dry during summer months and fire can spread rapidly. Homes and other structures near these areas are vulnerable if conditions are right.

e. **Authorities, Policies, Programs and Resources (C.1)**

The Town Fire Department has mapped the locations of all publicly and privately owned fire hydrants, dry hydrants and water sources throughout the Town and Borough to insure firefighters know the closest and best sources of water. The Town and Borough also have the authority to require new developments to install water storage tanks for fire protection if other water sources are not present. This ability and the mapping which has been completed provide ample coverage. In addition, the Connecticut DEEP issues warnings when drought conditions are present and will not issue burning permits when conditions warrant.

f. **Mitigation Specific to this Hazard (C.3, C.4)**

See Section III MITIGATION (ELEMENT C) for comprehensive mitigation strategy. The following are representative mitigation activities specific to this hazard:

Land-Use Planning. Require stormwater retention to recharge groundwater within existing, new, and redeveloping areas.

Wildfire Management Plan. Work with the regional EMD group and neighboring towns to develop a wildfire management plan and

protocol to ensure that outside fire-fighting resources, such as the National Guard, are available.

Dry Hydrants. For new development where water supply for fire fighting is inadequate, dry hydrants should be required.

Firefighter Training and Education. Training and education of firefighters should include brush and forest fires, with consideration for large areas of salt marsh vegetation.

4. **Winter Storms**

A winter storm is an event in which the dominant varieties of precipitation are forms that only occur at low temperatures, such as snow or sleet, or a rainstorm where ground temperatures are low enough to allow ice to form (i.e. freezing rain). In temperate continental climates, these storms are not necessarily restricted to the winter season, but may occur in the late autumn and early spring as well. Winter storms also can be accompanied by strong winds (e.g. nor'easters) that can cause coastal flooding and damage.

a. **Geographic Location (B.1)**

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).

b. **Occurrences (B.2)**

There is a history of powerful winter storms that have affected Old Saybrook and the region. See Table 10 for a summary. Some of the more notable storms are listed below.

1888 – Blizzard
1978 – Blizzard
1993 – “Storm of the Century”
1996 – Blizzard
2011 – Storm Alfred
2013 – Storm Nemo

Winter storm Nemo, the most recent significant winter storm to hit Old Saybrook, caused considerable problems. The storm dropped more than 2' feet of snow and was accompanied by strong winds. The entire state of Connecticut was placed under a state of emergency and state roads were closed. Fortunately power was only lost in a few isolated areas. Public schools and many businesses were closed for days as the Town, Borough and State worked to dig out from the storm.

c. **Probability of Occurring Again (B.2)**

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

d. **Potential Impacts (B.3)**

Depending upon the severity and duration of the storm, impacts can be varied. Those which require attention for hazard mitigation can cripple transportation, communications and threaten provision of basic needs for health, safety and the general welfare.

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. With the advent of cellular systems, reliance upon landline communications is less; however, severe storms can affect cellular communication towers. Most homes are dependent upon electricity to either provide heat or to ignite other fuel sources. Depending on outside temperatures, a prolonged electrical outage in the winter can result in freezing of pipes and can be life threatening. If travel becomes difficult or impossible, the provision of food, medicines, emergency services and other necessary goods can be delayed or halted and economic losses can occur.

Winter storms also can cause significant coastal flooding, the impacts of which are discussed in Section 1.

e. **Authorities, Policies, Programs and Resources (C.1)**

In anticipation of severe winter storms, both the Town and borough have the authority to order parking bans and can order evacuations in extreme situations if there is a significant threat of coastal flooding.

Each 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 Storm Nemo last winter, does the DPW have difficulty keeping roads open.

These policies are effective for their intended purposes during all but the most unusual events.

f. **Mitigation Specific to this Hazard (C.3, C.4)**

See Section III MITIGATION (ELEMENT C) for comprehensive mitigation strategy. The following are representative mitigation activities specific to this hazard:

Landscaping. Promote landscaping practices that encourage the planting of species that are less susceptible to damage from ice storms to reduce the probability of damage to structures.

Underground Utilities. Consider requiring that all new subdivisions and commercial development bury utilities to prevent power and telecommunications lines from damage from ice, snow and falling tree limbs.

Public Information. Provide information on the Town and Borough websites about pending storms and links to town, regional, state and federal sites for information on reducing damage from natural hazards.

5. Earthquake

An earthquake is the sudden, rapid shaking of the earth, caused by the breaking and shifting of subterranean rock as it releases strain that has accumulated over a long time.

a. Geographic Location (B.1)

The entire town could be affected by an earthquake in this region; however, severity of impacts could vary locally.

b. Occurrences (B.2)

While there is no record of damages in Old Saybrook from an earthquake, they have occurred in the region and have been felt locally.

As recently as March 23, 2011 the village of Moodus in East Haddam, just north of Old Saybrook experienced a 1.3 magnitude tremor.

c. Probability of Occurring Again (B.2)

The likelihood of an earthquake in Old Saybrook is very small. The figure below was generated from the USGS Earthquake Probability Mapping website and displays the probabilities of a greater than 5 magnitude earthquake occurring within 50 km of Old Saybrook.

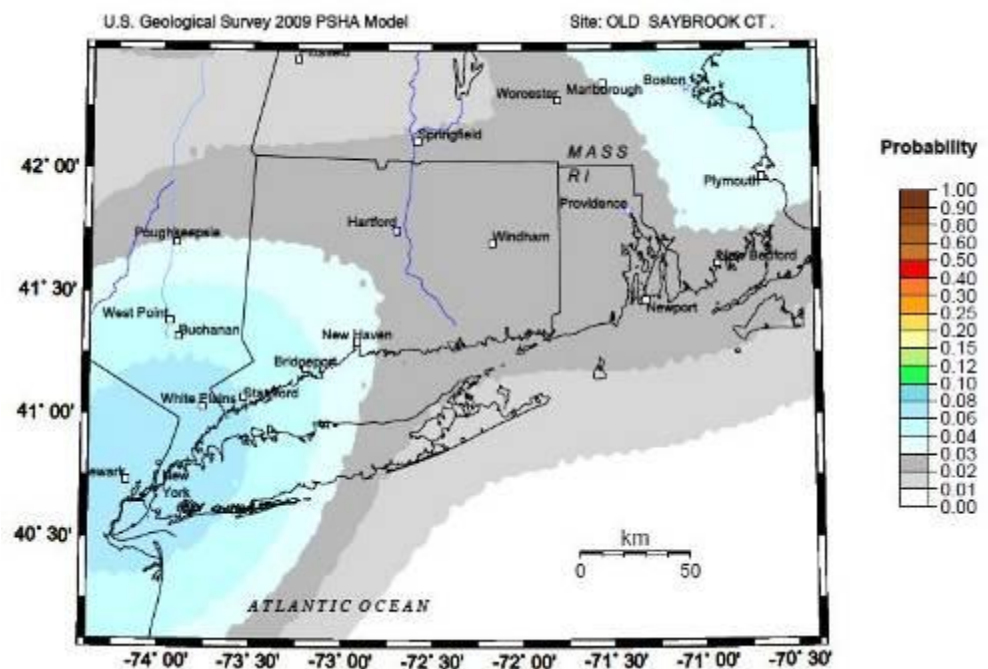


Figure 4: Probability of a magnitude 5 or greater earthquake occurring within 50 km of Old Saybrook.

d. **Potential Impacts (B.3)**

To assess potential impacts, Hazus-MH was used to model a 100-year probabilistic earthquake event. The model predicts that zero buildings will sustain moderate damage and that for the category of essential facilities, only one communication facility will be damaged. There will be zero casualties and zero people displaced and in need of emergency shelter. Economic losses also are forecast to be zero.

e. **Authorities, Policies, Programs and Resources (C.1)**

Both the Town and Borough enforce the State building code that dictates construction standards. No damage due to an earthquake has been reported which demonstrates that the State Building Code is effective for its intended purpose.

f. **Mitigation Specific to this Hazard (C.3, C.4)**

See Section III MITIGATION (ELEMENT C) for comprehensive mitigation strategy. The following are representative mitigation activities specific to this hazard:

Insurance. Encourage residents to purchase a low cost earthquake rider for homes and businesses. This would protect property owners for damage to chimneys, windows or foundations.

Public Information. Provide information on the town's website about earthquakes and links to town, regional, state and federal sites for information on reducing earthquake property damage.

Building Code. Insure that all new residential and commercial construction meets state building codes.

6. Hurricane & Tropical Storm

A hurricane is an intense tropical cyclone often with torrential rain and strong thunderstorms and with a well-defined surface circulation and maximum sustained winds of 74 MPH (64 knots) or higher. A tropical storm is similar but with winds from 39 to 73 MPH (34-63 knots).

a. Geographic Location (B.1)

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. See Section 1 for a discussion of coastal flooding and FEMA's flood insurance rate maps that depict the 1% annual chance flood zone and Section 2 for a discussion of high winds.

Map 11 below, Hurricane Surge Inundation with Storm Categories, depicts the extent of worst-case coastal flooding that could occur in Old Saybrook from category 1 through category 4 hurricanes.

b. Occurrences (B.2)

See Table 9 for an historic summary of hurricanes that have affected Old Saybrook.

In the last several years, the Town and Borough have experienced two significant tropical cyclones. On August 28, 2011, Old Saybrook was hit by Tropical Storm Irene which caused significant coastal flooding, coastal erosion, property damage, damage to homes and downed power lines; see figures 8, 9 and 10, page 54.

On October 29, 2012, Old Saybrook was hit by Superstorm Sandy which caused severe coastal flooding, coastal erosion, property damage, damage to homes and downed power lines. While Superstorm Sandy did not produce hurricane force winds in the Old Saybrook area, it produced a near record storm surge. Many long-term residents living near the coast who had never experienced flooding reported flooded basements and yards due to this storm.

Besides significant damage to coastal properties, both storms caused prolonged power outages in parts of the Town and Borough and generated tremendous amounts of debris that the DPWs had to collect and dispose of.



Figure 5: Satellite image of Hurricane Sandy before it turned to the west and made landfall in NJ. While the storm did not have hurricane force winds in Old Saybrook, its massive size, coupled with winds out of the east, caused severe flooding along the town's shoreline.

c. **Probability of Occurring Again (B.2)**

As a coastal community, Old Saybrook is *highly likely* to experience hurricanes and tropical storms.

d. **Potential Impacts (B.3)**

Because of the frequency of hurricanes and their potential severity, they are the natural disaster likely to cause the greatest damage. In the event of a hurricane or tropical storm, the primary risks in Old Saybrook are from high wind, storm surges and coastal flooding and inland flooding on small streams and rivers from heavy rain. See Sections 1 and 2 for a discussion of potential impacts from flooding and high winds.

To quantify potential damages, the Hazus-MH model was run to model impacts from a hurricane with a 100-year return period. Hazus-MH predicts that 1131 buildings will suffer minor damage; 182 moderate damage; 13 severe damage and 11 will be destroyed. The model further predicts that the fire station and police station will suffer loss of use of <1 day. Almost 12,000 tons of debris will be generated. Hazus-MH estimates that zero people will seek emergency shelter. Economic losses associated with building damages are estimated to be \$27.5 million. The complete Hazus-MH report is included in Appendix III.

Category	Sustained Winds	Types of Damage Due to Hurricane Winds
1	74-95 mph 64-82 kt 119-153 km/h	Very dangerous winds will produce some damage: Well-constructed frame homes could have damage to roof, shingles, vinyl siding and gutters. Large branches of trees will snap and shallowly rooted trees may be toppled. Extensive damage to power lines and poles likely will result in power outages that could last a few to several days.
2	96-110 mph 83-95 kt 154-177 km/h	Extremely dangerous winds will cause extensive damage: Well-constructed frame homes could sustain major roof and siding damage. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks.
3 (major)	111-129 mph 96-112 kt 178-208 km/h	Devastating damage will occur: Well-built framed homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to weeks after the storm passes.
4 (major)	130-156 mph 113-136 kt 209-251 km/h	Catastrophic damage will occur: Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months.
5 (major)	157 mph or higher 137 kt or higher 252 km/h or higher	Catastrophic damage will occur: A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months.

Table 15: Saffir-Simpson Scale of Hurricane Winds and Impacts

Source: NOAA

Table 15 provides the definition and impact of each category of Hurricane. Damage estimates are based on wind speed. A Hurricane affecting Long Island Sound would also cause considerable flooding which would cause additional damage to structures lying within the Flood Zone.



Figure 6: 1938 Hurricane damage - Damage inland from the hurricane also was severe due to intensive rain and high winds with gusts exceeding 180 mph. Photo: courtesy of Old Saybrook Historical Society.



Figure 7: 1938 Hurricane damage - Damaged houses at Cornfield Point. Photo: courtesy of Old Saybrook Historical Society.



Figure 8: 2011 Tropical Storm Irene damage - Damaged house on Beach Road.



Figure 9: 2011 Tropical Storm Irene damage - Damaged house on Beach Road.



Figure 10: Coastal Storm Damage Examples of damage at Chalker Beach caused by Tropical Storm Irene, September, 2011.

e. **Authorities, Policies, Programs and Resources (C.1)**

See Section 1, Flooding, and Section 2, High Winds and Tornadoes.

Policies in place for those two types of events are adequate for most events. Flooding continues to be the threat most present, in particular for residents closest to the Long Island Sound. New construction along the shoreline is best protected from both events; however, older homes which are not elevated to current standards at risk of flooding. Elevations and acquisitions are the best option, albeit cost prohibitive in most cases. Short of elevating every home in flood prone areas, the best option the town can take is mandatory evacuations of those areas when warranted in order to get people out of harm's way.

f. **Mitigation Specific to this Hazard (C.3, C.4)**

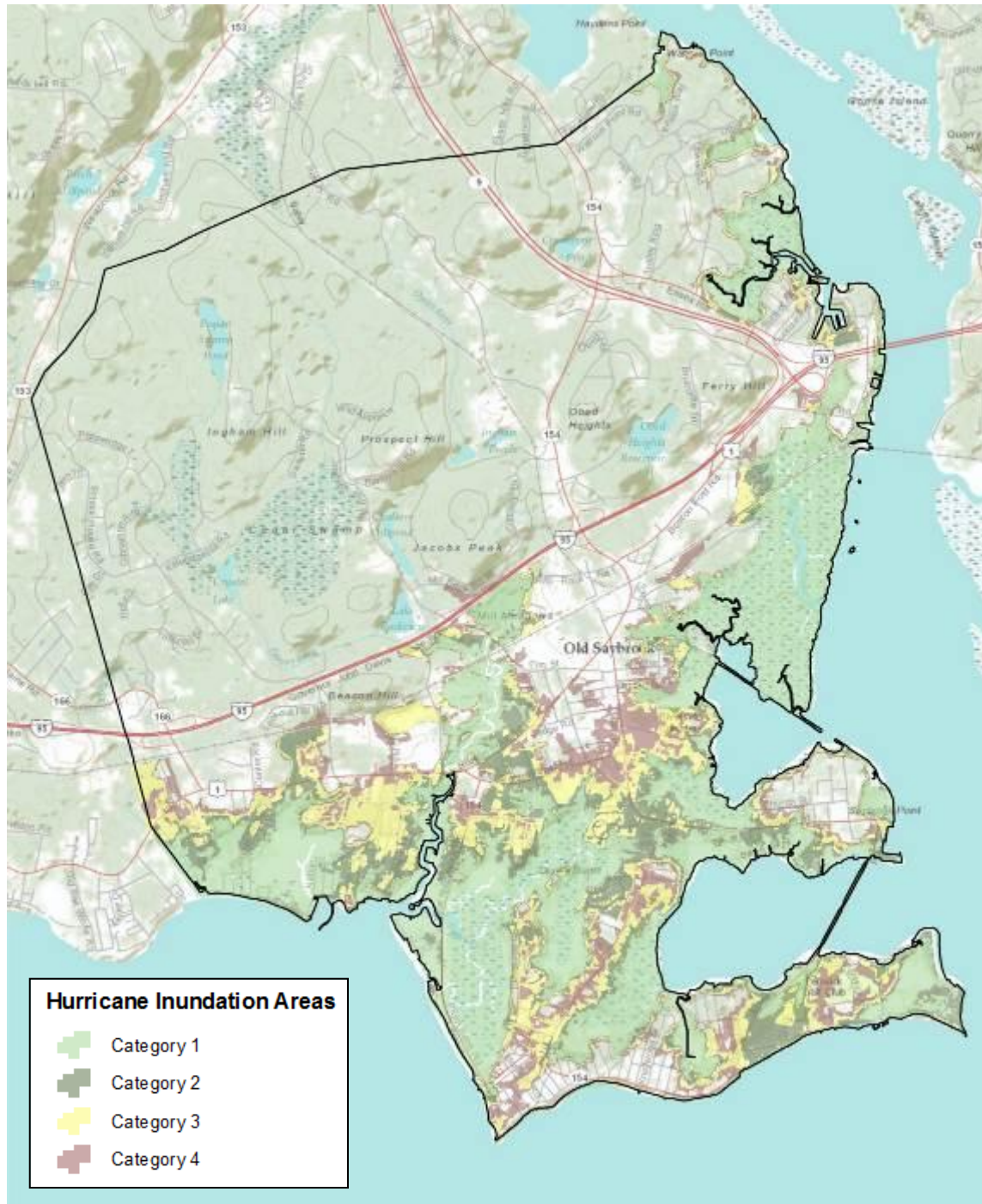
See Section III MITIGATION (ELEMENT C) for comprehensive mitigation strategy. The following are representative mitigation activities specific to this hazard:

Public Information. Provide information on the town's website about hurricane preparedness and links to town, regional, state and federal sites for information on reducing hurricane damage.

Building Code. Insure that all new residential and commercial construction meets state building codes for high wind zones (i.e. 110 mph wind loads for Old Saybrook).

Boats. Identify places where people could store their boats during flooding and hurricane events that would reduce the damage to them and that they cause to the waterfront infrastructure when they break from moorings.

Evacuation route signs. Maintain evacuation route signs from areas at risk from hurricane impacts to assist residents safely evacuate.



Map 11: **Hurricane Surge Inundation** with Storm Categories

This map depicts areas that may be flooded under worst case conditions from category 1 - 4 hurricanes. Hurricane surge values were developed by the National Hurricane Center using the SLOSH (Sea Lake and Overland Surge from Hurricanes) Model. This Surge Inundation layer was created by the U.S. Army Corps of Engineers, New England District.

7. **Sea Level Rise**

Sea level rise is the increase in mean sea level caused by global warming which will increase coastal erosion causing a general shoreline retreat and an increased risk for flooding.

a. **Geographic Location (B.1)**

Low lying coastal areas adjacent to Long Island Sound and the Connecticut River will be affected. Areas at higher elevations or further inland will be affected during coastal flood events due to the cumulative effect of storm surge and sea level rise. Sea Level Rise spatial data from the CT Dept. of Energy and Environmental Protection was acquired and evaluated in the Town's GIS to better understand what areas may be affected. One difficulty in using these data is that they are predicated on estimates of future SLR that vary greatly. Figure 5 on the following page illustrates differences in areas that will flood at "*average monthly maximum water level*" under current conditions and with 2 and 5 foot rises in sea level.

b. **Occurrences (B.2)**

Unlike the event-driven natural hazards discussed previously, sea level rise is a relatively slow-moving process – a slow-motion natural disaster.

Global sea level has been rising for more than ten thousand years, leading to the establishment and expansion of coastal salt marshes (e.g., Redfield and Rubin, 1962; Redfield, 1967, 1972; Lambeck, 1990). For most of the last 1,000 years the rate of relative sea-level rise was between 1.3 and 1.8 millimeters per year (mm/yr), but over the last 300-400 years it increased to 2.9-3.3 mm/yr, and has been faster than the accretion rate, especially in the middle marsh. (A sea-level rise curve Koren R. Nydick, Alison B. from Guilford, Connecticut, USA Bidwell, Ellen Thomas I, Johan C. Varekamp Department of Earth and Environmental Sciences, Wesleyan University, Middletown, CT 06459, USA Received 13 April 1994; revision accepted 21 September 1994).

c. **Probability of Occurring Again (B.2)**

Sea level rise is an ongoing phenomenon that should be considered an increasingly significant natural hazard. It is not caused by short term storm events; rather it is a change to baseline conditions. It is highly likely that SLR-related problems will worsen.



Current sea level conditions



2 foot rise in sea level



5 foot rise in sea level

Figure 11. These maps of Chalker Beach show in blue those areas that likely will flood during the *average monthly maximum water level* under 3 different sea level rise scenarios. The intensity of the blue indicates the flooding depth – the lighter blues indicate shallower flood water depths while the darker blues indicate deeper flood water depths. Data to produce these maps are from the CT Dept. of Energy and Environmental Protection’s Coastal Hazards Mapping Tool.

d. **Potential Impacts (B.3)**

On a long term basis, sea level rise may be the greatest natural hazard facing Old Saybrook. Unlike other natural hazards that are event driven, SLR is a slow motion incremental disaster that will take decades to unfold; however, the potential impacts to the natural and built environments and the financial costs could be tremendous. Sea level rise will cause more frequent and more damaging nuisance flooding – flooding from astronomical high tides – and will increase the impacts of coastal flooding associated with storm surges from nor’easters, tropical storms and hurricanes.

In addition to threats to homes, seawalls, roads, bridges, culverts and utility infrastructure, sea level rise likely will have detrimental effects on the natural environment. Tidal marshes and mud flats, critical and irreplaceable natural habitats and, in the case of tidal marshes, important visual components of Old Saybrook’s near shore character, will be at risk of drowning from accelerating sea level rise. Loss of these unique habitats could have far reaching consequences affecting aquatic organisms that breed, feed and live in them as well as water fowl that use the habitats for nesting and feeding.

Shoreline erosion also will increase due to sea level rise and will increase the construction of hardened shorelines to protect public and private properties further eliminating natural shorelines and habitats.

e. **Authorities, Policies, Programs and Resources (C.1)**

At the present time neither the Town nor the Borough has a comprehensive understanding of the specific medium- and long-term impact of sea level rise and the tools available to deal with it. (See mitigation action item to establish a Sea Level Rise Study Committee to address these issues.) The best option for the town at this point is to create such a committee to study the options of how best to deal with Sea Level Rise.

f. **Mitigation Specific to this Hazard (C.3, C.4)**

See Section III MITIGATION (ELEMENT C) for comprehensive mitigation strategy. The following are representative mitigation activities specific to this hazard:

Possible Open Space Criteria. The Conservation Commission should consider making possible inundation by future sea level rises to its considerations for preserving open space.

Local Sea Level Rise Study Committee. The Board of Selectmen should establish a standing committee to research medium and long-range impacts to coastal areas from SLR, to investigate possible mitigation actions and to assess legal, financial and policy implications.

Research Sea Level Rise Impacts. Seek grants funds to collaborate with an academic institution to research and study the social, economic, environmental and policy-related impacts from SLR.

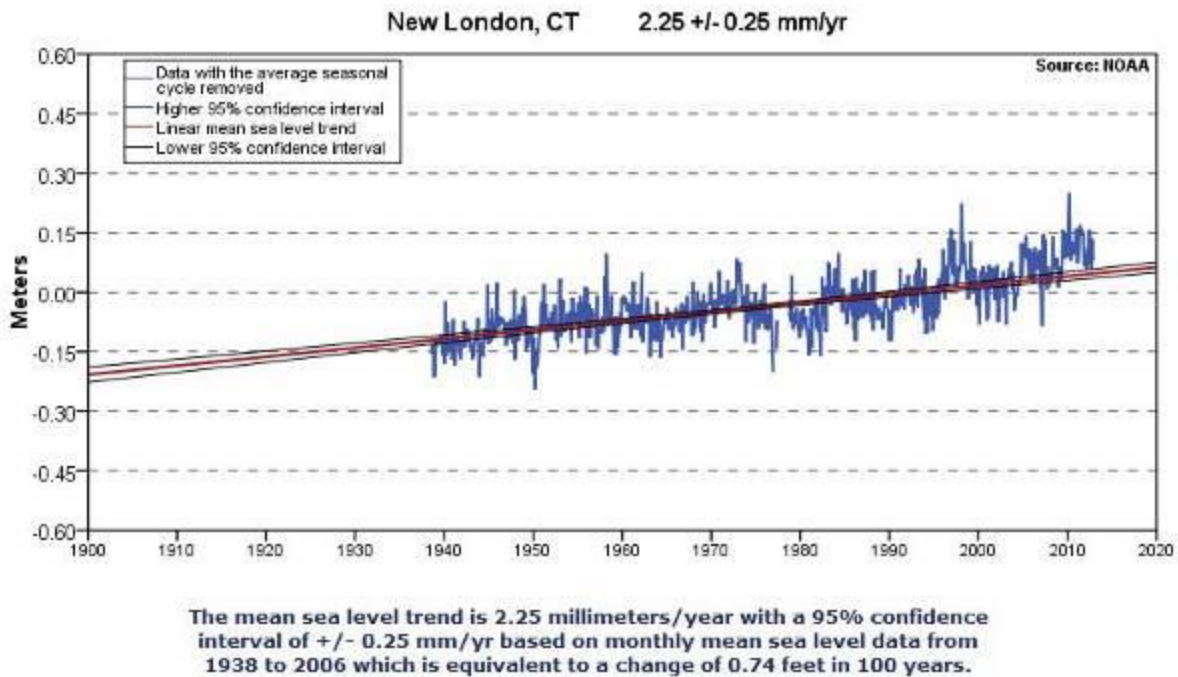


Figure 12: Sea Level Trends, New London, CT (Source: NOAA)

8. **Tsunami**

A tsunami, also known as a seismic sea wave (mistakenly called “tidal wave”), is a series of enormous waves created by an underwater disturbance such as an earthquake, landslide, volcanic eruption, or meteorite. A tsunami can move hundreds of miles per hour in the open ocean and smash into land with waves of 100 feet or more.

a. **Geographic Location (B.1)**

In theory, a tsunami could inundate large areas of coastal Old Saybrook.

b. **Occurrence (B.2)**

There is no record of a tsunami having occurred in Old Saybrook.

c. **Probability of Occurring Again (B.2)**

A tsunami is a *very unlikely* occurrence in Old Saybrook.

d. **Potential Impacts (B.3)**

Long Island is a barrier to smaller events in the Atlantic. Smaller events in the Sound could impact Old Saybrook but they would most likely resemble a flood event originating from other sources. A tsunami would cause water levels similar to a storm surge for a category 3 or 4 hurricane, which could do significant damage to shoreline areas (see Map 10). Large amount of land would be contaminated with sea water and many buildings could be damaged. If there is enough warning, evacuations could prevent loss of life; however, if there is no warning, many lives could be lost.

e. **Authorities, Policies, Programs and Resources (C.1)**

Currently neither the Town nor the Borough have policies in place to deal with a Tsunami; however, warning systems would be the most effective mitigation strategy for dealing with tsunamis.

f. **Mitigation Specific to this Hazard (C.3, C.4)**

See Section III MITIGATION (ELEMENT C) for comprehensive mitigation strategy. The following are representative mitigation activities specific to this hazard:

An event in the Atlantic Ocean large enough that Long Island Sound is overrun will most likely be beyond the capability of Old

Saybrook to plan or respond upon its own. Prevention measures for flood damage in the flood zones adjacent to the Connecticut River are likely to provide the required mitigation for the unlikely possibility of a tsunami reaching the east coast of the United States. A benefit cost analysis would show that the *very unlikely* probability of its occurrence would not merit extensive mitigation.

Incident Notification System – Enlist public participation through public workshops to develop methods for notification of hazard events and emergencies.

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" fund in case Federal assistance is insufficient or delayed.

9. **Heat Wave**

A heat wave is a prolonged period of unusually hot and usually humid weather. During a heat wave, damage to infrastructure is low but hyperthermia – heat stroke – can become life-threatening to very young children, elderly and overweight individuals, and individuals in poor health.

a. **Geographic Location (B.1)**

The entire town could be affected by a heat wave.

b. **Occurrence (B.2)**

Recent heat waves affecting Old Saybrook include:

- August 2001
- April 2002
- June 2008
- July 2010
- July 2011
- June 2012

c. **Probability of Occurring Again (B.2)**

A heat wave is a *likely* occurrence in Old Saybrook.

d. **Potential Impacts (B.3)**

While heat waves typically occur over large geographic areas, they affect individuals rather than entire neighborhoods or sections of a community. However, overall mortality from heat waves is higher than from other natural hazards.

A variety of medical conditions including heat edema, rash, cramps, exhaustion and stroke can occur affecting individuals or families in buildings lacking air-conditioning. Heat wave conditions can be worsened due to brown outs when electric utilities intentionally shut off power due to high demand and insufficient generation capacity.

Emergency response time could be slowed by excessive heat due to heat related equipment failure or responder fatigue.

If a heat wave occurs during a drought, the risk of wildfire can increase significantly.

With evidence of climate change mounting, the potential for more frequent and severe heat waves likely will rise.

e. **Authorities, Policies, Programs and Resources (C.1)**

The Old Saybrook Director of Emergency Management has the authority to designate cooling centers in public buildings during heat waves.

f. **Mitigation Specific to this Hazard (C.3, C.4)**

See Section III MITIGATION (ELEMENT C) for comprehensive mitigation strategy. The following are representative mitigation activities specific to this hazard:

Public Information. Provide information on the town's website about heat waves and links to town, regional, state and federal sites for information on reducing threats to potentially affected individuals.

Cooling Centers – Continue to open air-conditioned town facilities to the public as temporary shelters to escape the heat.

III. **MITIGATION:** *Planning for the Next Decade* (ELEMENTS C & D)

Hazard mitigation is any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards (44 CFR 201.2). Hazard mitigation actions may be implemented prior to, during, or after an event. However, hazard mitigation is most effective when based on an inclusive, comprehensive, long-term plan that is developed before a disaster occurs.

A. **Evaluation of Prior Plan** (ELEMENT D)

1. **Changes in Development** (D.1)

The Borough of Fenwick was not part of the 2006 Plan, therefore, for the purposes of this section, it is not included in changes. During the 2006-2011 timeframe covered by the previous Plan, the Town was considering an application for over 200 homes in the less developed northwest corner of town. Although that development has made progress in obtaining some permits, the town has yet to see any actual construction, and, in fact, there have been a few very small-scale subdivisions of land during this time. This represents a significant slowing in development as measured in “new start” construction”. The following table summarizes by fiscal year the number of building permits issued and total value of new construction for residential single family houses, condominium units and commercial buildings.

Fiscal Year	# Resid'l Permits (new)	# Resid'l Permits (tear down & rebuild)	Resid'l Value (1,000s)	# Condo Permits	Condo Value (1,000s)	# Comm'l Permits	Comm'l Value (1,000s)
06-07	7	8	\$3,619	2	\$251	4	\$1,596
07-08	6	7	\$4,378	0		1	\$150
08-09	1	12	\$3,482	0		1	\$225
09-10	2	9	\$2,968	0		0	
10-11	8	4	\$2,256	16	\$2,870	0	
11-12	2	10	\$2,236	0		4	\$1,436
Total	26	50	\$18,942	18	\$3,121	6	\$3,407

Table 16: Development Changes 2006–2012

There have been no new structures built within Fenwick, therefor no additional vulnerability is present.

The new construction and increase in population has not affected the vulnerability of the town in a substantial way since the adoption of the 2006 Plan. Any new construction in or around flood plains has been done so in accordance with local and State guidelines for construction in those areas. Any reconstruction or alteration to homes within the floodplain has only worked to reduce the vulnerability of those properties.

The population has not increased so drastically that Emergency Response has been unable to make adjustments accordingly.

2. Progress in Local Mitigation Efforts (D.2)

Mitigating for natural hazards is a multidisciplinary affair. Therefore, RiverCOG and its towns use the Plan in order to make consistent efforts to organize the necessary regulatory, structural, organizational, and educational efforts to achieve mitigation for each type of natural hazard. Examples of actions proposed by each Plan include: updates to regulations of local land use (both conservation and development), a list of structural projects for the capital improvement plan, suggestions for outreach materials for residents and businesses to educate and protect themselves.

The Town has made progress in implementing the action items prescribed by the Plan. The following section entitled “Comprehensive Mitigation Action Items” notes the status of each. In addition, the following activities have and will significantly help mitigation efforts going forward.

- Effective 2/6/2013, the Town strengthened its Flood Plain Ordinance (see page 39 for a discussion of highlights);
- The Dept. of Public Works has completed a GPS inventory of all stormwater outfalls, culverts and catch basins; and
- Since 1978 when Old Saybrook began its participation in the NFIP, approximately 530 structures have been elevated to meet NFIP requirements. Of this total, approximately 110 structures have been raised since the last NHMP was adopted in 2006.

3. Changes in Priorities (D.3)

In 2006, the Town set a priority for implementation of each action item in the Plan using the weighted STAPLEE criteria described in FEMA’s “How-to Guide #3: Developing the Mitigation Plan” (FEMA 386-3). The Town reviewed its progress in updating the Plan, and again used the STAPLEE method to prioritize all projects including items from 2006 Plan, some of which now include an increased concern for the long-term effects of sea level rise.

Priority is ranked by the STAPLEE total which ranges from -9 to 9. Ranking is defined as follows: Very Low (9 - 6) Low (5 - 0) or Medium (-0-2), High (3 - 6) and Very High (7 - 9).

B. Goals to Reduce or Avoid Long-term Vulnerability (C.3)

The goal of this Plan is: *Elimination of injury and loss of life; elimination or reduction of damages to property and natural environments; and reduction of associated economic impacts from natural hazards.*

C. Integration into Other Planning Mechanisms (C.6)

The 2006 Old Saybrook Natural Hazard Mitigation Plan Annex was written as part of a larger regional Natural Hazard Mitigation Plan, but meant to stand-alone in the town of Old Saybrook. As such, the Plan was not integrated into other planning mechanisms. Action Items from this update, as a Stand-Alone Plan, can be integrated by the Town and Borough into several mechanisms, including the following:

- **5-year Capital Improvement Plan** which addresses *municipal improvements* including: rights-of-way, land, housing, or utilities for public purposes.
- **Plan of Conservation & Development** which references the Plan as an appendix guiding other boards / commissions in promoting *programs* including: outreach, stewardship, and services;
- **Administrative Departments** that take on the implementation of the need for new or updated *standards* including: road specifications, zoning regulations, fire/building code, and the local flood ordinance.

D. Discussion of Benefit-Cost Review (C.5)

Although Old Saybrook and Fenwick 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 one. Calculation of the BCR is conducted using FEMA's Benefit Cost Analysis (BCA) toolkit. The calculation may be complex, varying with the mitigation action of interest, and is dependent on detailed information such as property value appraisals, design and construction costs for structural projects, and tabulations of previous damages or NFIP claims.

Although it is beyond the scope of this plan to develop precise BCRs for each recommendation, a cost estimate and possible funding source for each mitigation action item are included in Figure 17. When pursuing grants for selected projects, this information can be used to help select the projects that have the greatest chance of successfully navigating through the application review process. In many cases, benefit to the community may outweigh financial costs, and therefore priority may be increased.

E. Comprehensive Mitigation Action Items (C.3 & D.4)

The following Table 17 summarizes the specific mitigation actions that have been identified and evaluated through the NHMP update process. The table includes action items from the previous plan as well as new items that have been added by the NHMP Committee as a result of Committee work and public comments (see Appendix V).

The table includes the following information:

- a categorization of items that identifies each as a physical improvement, a program element or a regulation or standard;
- identification of the natural hazard(s) that the action item addresses;
- the status of the action item;
- the board, commission, person or department responsible for implementing the action item;
- a schedule of when or how often the action item is implemented;
- a ranking of the cost to implement the action item;
- possible funding sources to implement the action item; and
- a STAPLEE rank assigned to each action item.

Each action item is shaded either grey, green or un-shaded. Items with green shading are items from the 2006 Plan that have been completed, the status column is labeled as such; un-shaded items are items from the 2006 Plan, the status of each is noted in the status column; grey shaded items are new action items for this Plan Update.

The enabling task for many of these actions will be the application for grants when local sources are unavailable and placement in the budget when Town or Borough funding is available.

Table 17: Comprehensive Mitigation Action Items ¹	Category *	Natural Hazards										Status	Responsible Party **2	Schedule A. Daily B. Monthly C. Annually D. 2013-2017 E. 2018-2022	Cost***	Possible Funding Source*** (where applicable)	Weighted STAPLEE Criteria								
		Flooding	High Wind & Tornado	Drought and Wildfire	Winter Storm	Earthquake	Hurricane	Sea Level Rise	Tsunami	Heat Wave	Costs (-1)/ Benefits (1)														
											Social						Technical (x2)	Administrative	Political	Legal	Economic (x2)	Environmental	STAPLEE Total		
1. NHMP Implementation, Maintenance and Review																									
Annual Review of Mitigation Efforts & Plan Implementation. The Planning Commission will monitor and evaluate progress in addressing action items in this Plan and include those accomplishments in its annual report to the Town.	2	X	X	X	X	X	X	X	X	X	X	Occurs Annually	PC	C	\$	CIP	1	1	-1	1	1	1	1	1	7
5-Year Review & Update of Natural Hazard Mitigation Plan. The Planning Commission will reconvene its multi-agency Committee every 5 years to update the Plan.	2	X	X	X	X	X	X	X	X	X	Will next occur in July 2017.	PC	D	\$	OP	1	1	-1	1	1	1	1	1	7	
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.	2	X	X	X	X	X	X	X	X	X	Occurs annually.	BOS / BOF, DPW, OEM, CREMPO, ETD	C	\$\$	CIP, RTP, STIP	1	1	-1	1	1	1	1	1	7	
Benefit-Cost Analysis. Evaluate opportunities for public funding of mitigation projects on private property where public benefits exceed the cost for RL properties or for properties otherwise eligible for buy-out.	2	X	X	X	X	X	X	X	X	X	Occurs for each project.	BOS / BOF, BO, TE, Assessor	C	\$\$	OP	1	1	-1	1	1	1	1	1	7	
Grants. Identify and apply for grants to fund infrastructure improvements and other mitigation tasks identified in this plan.	2	X	X	X	X	X	X	X	X	X	Occurs for each applicable project.	BOS / BOF, EDC, DPW, OEM	B	\$	OP	1	1	-1	1	1	1	1	1	7	
2. Planning & Regulatory Standards																									
Land Use Regulation. Maintain, and strengthen as appropriate, subdivision and zoning regulations to make safer new roads and lots within flood zones.	3	X					X	X	X		Reviewed annually, changes made as necessary.	BOS / BOF, ZC, PC, DPW, LUD, TE	C	\$	OP	1	1	1	1	1	1	1	1	9	
Flood Enforcement. Enforce through existing zoning, building and flood permitting processes, construction standards to minimize flood risks.	3	X					X		X		Flood Standards are enforced through existing regulations.	BOS / BOF, ZC, BO, TE	A	\$	OP	1	1	1	1	1	1	1	1	9	
Stormwater Management. Continue land use permitting that encourages storm water retention within new and redeveloping areas (rain gardens, curb less roads, etc.).	3	X					X	X	X		Occurs for each new project.	BOS / BOF, ZC, PC, IWWC, LUD, DPW, TE	B	\$	CIP	1	1	1	1	1	1	1	1	9	
Public Transit Funding. Support regional transportation district (RTD) to facilitate movement of people without means of transportation prior to NH events.	2	X	X	X	X	X	X		X		Town currently contributes to 9TT funding.	BOS / BOF, DPW, OEM, CREMPO, ETD	C	\$\$	CIP, RTP, STIP	1	1	0	1	1	1	1	1	8	

FIRMs. Work with Federal Emergency Management Agency (FEMA) to incorporate updated Flood Insurance Rate Maps (FIRMs) into town's planning, outreach and mitigation actions.	2	X							X		Completed for recent FIRM updates	BOS / BOF, all DEPTs	A	\$	OP	1	1	1	1	1	1	1	1	9
Group Homes Permitting. Future permitting of these facilities shall include the requirement for the preparation of a disaster plan tailored to the needs of the specific clientele, or location of these facilities shall be discouraged in areas of known natural hazards.	3	X	X	X	X	X	X	X	X		New	ZC	D	\$	OP	1	1	1	1	0	1	0	7	
Safer Location of Town Buildings. Future municipal structures should be located outside of known hazardous locations such as floodplains, to the extent possible.	1	X					X	X	X		New	BOS, BOF	D	\$\$	OP	1	1	1	1	1	1	0	8	
Local Sea Level Rise Study Committee. BOS should establish an ad-hoc committee to research medium and long-range impacts to coastal areas from SLR, to investigate possible mitigation actions and to assess legal, financial and policy implications.	2	X			X		X	X	X		New	BOS, BOF, PC, LUD, BO, TE	D	\$	OP	1	1	1	1	1	1	1	9	
Design Standards. Continue to implement State Building/Fire Code and local Flood Code for construction that minimizes loss of life and property damage due to NHs. Develop guidelines for HDC and ARB to retrofit existing structures in a manner that is respectful to significant or contributing structures and to overall neighborhood preservation.	3	X	X	X	X	X	X	X	X		State Building Code is currently enforced.	BOS / BOF, ZC, BO, TE, ARB, HDC	A	\$	OP	1	1	1	1	1	1	0	8	
Mandatory Wind Code Compliance. Ensure all building permit applicants construct their projects to meet 110 mile per hour wind load standard.	3		X		X		X				Req'd for building permit	BO	A	\$	OP	1	1	1	1	1	1	0	8	
3. Information Systems, Data Management & Analysis																								
Geographic Information System. Establish a comprehensive GIS database to better identify and assess areas, structures and populations potentially affected by natural disasters. These data will provide the town with information necessary to assess natural hazard risks and develop plans to mitigate risks to people and property.	2	X	X	X	X	X	X	X	X		Completed for NHMP update; ongoing	BOS / BOF, all DEPTs	B	\$	OP	1	1	1	1	0	0	0	5	
Oblique Imagery. Over the next five (5) years obtain oblique imagery in order to allow for assessment of such factors as extent of fire damage, compliance with building standards, identification of shoreline hardening and shoreline erosion and accretion.	2	X		X		X	X	X	X		New	BOS, BOF	D	\$\$	OP	1	1	1	0	1	0	0	5	
Research Sea Level Rise Impacts. Seek grants funds to collaborate with an academic institution to research and study the social, economic, environmental and policy-related impacts from SLR.	2	X			X		X	X	X		New	BOS, BOF, PC	D	\$	OP	1	-1	1	1	1	1	1	5	
Dam Inventory. Update inventory of dams and assess downstream risks due to catastrophic failure.	2	X				X	X		X		New	BOS / BOF, DPW, DEEP	D	\$\$	OP	1	1	-1	0	-1	-1	1	0	
Risk Assessment. Use GIS to conduct NH risk assessments that identify potentially affected areas and assess evacuation routes.	2	X	X	X	X	X	X	X	X		Completed for this update	BOS / BOF, all DEPTs	C	\$	OP	1	1	1	1	0	0	1	6	
Stormwater Infrastructure Inventory. Implement mapping and monitoring of catch basins, stormwater outfalls and related infrastructure.	2	X					X	X	X		Basins, culverts and outfalls completed	BOS / BOF, DPW	C	\$	OP	1	1	1	1	0	0	1	6	
Paper Records Preservation. Convert 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.	2	X	X	X	X	X	X		X		Records are preserved as needed.	BOS / BOF, all DEPTs	D	\$\$	CIP	1	1	-1	-1	0	-1	0	-1	
Electronic Records Preservation. Design databases for records keeping. Create a back-up of existing electronic records, including geographic information system (GIS) data.	2	X		X	X	X	X		X		Records are preserved as needed.	BOS / BOF, all DEPTs	D	\$\$	CIP	1	1	1	1	1	0	0	6	

	Structural Reports. Continue to require structural engineering reports for expansion or alteration of buildings within the V zone.	3	X							X		Currently required.	BOS / BOF, ZC, BO, TE	A	\$	OP	0	1	1	1	0	0	0	4
	Firefighting Infrastructure Analysis. Evaluate existing firefighting infrastructure to identify needs for improvement to cover gaps in availability.	2	X	X	X	X	X	X	X	X		Has not been completed.	BOS / BOF, FD, FM	D	\$	CIP	1	1	1	1	1	0	0	6
	Zoning Map Audit. The Town should conduct a comprehensive audit of the zoning map to considering what changes might be advisable so that the free market investing is not misguided back towards areas that are at high risk from natural disasters.	3		X	X							New	ZC	D	\$	OP	0	1	1	1	1	1	0	7
	Open Space Criteria. Consider adding sea level rise to the Town's considerations for preserving as open space those areas that flood waters will inundate.	2	X									New	CC	D	\$	OP	1	1	1	1	1	1	1	9
	Amend Flood Ordinance. Consider adding a "freeboard" – an additional height above the flood level – to add a greater margin of safety. In the case of nonresidential structures, the insurance rates do not go down until a structure is flood proofed at least One (1) foot above the BFE.	2	X			X	X	X	X			Completed 2/6/13	ZC	Complete		OP								0
4. Physical and Infrastructure Improvements																								
M	Stormwater Infrastructure Maintenance. Provide for annual maintenance of stormwater infrastructure, including catch basins, detention basins and outfalls.	2	X					X	X	X		Basins cleaned annually; ongoing	BOS / BOF, DPW	C	\$\$	CIP	1	1	1	0	1	0	1	6
M	Critical Facilities. Maintain and upgrade as necessary all facility mechanicals, such as generators, in municipal and other critical facilities.	1	X	X	X	X	X	X	X	X		Has not been completed.	BOS / BOF, all DEPTs	D	\$\$\$	CIP	1	1	1	1	1	-1	0	4
M	Telecommunication Tower Generators (Private). Evaluate whether generators are needed for back-up power at telecommunications facilities.	1	X	X	X	X	X	X		X		New	BOS / BOF, DPW, OEM, CREMPO, DOT	D		CIP, RTP, STIP	1	1	0	0	-1	0	0	2
M	Public Works Garage & Transfer Station Generator. Purchase and install a generator for back-up power.	1	X	X	X	X	X	X		X		New	BOS / BOF, DPW, OEM, CREMPO, DOT	D	\$\$\$	CIP, RTP, STIP	1	1	1	1	1	-1	0	4
M	Gas Station Generators. Encourage all privately-owned gas stations to install and maintain emergency back-up generators to insure availability of fuel during prolonged power outages.	2	X	X		X	X	X		X		New	BOS, OEM, PC	D	\$\$		1	1	0	1	-1	0	0	3
M	Road Evaluation. Evaluate roads at least annually to develop plans for improvement or elevation for emergency access and evacuation.	1	X	X	X	X		X	X	X		Requires funding for technical assistance.	BOS / BOF, DPW, OEM, CREMPO, DOT	C	\$\$	CIP, RTP, STIP	1	1	-1	1	1	1	0	6
M	Elm Street Underpass. Resolve drainage/flooding problems to improve emergency access and evacuation.	1	X	X	X	X		X	X	X		Eng. design done, requires funding for const.	BOS / BOF, DPW, OEM, CREMPO, DOT	D	\$\$\$	CIP, RTP, STIP	1	-1	-1	1	1	-1	-1	-3
M	College Street near North Cove Road. Evaluate to develop plans, and improve for emergency access and evacuation.	1	X	X	X	X		X	X	X		Requires funding for eng. design and construction.	BOS / BOF, DPW, OEM, CREMPO, DOT	D	\$\$	CIP, RTP, STIP	1	1	-1	1	1	1	-1	5
M	Banbury Crossing. Elevate to improve evacuation options, and explore options for secondary means of emergency access and evacuation.	1	X	X	X	X		X	X	X		Requires funding for engineering design and construction.	BOS / BOF, DPW, OEM, CREMPO, DOT	D	\$\$	CIP, RTP, STIP	1	1	-1	-1	0	1	0	3

M	South Cove Causeway. Evaluate to improve emergency access and evacuation and potential creation of a harbor of refuge.	1	X	X	X	X		X	X	X		Requires funding for engineering design and construction.	BOS / BOF, DPW, OEM, CREMPO, DOT	D	\$\$	CIP, RTP, STIP	1	-1	-1	1	1	-1	-1	-3
M	South Cove. Evaluate to develop plans, and improve for emergency access and evacuation potential dredging to improve flood storage capacity and potential creation of a harbor of refuge.	1	X	X	X	X		X	X	X		Requires funding for engineering design and construction.	BOS / BOF, DPW, HMC, CREMPO, DOT	D	\$\$	CIP	1	-1	-1	0	1	-1	-1	-4
M	Plum Bank Road & Salt Meadow Road near Cornfield Park - Evaluate to develop plans, and improve for emergency access and evacuation.	1	X	X	X	X		X	X	X		Requires funding for engineering design and construction.	BOS / BOF, DPW, OEM, CREMPO, DOT	D	\$\$	CIP, RTP, STIP	1	1	-1	-1	1	-1	0	0
M	Sandy Point Road (Private). Evaluate to develop plans, and improve for emergency access and evacuation.	1	X	X	X	X		X	X	X		Requires funding for engineering design and construction.	BOS / BOF, DPW, OEM, CREMPO, DOT	D	\$\$	CIP, RTP, STIP	1	1	-1	-1	-1	-1	0	-2
M	Shetucket Trail. Review improvements and determine adequacy for emergency access and evacuation.	1	X	X	X	X		X	X	X		Has not been completed.	BOS / BOF, DPW, OEM, CREMPO, DOT	D	\$	CIP, RTP, STIP	1	1	-1	1	1	1	0	6
M	Fourth Avenue & Sunset Avenue. Evaluate to develop plans; improve for emergency access and evacuation.	1	X	X	X	X		X	X	X		New	BOS / BOF, DPW, OEM, CREMPO, DOT	E	\$\$\$	CIP, RTP, STIP	1	1	-1	-1	1	-1	0	0
M	Old Post Road (Eastern End). Evaluate to develop plans; improve for emergency access and evacuation.	1	X	X	X	X		X	X	X		New	BOS / BOF, DPW, OEM, CREMPO, DOT	E	\$\$\$	CIP, RTP, STIP	1	1	-1	1	1	1	-1	5
M	Shetucket Trail-to-Bellaire Drive. Evaluate to develop plans; improve for emergency access and evacuation.	1	X	X	X	X		X	X	X		New	BOS / BOF, DPW, OEM, CREMPO, DOT	E	\$\$\$	CIP, RTP, STIP	1	1	-1	1	1	1	0	6
M	Oweneco, Obed & Nehantic Trails. Evaluate to develop plans; improve for emergency access and evacuation.	1	X	X	X	X		X	X	X		New	BOS / BOF, DPW, OEM, CREMPO, DOT	E	\$\$\$	CIP, RTP, STIP	1	1	-1	1	1	1	0	6
M	Mohican & Red Bird Trails. Evaluate to develop plans; improve for emergency access and evacuation.	1	X	X	X	X		X	X	X		New	BOS / BOF, DPW, OEM, CREMPO, DOT	E	\$\$\$	CIP, RTP, STIP	1	1	-1	1	1	1	0	6
M	Maple Avenue. Develop plans to elevate approximately 1000' at northeast and near intersection with Main and College Streets; improve for emergency access and evacuation.	1	X	X	X	X		X	X	X		New	CIP, RTP, STIP	E	\$\$\$	CIP, RTP, STIP	1	1	-1	1	1	1	0	6
M	Bokum-to-Barley Hill Road. Evaluate to develop plans; improve for emergency access and evacuation.	1	X	X	X	X	X	X		X		New	BOS / BOF, DPW, OEM, CREMPO, DOT	E	\$\$\$	CIP, RTP, STIP	1	-1	-1	-1	-1	-1	-1	-7

M	Dwayne Road-to-Kitteridge Hill Road. Evaluate to develop plans; improve for emergency access and evacuation.	1	X	X	X	X	X	X	X			New	BOS / BOF, DPW, OEM, CREMPO, DOT	E	\$\$\$	CIP, RTP, STIP	1	-1	-1	-1	-1	-1	-1	-7
M	Rock Ridge Drive-to-Dibble Road. Evaluate to develop plans; improve for emergency access and evacuation.	1	X	X	X	X	X	X	X			New	BOS / BOF, DPW, OEM, CREMPO, DOT	E	\$\$\$	CIP, RTP, STIP	1	-1	-1	-1	-1	-1	-1	-7
M	Day Drive-to-Acorn Drive (Westbrook). Evaluate to develop plans; improve for emergency access and evacuation.	1	X	X	X	X	X	X	X			New	BOS / BOF, DPW, OEM, CREMPO, DOT	E	\$\$\$	CIP, RTP, STIP	1	-1	-1	-1	-1	-1	-1	-7
M	Off-street parking. Construct public parking lots to deter on-street parking that hinders emergency access and evacuation in high-density neighborhoods or high-intensity areas.	1	X	X	X	X	X	X	X			New	BOS / BOF, DPW, OEM, CREMPO, DOT	E	\$\$\$	CIP, RTP, STIP	1	-1	-1	1	-1	-1	0	-4
M	North Main Street. Better organize on-street parking and partner with DOT/Amtrak to site a parking structure within walking distance of the train station.	1	X	X	X	X	X	X	X			New	BOS / BOF, DPW, OEM, CREMPO, DOT, AMTRAK	D	\$	CIP, RTP, STIP	1	1	-1	1	-1	1	0	4
M	Sheffield Street / Main Street. Better organize on-street parking and site a parking garage within walking distance of critical facilities, such as Town Hall, schools, Fire Department and Police Department.	1	X	X	X	X	X	X	X			New	BOS / BOF, DPW, OEM, CREMPO, DOT	D	\$	CIP, RTP, STIP	1	1	-1	0	1	1	0	5
M	Pool. Construct a public pool to train emergency responders and improve swimming skills of residents.	1	X					X	X			Requires funding for engineering design and construction.	BOS / BOF, DPW, OEM, DEEP	D	\$\$\$	CIP	1	1	-1	0	1	-1	0	1
M	Obed Heights Dam. Evaluate Obed Heights Reservoir dam; work with property owners and State DEEP for repairs as needed.	2	X					X	X			Has not been completed.	BOS / BOF, DPW, DEEP	E		CIP	1	0	0	0	-1	0	0	0
M	Private Dam Evaluation. Evaluate remaining privately-owned dams; work with property owners and State DEEP for repairs as needed.	1	X					X	X			Has not been completed.	BOS / BOF, DPW, DEEP	C		OP	1	-1	0	0	-1	0	0	-2
M	Town Dam Evaluation. Evaluate remaining Town-owned dams; work with DPW and State DEEP for repairs as needed.	1	X	X	X	X		X	X	X		Has not been completed.	BOS / BOF, DPW, DEEP	D		CIP	1	-1	-1	0	1	1	0	1
M	Stormwater Management. Continue to use best management practices (BMPs) as described in the Connecticut DEEP Stormwater Management Guidelines on a site-by-site basis as advised by a professional engineer.	2	X					X	X	X		Completed site-by-site.	BOS / BOF, ZC, PC, IWWC, LUD, DPW, TE	B	\$	CIP	1	1	0	1	1	0	1	6

5. Public Information and Outreach

M	Preparedness Webpage. Keep Town website updated with NH preparedness information, including hazard areas, evacuation routes deemed appropriate per NH event and locations of shelters.	2	X	X	X	X	X	X	X	X		Requires allocation of staff time.	BOS / BOF, all DEPTs	B	\$	OP	1	1	1	1	1	1	0	8
M	Recovery Webpage. Post on Town website information about recovery assistance following NH events.	2	X	X	X	X	X	X	X			Done following TS Irene and Storm Sandy; Ongoing	BOS PC LUD OEM BO DPW	B	\$	OP	1	1	1	1	1	1	0	8

	Wildfire Education. Educate the public about potential hazard of wildfire caused by campfires or open burning.	2			X		X					Information is available online and through DEEP.	BOS / BOF, OEM, FD, FM	C	\$	OP	1	1	1	1	1	1	1	1	9
	Hotline. Publicize emergency "hotline" phone number or website for public information and volunteer support.	2	X	X	X	X	X	X		X	X	Website is available.	BOS / BOF, OEM	A	\$	OP	1	1	1	1	1	1	1	0	8
	Drought Education. Coordinate with CWC on public education and public serve announcements during droughts.	2			X							New	BOS / BOF, OEM, CWC	C	\$	OP	1	1	1	1	1	0	1	7	
	Educate About Risk Based on Where People Live. Educate residents at high risk due to demographic or social attributes about the risk(s) relative to the areas where they live.	2	X	X	X	X	X	X	X	X	X	New	PC, ZC, Social Services	D	\$	OP	1	1	1	1	1	0	0	6	
	Outreach. Promote owner participation in mitigation efforts to protect their property.	2	X	X	X	X	X	X	X	X		Information is available to homeowners.	BOS / BOF, LUD, BO, EDC	A	\$	OP	1	1	1	1	1	0	0	6	
M	Repetitive Loss Elevation Funding. Encourage RL property owners to obtain assistance from DEEP and FEMA to acquire hazard mitigation funds to elevate structures where appropriate.	2	X						X		X	Ongoing; one-on-one guidance in permitting.	BOS / BOF, ZC, BO, TE	A	\$	GRANT	1	1	1	1	1	0	0	6	
	Conservation Planning. Educate the public about how the Town uses planning, regulation, and ordinances to mitigate NHs via LID, aquifer recharge, riparian buffer, rain gardens, open burning ordinances, house numbering, etc.	2	X	X	X	X				X	X	Information is available.	BOS / BOF, CC, IWWC	B	\$	OP	1	1	1	1	1	0	1	7	
	Neighborhood Mitigation. Engage neighborhood associations annually to participate in implementing the NH Mitigation Plan.	2	X	X	X	X	X	X	X	X		Associations were actively involved in this update.	BOS / BOF, all DEPTs, RiverCOG	C	\$	OP	1	1	1	1	1	0	0	6	
M	Incident Notification System. Enlist public participation through public workshops to develop methods for notification of hazard events and emergencies.	1	X	X	X	X	X	X	X	X	X	Town uses Everbridge incident notification system and electronic signs; ongoing	BOS / BOF OEM	D	\$	OP	1	1	1	1	1	0	0	6	

6. Actions to Reduce Risk and Minimize Impacts During NH Events

	Refuges of Last Resort. Identify refuges of last resort for those unable to reach designated shelter.	2	X	X	X	X	X	X		X		Has not been completed.	BOS / BOF, OEM	D	\$	OP	1	1	0	1	1	0	0	5
	Immobile Evacuees. Review annually the program to evacuate persons without means of transport, including registration and house numbering.	2	X	X	X	X	X	X		X	X	New	BOS / BOF, OEM	C	\$	OP	1	1	0	1	1	0	0	5
M	Animal Shelter. Expand dog pound to shelter more animals/pets and participate in regional pet sheltering center.	1	X	X	X	X	X	X		X		Has not been completed.	BOS / BOF, OEM	D	\$\$	CIP	1	-1	0	0	1	-1	0	-2
	Natural Hazard Training. Continue to train and educate emergency responders about mitigating NHs.	2	X	X	X	X	X	X	X	X		Training occurs annually.	BOS / BOF, OEM	C	\$		1	0	0	1	1	0	0	3
M	Land Acquisition. Advance an assertive land acquisition plan to reserve vacant land subject to NHs.	1	X	X	X	X	X	X	X	X		Occurs when feasible.	BOS / BOF, LAC	C	\$\$\$	CIP	1	1	0	0	1	-1	1	3
	Street Tree Program. Implement a tree hazard management program to encourage appropriate planting and maintenance practices to minimize future storm damage to buildings, utilities and streets.	2	X	X	X	X		X		X		Occurs regularly.	BOS / BOF, DPW, TW	C	\$	OP	1	1	0	0	1	0	1	5
M	Dune Restoration. Implement dune restoration and marshland protection techniques for flood storage and surge protection.	1	X					X	X	X		Requires funding for engineering design and construction.	BOS / BOF, LAC, CC, DPW, DEEP	D	\$\$	CIP	1	1	0	1	1	0	1	6

M	Drought Study. Conduct town-wide study of ground- and surface water capacity as it relates to planning for droughts.	2		X								New	BOS / BOF, FD, FM, CWC	E	\$\$	OP	1	0	0	0	1	-1	1	1
M	Underground Utilities. Require underground utilities for new development; require retrofitting during redevelopment of existing sites to bury utilities where appropriate to mitigate NHs.	3	X	X	X	X	X	X	X	X		Ongoing through land use permitting process.	BOS / BOF, ZC, PC, IWWC, LUD, DPW, TE	E	\$	CIP	1	0	1	0	1	0	0	3
M	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" fund in case Federal assistance is insufficient or delayed.	2	X	X	X	X	X	X	X	X		New	BOS / BOF	D	\$\$	CIP	1	0	0	1	1	0	0	3
	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".	1	X				X	X	X	X		Occurs when feasible.	BOS / BOF, LUD	D	\$\$\$	CIP	1	0	0	0	1	-1	0	0
	Group Homes Disaster Plans. The Town should offer to work with each of the existing facilities to prepare a disaster plan, if they do not already have one.	2	X	X	X	X	X	X	X	X		New	ZC	D	\$	OP	1	1	0	1	0	0	0	4
	Tenant Notification. Develop a mechanism for tenants to register for disaster notification.	2	X	X	X	X	X	X		X	X	New	BOS, ZC	D	\$	OP	1	1	0	1	0	0	0	4
	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.	3	X	X			X	X			X	New	BOS, ZC, BO	D	\$	OP	1	0	0	1	0	0	0	2
M	Municipal Buildings Capable of being Shelters. Future investment in municipal structures should include funding for new construction or renovation that will assure the structure is compliant with the standards for use as a shelter, to the extent possible.	1	X	X	X		X	X	X		X	New	BOS, BOF	D	\$\$\$	CIP	1	0	0	1	1	0	0	3
M	Caches. Consider creating stores of emergency supplies in areas of town that will be cut off during major flooding events.	1	X	X	X	X	X	X	X	X		New	BOS, BOF	E	\$\$	CIP	1	0	0	1	1	0	0	3
M	Drinking Water Cache. Install drinking water tanks with a supply of bleach for private well water purification.	3	X		X			X				New	PC, ZC	E	\$\$	OP	1	0	0	1	1	0	0	3
M	Boats. Identify places where people could store their boats during flooding and hurricane events that would reduce the damage to them and that they cause to the waterfront infrastructure when they break from moorings.	2	X	X	X			X				New	PC, ZC, HC	E	\$	OP	1	0	0	1	1	0	0	3
	Cooperative Agreements for Shelters. Develop supporting documentation and encourage the Board of Selectmen to establish agreements for shelters that can provide specialized services, throughout the region. Shelters with the capacity to provide for companion pets and medical equipment needs for individuals with disabilities are two examples of such specializations. Support changes in the laws that require every town to provide facilities capable of serving the most severe of handicapped individuals such that towns could pool their resources to better serve these individuals and their families by giving them the option to go to a regional shelter better equipped to handle theirs, and their family's, needs.	2	X	X	X	X	X	X	X	X		New	BOS, BOF	E	\$	OP	1	0	0	1	1	0	0	3
	Interpretation in Shelters. Request information regarding the need for providing non-English language speakers during natural disasters from the Old Saybrook School administration; and coordinate a shared service for non-emergency and emergency operations.	2	X	X	X	X	X	X		X		New	BOS, BOF	D	\$	OP	1	0	0	0	1	-1	0	0

	Local Social Resources. Identify local resources to assist with those populations (i.e. elderly, disabled, non-English speakers, who may frequent, reside, or work) in Old Saybrook. Seek grants to provide funding for developing more detailed data to assist in the social – demographic analysis of how Old Saybrook will be affected by natural hazards.	2	X		X	X	X	X	X	X			New	BOS, BOF	D	\$	OP	1	0	0	1	1	0	0	3
	Social –Demographic Impacts. Seek grants to provide funding for developing more detailed data to assist in the social – demographic analysis of how Old Saybrook will be affected by natural hazards.	2	X	X	X	X	X	X	X	X	X		New	BOS, BOF	E	\$	OP	1	0	0	1	1	0	0	3
	Temporary Housing. Evaluate the need for post disaster housing for residents displaced by flood or another natural disaster.	2	X	X	X		X	X		X			New	BOS, PC, LUD, Social Services	D	\$	OP	1	0	0	1	1	0	0	3
	Identify Purchase Zones. Evaluate the benefit of purchasing destroyed properties as open space as an alternative to rebuilding. Identify specific areas where such a program could benefit residents and mitigate loss.	2	X	X	X		X	X	X	X			New	BOS, PC, LUD	E	\$	OP	1	0	0	0	1	0	1	3
	Evaluate Benefits of Engineered Town Beach. Investigate benefit cost of engineered designs for Town beaches so they could be eligible for recovery funding.	1	X			X		X	X	X			New	BOS, DPW, TE	D	\$	OP	1	1	0	1	1	0	0	5

7. Miscellaneous

	Post Disaster School Arrangements. Establish reciprocal arrangements with other school districts for getting students back into classes during extended recovery periods.	2	X	X	X	X	X	X	X				New	BOS, BOE	E	\$	OP	1	0	0	1	1	0	0	3
	Potential Financial Impact of Recent Storms. Provide a reference point; ask the Tax Assessor if he can provide a figure for the lost property value resulting from Tropical Storm Irene and Storm Sandy and the potential lost tax revenue if the structures are not restored before the next taxing period.	2				X		X					New	BOS, BOF	D	\$	OP	1	1	1	1	1	0	0	6
	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” [to paraphrase former First Selectman, Michael Pace] of public funds at all levels of government.	2	X	X	X	X	X	X	X	X			New	BOS, BOF	D	\$\$\$	OP	1	0	0	1	1	0	0	3
M	Forest Management Plan. Hire a consulting forester to establish a forest management plan to enable ability of firefighters to access forest fires during periods of drought.	2			X								New	BOS / BOF, PRC, FD, FM	E	\$\$	OP	1	1	0	0	1	-1	1	3
M	Park Maintainer. Fund a dedicated Park Maintainer to act as steward of public open spaces, including parks, forests, drainage basins, conservation easements, coastal access points, and forests, and to mitigate NHs at Town-owned properties.	2	X		X	X				X			New	BOS / BOF, PRC, CC	D	\$\$	OP	1	1	0	0	1	-1	1	3

8. Borough of Fenwick Specific Projects

M	Nibang Ave. End near Route 154 is under water after most big rains and storms and is lower than the land surrounding it. Raise and rebuild.	1	X					X	X	X			New	BOS / BOF / DPW / BW	D	\$\$\$	OP	1	1	-1	1	1	1	0	6
M	Sequassen Ave. Raise and rebuild to address flooding issues.	1	X					X	X	X			New	BOS / BOF / DPW / BW	D	\$\$\$	OP	1	1	-1	1	1	1	0	6
M	Borough property north of seawall near Pattaquesett Ave. Severely scoured in the last 2 major storms. A permanent fix has been recommended by FEMA. Repair/ replace based on FEMA recommendations is needed.	1	X					X	X	X			New	BOS / BOF / DPW / BW	D	\$\$\$	OP	1	1	-1	1	1	1	0	6

Codes from Table 17 Above:

*Category Code	**Responsible Part Code	*** Funding Source Code	****Cost Estimate
1 = Physical improvement 2 = Program 3 = Land Use/ Building Standard	ARB = Architectural Review Board BO = Building Official BOF = Board of Finance BOS = Board of Selectmen BW = Borough Warden CC = Conservation Commission CWC = CT Water Company DEEP = CT Dept. Energy & Env. Prot. DPW= Dept. of Public Works EDC = Economic Dev. Commission FD = Fire Dept. FM = Fire Marshall HC = Harbor Commission HDC = Historic Dist. Commission IWWC = Inland Wetlands Commission LAC = Land Acquisition Commision LUD = Land Use Department OEM = Off. of Emergency Management PC = Planning Commission PRC = Parks and Rec. Commission TE = Town Engineer TW = Tree warden ZC = Zoning Commission	CIP = Capital Improvement Plan FMA = Flood Mitigation Assistance HMPG = Hazard Mitigation Program Grant OP = Other Program PDM = Pre-Disaster Mitigation RFC = Repetitive Flood Claim RTP = Regional Transportation Program SRL = Severe Repetitive Loss STIP = Statewide Transportation Improvement Project	\$ = Up to \$50,000 \$\$ = \$50,001 to \$100,000 \$\$\$ = Over \$100,000

Notes:

1. Table 17 includes many items that are not necessarily considered Mitigation Action items, rather maintenance, emergency response, and operational preparedness. True Mitigation Action Items that may be considered for Federal funding are marked with an M in the left-hand most column.
2. For any item in which more than one responsible party is listed, the primary party responsible is the first which is listed.

Appendix I – Existing Plans, Studies, Reports & Technical Information (A.4)

Resource materials utilized in the Plan update included:

BOOKS AND ARTICLES:

Tidal Marshes of Long Island Sound, Ecology, History and Restoration, Bulletin No. 34, *The Connecticut College Arboretum, New London, CT, edited by Glenn Dreyer and William Niering, 1995*

Soil Survey of Middlesex County, *USDA, Connecticut Agricultural Experiment Station, 1979*

The Face of Connecticut, People, Geology, and the Land, *Bulletin 110, State Geological and Natural History Survey of Connecticut, Michael Bell, 1985, reprint, 1997*

Movable Shore, *Peter C. Patton, and James M. Kent, Sponsored by the National Audubon Society and the Connecticut Department of Environmental Protection, 1992*

FEDERAL DOCUMENTS:

FEMA Flood Study, Old Saybrook, CT – Preliminary: 9/22/2011

FEMA Flood Insurance Rate Maps – Effective 2/6/2013

STATE DOCUMENTS:

Connecticut's 2010 Natural Hazard Mitigation Plan Update, *December 2010.*

MUNICIPAL DOCUMENTS:

Old Saybrook Town Code, Chapter 128, Floodplain Management, *Adopted 9-19-2002; amended 6-17-2008; amended 2-6-2013.*

Building Permits, Fiscal Year 2006-2007; 2007-2008; 2008-2009; 2009-2010; 2010-2011; 2011-2012, *Prepared by the Old Saybrook Building Department.*

Town of Old Saybrook Subdivision Regulations, *Amended through 11/17/2010*

Town of Old Saybrook Zoning Regulations, *Amended through 11/19/2012*

Town of Old Saybrook Plan of Conservation and Development, *Effective October 15, 2003*

Old Saybrook Inland Wetlands and Watercourses Regulations, *Amended through 5/19/2011*

BOOKS AND ARTICLES:

Primer on Natural Hazard Management in Integrated Regional Development Planning, Department of Regional Development and Environment Executive Secretariat for Economic and Social Affairs, Organization of American States, With support from the Office of Foreign Disaster Assistance United States Agency for International Development, Washington, D.C., 1991

Public Safety, What is Hazard Mitigation, Commonwealth of Massachusetts, The Official Website of the Executive Office of Public Safety and Security (EOPSS), 2011

Best Practices;:Disaster Mitigation Working in Massachusetts; High Marks for Buildings Higher: Hull's Freeboard Incentive Program; Get 'em Up: Situate's Grant Committee Gets Homes in the Air; New Culvert Works: No Flooding at East Street; and New Drainage System Averts Flooding in Melrose; FEMA Region 1 Mitigation Division as part of DR-1985-MA, June and July 2010

Mitigation...In Massachusetts, U.S. Department of Homeland Security, Federal Emergency Management Agency produced in cooperation with the Commonwealth of Massachusetts, circa 2011

CT-Old Saybrook town, 2010 Census Interactive Population Search, <http://2010.census.gov>, November 2011

PICTURES AND NEWS ARTICLES:

Hartford Courant, "Retreat To High Ground: Hurricane Danger What if Irene had been a major hurricane?", Tuesday, August 30, 2011

Your Town, Old Saybrook, Connecticut, Version 2 Connecticut's Changing Landscape, University of Connecticut, College of Agriculture & Natural Resources, Center for Landuse Education & Research, 2006

Appendix II – Acronyms

Acronyms are used to identify terms and entities with long names that frequently are referenced in the plan:

BF E:	Base Flood Elevation
CGS:	Connecticut General Statute
CLEAR:	Center for Land Use Education and Research, University of Connecticut, College of Agriculture and Natural Resources.
CL&P:	Connecticut Light and Power
CRERPA:	Connecticut River Estuary Regional Planning Agency
RiverCOG:	Lower Connecticut River Valley Council of Governments
DEEP:	Department of Energy & Environmental Protection, Connecticut
DOT:	Department of Transportation
DWP:	Department of Public Works
EOC:	Emergency Operation Center
EOP:	Emergency Operations Plan
FEMA:	Federal Emergency Management Agency
FIRM:	Flood Insurance Rate Map
FIS:	Flood Insurance Study
FMA:	Flood Mitigation Assistance
GIS:	Geographical Information System
HMA:	Hazard Mitigation Assistance
HMGP:	Hazard Mitigation Grant Program
LID:	Low Impact Development
LiMWA:	Limit of Moderate Wave Action
MPH:	Miles per Hour
MRPA:	Midstate Regional Planning Agency
NDDB:	Natural Diversity Data Base
NFIP:	National Flood Insurance Program
NFIRA:	National Flood Insurance Reform Act of 1994
NOAA:	The National Oceanic and Atmospheric Administration
NPDES:	National Pollutant Discharge Elimination System
NRCC:	Northeast Regional Climate Center
PDM:	Pre-Disaster Mitigation
POCD:	Plan of Conservation and Development
RFC:	Repetitive Flood Claims
RLP:	Repetitive Loss Property
SFHA:	Special Flood Hazard Area
SLOSH:	Sea, Lake, and Overland Surges from Hurricanes
SLR:	Sea Level Rise
SRL:	Sever Repetitive Loss
STAPLEE:	Social, Technical, Administrative, Political, Legal, Economic, and Environmental
TNC:	The Nature Conservancy
USGS:	United States Geological Survey

Appendix III – Results of Hazus-MH Analysis

Hazus-MH analyses were run for floods, hurricanes and earthquakes. The results for floods and hurricanes are included in this appendix; the results for earthquakes are omitted since the analysis predicted there would be no damage from an earthquake with a 100-year probability.

Hazus-MH: Flood Event Report

Region Name: Town of Old Saybrook

Flood Scenario: Old Saybrook

Print Date: Tuesday, April 02, 2013

Disclaimer:

Totals only reflect data for those census tracts/blocks included in the user's study region.

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social

General Description of the Region

Hazus is a regional multi-hazard loss estimation model that was developed by the Federal Emergency Management Agency (FEMA) and the National Institute of Building Sciences (NIBS). The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The flood loss estimates provided in this report were based on a region that included 1 county(ies) from the following state(s):

- Connecticut

Note:

Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 15 square miles and contains 310 census blocks. The region contains over 4 thousand households and has a total population of 10,367 people (2000 Census Bureau data). The distribution of population by State and County for the study region is provided in Appendix B.

There are an estimated 6,330 buildings in the region with a total building replacement value (excluding contents) of 1,408 million dollars (2006 dollars). Approximately 90.55% of the buildings (and 72.06% of the building value) are associated with residential housing.

Building Inventory

General Building Stock

Hazus estimates that there are 6,330 buildings in the region which have an aggregate total replacement value of 1,408 million (2006 dollars). Table 1 and Table 2 present the relative distribution of the value with respect to the general occupancies by Study Region and Scenario respectively. Appendix B provides a general distribution of the building value by State and County.

**Table 1
Building Exposure by Occupancy Type for the Study Region**

Occupancy	Exposure (\$1000)	Percent of Total
Residential	1,014,277	72.1%
Commercial	282,259	20.1%
Industrial	63,999	4.5%
Agricultural	3,360	0.2%
Religion	21,325	1.5%
Government	13,509	1.0%
Education	8,843	0.6%
Total	1,407,572	100.00%

Table 2
Building Exposure by Occupancy Type for the Scenario

Occupancy	Exposure (\$1000)	Percent of Total
Residential	884,885	75.2%
Commercial	200,507	17.0%
Industrial	50,660	4.3%
Agricultural	2,925	0.2%
Religion	17,476	1.5%
Government	11,799	1.0%
Education	8,720	0.7%
Total	1,176,972	100.00%

Essential Facility Inventory

For essential facilities, there are no hospitals in the region with a total bed capacity of no beds. There are 4 schools, 1 fire station, 1 police station and no emergency operation centers.

Flood Scenario Parameters

Hazus used the following set of information to define the flood parameters for the flood loss estimate provided in this report.

Study Region Name:	Town of Old Saybrook
Scenario Name:	Old Saybrook
Return Period Analyzed:	100
Analysis Options Analyzed:	No What-ifs

Building Damage

General Building Stock Damage

Hazus estimates that about 851 buildings will be at least moderately damaged. This is over 39% of the total number of buildings in the scenario. There are an estimated 12 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 5.3 of the Hazus Flood Technical Manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 summarizes the expected damage by general building type.

Table 3: Expected Building Damage by Occupancy

Occupancy	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Commercial	4	100.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Education	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Government	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Industrial	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Religion	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Residential	1	0.12	215	25.23	197	23.12	116	13.62	311	36.50	12	1.41
Total	5		215		197		116		311		12	

Table 4: Expected Building Damage by Building Type

Building Type	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
ManufHousing	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Masonry	1	6.25	2	12.50	2	12.50	2	12.50	9	56.25	0	0.00
Steel	1	100.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Wood	2	0.24	213	25.45	195	23.30	114	13.62	301	35.96	12	1.43

Essential Facility Damage

Before the flood analyzed in this scenario, the region had 0 hospital beds available for use. On the day of the scenario flood event, the model estimates that 0 hospital beds are available in the region.

Table 5: Expected Damage to Essential Facilities

Classification	# Facilities			
	Total	At Least Moderate	At Least Substantial	Loss of Use
Fire Stations	1	0	0	0
Hospitals	0	0	0	0
Police Stations	1	0	0	0
Schools	4	2	0	1

If this report displays all zeros or is blank, two possibilities can explain this.

- (1) None of your facilities were flooded. This can be checked by mapping the inventory data on the depth grid.
- (2) The analysis was not run. This can be tested by checking the run box on the Analysis Menu and seeing if a message box asks you to replace the existing results.

Induced Flood Damage

Debris Generation

Hazus estimates the amount of debris that will be generated by the flood. The model breaks debris into three general categories: 1) Finishes (dry wall, insulation, etc.), 2) Structural (wood, brick, etc.) and 3) Foundations (concrete slab, concrete block, rebar, etc.). This distinction is made because of the different types of material handling equipment required to handle the debris.

Analysis has not been performed for this Scenario.

Social Impact

Shelter Requirements

Hazus estimates the number of households that are expected to be displaced from their homes due to the flood and the associated potential evacuation. Hazus also estimates those displaced people that will require accommodations in temporary public shelters. The model estimates 1,256 households will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 3,219 people (out of a total population of 10,367) will seek temporary shelter in public shelters.

Economic Loss

The total economic loss estimated for the flood is 170.69 million dollars, which represents 14.50 % of the total replacement value of the scenario buildings.

Building-Related Losses

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the flood. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the flood.

The total building-related losses were 169.43 million dollars. 1% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 62.83% of the total loss. Table 6 below provides a summary of the losses associated with the building damage.

Table 6: Building-Related Economic Loss Estimates

(Millions of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
<u>Building Loss</u>						
	Building	63.63	11.82	3.21	1.57	80.23
	Content	43.33	27.51	8.37	8.05	87.27
	Inventory	0.00	0.75	1.15	0.03	1.94
	Subtotal	106.96	40.08	12.73	9.66	169.43
<u>Business Interruption</u>						
	Income	0.01	0.20	0.00	0.02	0.24
	Relocation	0.18	0.05	0.00	0.01	0.24
	Rental Income	0.05	0.03	0.00	0.00	0.09
	Wage	0.04	0.20	0.00	0.46	0.70
	Subtotal	0.28	0.48	0.00	0.49	1.26
	Total	107.24	40.56	12.74	10.15	170.69
<u>ALL</u>						

Appendix A: County Listing for the Region

Connecticut
 - Middlesex

Appendix B: Regional Population and Building Value Data

	Building Value (thousands of dollars)			
	Population	Residential	Non-Residential	Total
Connecticut				
Middlesex	10,367	1,014,277	393,295	1,407,572
Total	10,367	1,014,277	393,295	1,407,572
Total Study Region	10,367	1,014,277	393,295	1,407,572

Hazus-MH: Hurricane Event Report

Region Name: Old Saybrook

Hurricane Scenario: Probabilistic 100-year Return Period

Print Date: Monday, January 14, 2013

Disclaimer:

Totals only reflect data for those census tracts/blocks included in the user's study region.

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social

General Description of the Region

Hazus is a regional multi-hazard loss estimation model that was developed by the Federal Emergency Management Agency (FEMA) and the National Institute of Building Sciences (NIBS). The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The flood loss estimates provided in this report were based on a region that included 1 county(ies) from the following state(s):

- Connecticut

Note:

Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 15 square miles and contains 310 census blocks. The region contains over 4 thousand households and has a total population of 10,367 people (2000 Census Bureau data). The distribution of population by State and County for the study region is provided in Appendix B.

There are an estimated 6,330 buildings in the region with a total building replacement value (excluding contents) of 1,408 million dollars (2006 dollars). Approximately 90.55% of the buildings (and 72.06% of the building value) are associated with residential housing.

Building Inventory

General Building Stock

Hazus estimates that there are 6,330 buildings in the region which have an aggregate total replacement value of 1,408 million (2006 dollars). Table 1 and Table 2 present the relative distribution of the value with respect to the general occupancies by Study Region and Scenario respectively. Appendix B provides a general distribution of the building value by State and County.

**Table 1
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Occupancy	Exposure (\$1000)	Percent of Total
Residential	1,014,277	72.1%
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Agricultural	3,360	0.2%
Religion	21,325	1.5%
Government	13,509	1.0%
Education	8,843	0.6%
Total	1,407,572	100.00%

Table 2
Building Exposure by Occupancy Type for the Scenario

Occupancy	Exposure (\$1000)	Percent of Total
Residential	884,885	75.2%
Commercial	200,507	17.0%
Industrial	50,660	4.3%
Agricultural	2,925	0.2%
Religion	17,476	1.5%
Government	11,799	1.0%
Education	8,720	0.7%
Total	1,176,972	100.00%

Essential Facility Inventory

For essential facilities, there are no hospitals in the region with a total bed capacity of no beds. There are 4 schools, 1 fire station, 1 police station and no emergency operation centers.

Hurricane Scenario

Hazus used the following set of information to define the hurricane parameters for the hurricane loss estimate provided in this report.

Scenario Name:	Probabilistic
Type:	Probabilistic

Building Damage

General Building Stock Damage

Hazus estimates that about 205 buildings will be at least moderately damaged. This is over 3% of the total number of buildings in the region. There are an estimated 11 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 6 of the Hazus Hurricane technical manual. Table 2 below summarizes the expected damage by general occupancy for the buildings in the region. Table 3 summarizes the expected damage by general building type.

Table 2: Expected Building Damage by Occupancy : 100 - year Event

Occupancy	None		Minor		Moderate		Severe		Destruction	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	21	79.33	4	14.44	1	4.09	1	1.92	0	0.22
Commercial	324	82.96	50	12.79	15	3.76	2	0.49	0	0.00
Education	7	83.19	1	13.02	0	3.50	0	0.28	0	0.00
Government	11	81.58	2	13.74	1	4.29	0	0.40	0	0.00
Industrial	113	83.99	16	11.95	5	3.44	1	0.58	0	0.03
Religion	21	83.33	3	13.72	1	2.76	0	0.20	0	0.00
Residential	4,497	78.46	1,055	18.40	160	2.79	10	0.17	11	0.19
Total	4,994		1,131		182		13		11	

Table 3: Expected Building Damage by Building Type : 100 - year Event

Building Type	None		Minor		Moderate		Severe		Destruction	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	29	83.91	4	12.41	1	3.50	0	0.17	0	0.00
Masonry	248	79.03	47	14.96	17	5.49	1	0.45	0	0.08
MH	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Steel	216	83.68	30	11.68	10	4.03	2	0.60	0	0.00
Wood	4,175	78.88	969	18.30	131	2.47	9	0.16	9	0.18

Essential Facility Damage

Before the hurricane, the region had no hospital beds available for use. On the day of the hurricane, the model estimates that 0 hospital beds (0%) are available for use. After one week, none of the beds will be in service. By 30 days, none will be operational.

Table 4: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		Probability of at Least Moderate Damage > 50%	Probability of Complete Damage > 50%	Expected Loss of Use < 1 day
Fire Stations	1	0	0	1
Police Stations	1	0	0	1
Schools	4	0	0	0

Induced Hurricane Damage

Debris Generation

Hazus estimates the amount of debris that will be generated by the hurricane. The model breaks the debris into four general categories: a) Brick/Wood, b) Reinforced Concrete/Steel, c) Eligible Tree Debris,

and d) Other Tree Debris. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 11,966 tons of debris will be generated. Of the total amount, 5,448 tons (46%) is Other Tree Debris. Of the remaining 6,518 tons, rick/Wood comprises 41% of the total, Reinforced Concrete/Steel comprises of 0% of the total, with the remainder being Eligible Tree Debris. If the building debris tonnage is converted to an estimated number of truckloads, it will require 106 truckloads (@25 tons/truck) to remove the building debris generated by the hurricane. The number of Eligible Tree Debris truckloads will depend on how the 3,864 tons of Eligible Tree Debris are collected and processed. The volume of tree debris generally ranges from about 4 cubic yards per ton for chipped or compacted tree debris to about 10 cubic yards per ton for bulkier, uncompacted debris.

Social Impact

Shelter Requirement

Hazus estimates the number of households that are expected to be displaced from their homes due to the hurricane and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 0 households to be displaced due to the hurricane. Of these, 0 people (out of a total population of 10,367) will seek temporary shelter in public shelters.

Economic Loss

The total economic loss estimated for the hurricane is 27.5 million dollars, which represents 1.96 % of the total replacement value of the region’s buildings.

Building-Related Losses

The building related losses are broken into two categories: direct property damage losses and business interruption losses. The direct property damage losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the hurricane. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the hurricane.

The total property damage losses were 28 million dollars. 3% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 84% of the total loss. Table 4 below provides a summary of the losses associated with the building damage.

Table 5: Building-Related Economic Loss Estimates

(Thousands of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
<u>Property Damage</u>						
	Building	16,833.55	1,617.68	390.64	277.88	19,119.75
	Content	4,788.11	456.73	227.13	81.31	5,553.29
	Inventory	0.00	10.93	37.33	2.06	50.32
	Subtotal	21,621.66	2,085.34	655.10	361.25	24,723.35

Business Interruption Loss

Income	0.00	246.43	5.96	33.92	286.31
Relocation	974.69	314.17	32.50	55.51	1,376.86
Rental	448.27	180.08	5.26	7.13	640.74
Wage	0.00	249.04	10.07	247.72	506.82
Subtotal	1,422.95	989.72	53.78	344.27	2,810.73

Total

Total	23,044.61	3,075.07	708.88	705.52	27,534.08
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Appendix A: County Listing for the Region

Connecticut
- Middlesex

Appendix B: Regional Population and Building Value Data

	Building Value (thousands of dollars)			
	Population	Residential	Non-Residential	Total
Connecticut				
Middlesex	10,367	1,014,277	393,295	1,407,572
Total	10,367	1,014,277	393,295	1,407,572
Study Region Total	10,367	1,014,277	393,295	1,407,572

Appendix IV - Natural Hazard Mitigation Committee Meeting Minutes



TOWN OF OLD SAYBROOK
Planning Commission
NATURAL HAZARD MITIGATION COMMITTEE

302 Main Street • Old Saybrook, Connecticut 06475-1741
Telephone (860) 395-3131 • FAX (860) 395-3125

SPECIAL MEETING MINUTES

Wednesday, September 14, 2011 at 2:00 P.M.
CRERPA Offices
Saybrook Junction Marketplace
455 Boston Post Road

I. CALL TO ORDER

The meeting came to order after introductions at 2:30 p.m.

II. ROLL CALL

Planning Commission

Janis Esty
Bob Missel

Connecticut River Estuary Regional Planning Agency

Jay Northrup
Torrence Downs

Land Use Department

Sandy Prisloe
Christine Nelson

III. INVENTORY

J. Northrup gave an overview of the need to update the current 5-year Natural Hazard Mitigation Plan, which the Town last adopted in 2006. Although there is no deadline by which to adopt an update, an out-of-date plan would make the Town ineligible for and hazard mitigation funding during a gap in effectiveness. The Town does not have any applications pending for funding.

A. Orientation to Plan Elements

Mr. Northrup described the format of the Plan as set by the Federal Emergency Management Agency ("FEMA"). The first part of the Plan, entitled "Introduction", is a contextual description of the town (geography, demographics, geology, land use, etc.). Much of this will remain the same but will need to be updated or expanded for the 2011-2016 edition.

Mr. Downs, who prepared the last version of the Plan for the Town, suggested that the update of this section should account for accomplishments in implementing tasks assigned in the 2005-2011 Plan.

B. Interview Officials, Volunteers, Community

The Committee would like to review the Capital Improvement Program for the last 5-years and the next to give credit for accomplishments to-date (and assess needs

going-forward); the critical and non-critical facilities since many have been renovated in the past five years (and itemize any need for new investment); and Emergency Management's plan for hazard mitigation to understand how best to integrate without inconsistency (and identify if there is opportunity to mutually support different stages of administration); grants/funding the Town has received and used for natural hazard mitigation (and if there is a need to continually fund programs or facilities)

The Committee will continue its first review at its 9/21/2011 meeting by inviting its first official for an informal interview: Christina Costa, Zoning Enforcement Officer, regarding her active and on-going participation in Plan implementation.

C. Model Natural Hazards

At its 9/28/2011 meeting, the Committee will meet with Adam Whelchel of the Nature Conservancy regarding its work with Old Saybrook as a pilot community to display its Coastal Resilience tool to better inform land use planning by taking into account the phenomenon of sea level rise.

IV. MITIGATION ANALYSIS

The second part of the Plan, entitled "Evaluation", examines the Town's infrastructure (roads, bridges, dams, stormwater catchments and outfalls, etc.) and its regulatory scheme for use of land and construction of buildings (open space exaction, flood hazard ordinance, stormwater management, building code). The Committee began a preliminary audit of the status of implementation of the tasks assigned in the current plan (eliminate as done or no longer relevant; keep as ongoing, having a next step, or still relevant but incomplete). The Committee also looked at the agencies or officials to whom the tasks were originally associated to verify appropriateness.

V. PLAN DRAFTING

The Committee agreed that it is their goal to get the updated plan adopted by January 18, 2012, which is 5 years after its previous adoption, but that it will be necessary to be flexible given the change in administration of the Board of Selectmen.

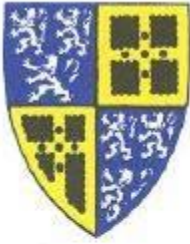
VI. IMPLEMENTATION

The Committee would like a representative of the Board to be active in its drafting and adoption so that its implementation has a champion to put the necessary resources in place (personnel, funding, and prioritization).

VIII. ADJOURNMENT

The Committee adjourned at 4:15 P.M. and agreed to have its next special meeting Wednesday, September 21, 2011 at 2:00 P.M., CRERPA Offices, Saybrook Junction Marketplace, 455 Boston Post Road.

Respectfully submitted,
Christine Nelson



TOWN OF OLD SAYBROOK
Planning Commission
NATURAL HAZARD MITIGATION COMMITTEE

302 Main Street • Old Saybrook, Connecticut 06475-1741
Telephone (860) 395-3131 • FAX (860) 395-3125

**SPECIAL MEETING
MINUTES**

Wednesday, September 21, 2011 at 2:00 P.M.
CRERPA Offices
Saybrook Junction Marketplace
455 Boston Post Road

I. CALL TO ORDER

The meeting was called to order at 2:05 PM.

II. ROLL CALL

Janis Esty, Planning Commission; Jerry Brophy, Conservation Commission; John Talbott, Zoning Commission

Also: Sandy Prisloe, Environmental Planner, OSLUD; J.H. Torrance Downs, Senior Planner, CRERPA; Jay Northrup, Senior Regional Planner, CRERPA.

III. INVENTORY

A. Orientation to Plan Elements

WHAT CONSTITUTES MITIGATION?

Jay Northrup handed out a packet of information. It included a definition of Hazard Mitigation and several examples of mitigation projects from the Massachusetts Hazard Mitigation Program. He reviewed them briefly and summarized that Hazard Mitigation is, "...actions that can help reduce or eliminate long term risks caused by natural hazards, or disasters,..." He offered that where Emergency Management tends to be focused on the short term planning and response, hazard mitigation is focused on the long-term actions that take time to implement.

REVIEW OF APPENDIX II: GOALS & IMPLEMENTATION

There was a discussion about the best way to go about the review of the Goals and Implementation. Torrance Downes had prepared a version of the goals that allowed notes to be taken on each of the items. The Committee picked up where it left off at Goal 2, Objective 1, Supporting Task 6 and ended at Goal 2, Objective 2, Supporting Task 2.

The Committee asked that the Land Use Department and CRERPA staff to identify which tasks would be most appropriately directed towards which Town staff when the Committee asked them to come to a meeting to be interviewed. In this way, the process would be expedited so it did not waste the time of the invited experts.

B. Interview Officials, Volunteers, Community

DISCUSSION WITH CHRIS COSTA, ZEO

Mr. Northrup suggested that Chris Costa explain a bit about how she as the Zoning Enforcement Officer is involved with Hazard Mitigation. Ms. Costa described her experiences permitting in special flood hazard areas and recent experiences educating the public with rebuilding after Tropical Storm Irene. She said there had been a number of people seeking information regarding repairs who she had to inform would need to elevate their homes because of damage repairs that would constitute a substantial improvement under the Town of Old Saybrook Flood Plain Management Ordinance. Ms. Costa explained that the FEMA disaster assistance procedure requires homeowners having to make application to the Small Business Administration (SBA) for loans in addition to their application to the Federal Emergency Management Agency (FEMA). The Committee discussed grant possibilities for elevating homes and outreach to repetitive loss properties as one of the action items in the current plan that ought to be carried through to the next plan and implemented.

C. Model Natural Hazards

The Committee asked Mr. Prisloe to put together a comprehensive list of Goals/Objectives for a geographic information system (GIS) for the next meeting, and report on the status of the mapping of storm drains and outfalls.

IV. MITIGATION ANALYSIS

At its 9/28/2011 meeting, the Committee will meet with Adam Whelchel of the Nature Conservancy regarding its work with Old Saybrook as a pilot community to display its Coastal Resilience tool to better inform land use planning by taking into account the phenomenon of sea level rise.

V. PLAN DRAFTING

Mr. Northrup also offered to check with the State Agency with whom CRERPA received the grant for the Hazard Mitigation Plan, as to whether it was necessary to retain the same format as was used in the previous version.

VI. IMPLEMENTATION

There was discussion as to whether any of the tasks were reasonable to expect completion before the next update in 5 years. Mr. Northrup offered that many might not because it takes time to get people aware of a problem and motivated to implement some of the tasks.

Other tasks like the public outreach are intended to be the vehicle for developing the support for the more involved tasks.

VIII. ADJOURNMENT

The meeting was adjourned at 3:40 PM.

Respectfully submitted,

Jay Northrup
Senior Regional Planner
Connecticut River Estuary Regional Planning Agency



TOWN OF OLD SAYBROOK
Planning Commission
NATURAL HAZARD MITIGATION COMMITTEE

302 Main Street • Old Saybrook, Connecticut 06475-1741
Telephone (860) 395-3131 • FAX (860) 395-1216

SPECIAL MEETING
MINUTES

Wednesday, September 28, 2011 at 2:00 P.M.
CRERPA Offices
Saybrook Junction Marketplace
455 Boston Post Road

I. CALL TO ORDER

The meeting was called to order at 2:05 PM.

II. ROLL CALL

Present: Janice Esty, Planning Commission; Bob Missel, Planning Commission; John Talbott, Zoning Commission

Absent: Cathy Flanagan, Planning Commission; Jerry Brophy, Conservation Commission.

Staff: Torrance Downes, Senior Planner, CRERPA; Christine Nelson, Town Planner, Old Saybrook; Michael Spera, Police Chief, Old Saybrook.

Guest: Adam Whelchel, Director of Conservation Programs, The Nature Conservancy.

Ms. Nelson reminded the Committee that it needs to elect a chairperson, make contact with the organizations that have not yet sent representatives, and approve minutes of previous meetings.

III. INVENTORY

By way of welcoming the guests at the meeting, Ms. Nelson and Mr. Downes gave an overview of the status of the process to update the Plan. She noted that this is a meeting of a committee under the Planning Commission with representatives from various boards to update the Natural Hazard Mitigation Plan (NHMP). The goal is to have the plan done by mid-January 2012.

A. Orient to Plan Elements

Ms. Nelson introduced Chief Spera and related previous conversations they had had about how this Plan fits into the cycle of procedures a town has for dealing with a disaster (prepare, respond, recover, mitigate). The Chief described a Federal initiative of a number of years ago whereby communities made efforts to become more than "secure", to become "resistant". He explained that, therefore, his role as

Emergency Management Coordinator includes administering mitigation on a broader scale of “security” than simply mitigating for natural hazards). He asked the Committee if there was not an opportunity to collaborate outside the FEMA/DEEP format for the Plan to make one mitigation plan for the Town that both emergency and land use agencies then consult regularly. Mr. Downes stated that his agency’s role falls within their funding under a grant but that there was room under the Town’s annual subscription to work outside the FEMA format, he said he would check with DEEP to gauge their reaction to this concept.

Ms. Nelson asked the Committee members if they would like to continue to audit the status of the current Plan’s implementation (Appendix II) as orientation to the Plan, which is taking more time than was originally intended, or review it on their own. The Committee stated that it appreciated the opportunity to discuss it with staff since they were not involved in the original drafting. Ms. Nelson suggested that Ms. Costa might return for this purpose since she has been involved in implementing its programs and standards through her regular duties.

B. Interview Officials, Volunteers, Community

DISCUSSION WITH POLICE CHIEF MICHAEL SPERA

Chief Spera described the process by which the Town’s current mitigation plan is reviewed annually by the State Department of Public Safety (soon to become the Department of Emergency Services and Public Protection), and how it’s details were valuable in qualifying for recovery funding that went beyond replacement to actually mitigate for future disasters/events. He gave many examples, many of which are also in the current Natural Hazard Mitigation Plan, but that plan is not considered as regularly and perhaps not as detailed as it could be for more immediate implementation. Ms. Nelson described for the Committee that the initial edition of the Natural Hazard Mitigation Plan was done on a regional basis, but then had to be broken down town-by-town. Ms. Esty stated that it is a good place from which to treat the process as creating “living document”. Mr. Downes said that either way it could only get better.

C. Catalog Facilities, Resources and Assets

The Committee acknowledged the Chief’s list of critical facilities as of interest to review for its mitigation analysis. There was discussion of certain demographic groups and their needs for special accommodation, including people with pets. There was discussion about ensuring access to non-critical facilities based on observations of people’s needs following a disaster event: coffee, pharmacy, etc.

IV. MITIGATION ANALYSIS

Adam Whelchel of The Nature Conservancy described the Coastal Resilience tool and discussed some of its benefits related to considering sea level rise in planning a “resilient” community. The Committee is interested in scheduling a demonstration when all the members can attend.

V. PLAN DRAFTING

Ms. Nelson asked the Chief if the Committee could review the mitigation plan he administers to understand better the broader range of disasters/events.

The Committee stated that they are interested in looking the Plan product that Guilford recently put together for natural hazard mitigation.

VI. IMPLEMENTATION

Mr. Welchel suggested that the Committee identify in its final product some action items of high priority for both emergency management and land use to serve as examples of hazard mitigation.

VII. ADJOURNMENT

The meeting was adjourned at 3:45 PM.

Respectfully submitted,

Susan Graham
Administrative Clerk



TOWN OF OLD SAYBROOK
Planning Commission
NATURAL HAZARD MITIGATION COMMITTEE

302 Main Street • Old Saybrook, Connecticut 06475-1741
Telephone (860) 395-3131 • FAX (860) 395-1216

SPECIAL MEETING
MINUTES
Wednesday, October 5, 2011 at 2:00 P.M.
CRERPA Offices
Saybrook Junction Marketplace
455 Boston Post Road

I. CALL TO ORDER

The meeting was called to order at 2:05 P.M.

II. ROLL CALL

Present: Cathy Flanagan, Planning Commission; Bob Missel, Planning Commission; John Talbott, Zoning Commission; Jerry Brophy, Conservation Commission

Absent: Janice Esty, Planning Commission

Staff: Jay Northrup, Planner, CRERPA; Christine Nelson, Town Planner, Old Saybrook; Chris Costa, ZEO, Old Saybrook, Sandy Prisloe, Environmental Planner

III. REGULAR BUSINESS

A. Elect Chairman

The committee elected Mr. Missel as Chairman.

B. Minutes

The Committee accepted the minutes of 9/14/11, 9/21/11, and 9/28/11.

C. Correspondence

None.

D. Staff Reports

Mr. Northrup received criteria from the State of Connecticut's Department of Energy & Environmental Protection ("DEEP") for organizing the Natural Hazard Mitigation Plan (NHMP). He said that it can be organized in a variety of ways as long as the criteria are met. He suggested that the staff look over the existing plan and matrix and report feedback at the next meeting on 10/26/11. He said that FEMA requires separate plans for natural hazard mitigation and emergency

management. The committee agreed that each should be kept distinct, with an appendix added to each one that would cross-reference the other.

Ms. Nelson recapped Chief Spera's discussion with the Committee for those that were not present at the last meeting. She pointed out that the NHMP is only a portion of his mitigation concerns since he also has to look at man-made hazards. Mr. Missel asked if perhaps some of those elements could be integrated into this plan, especially if they could be easily added. Mr. Northrup felt they could be "married" if set up similarly. The Committee then discussed that their immediate role is to work on a plan for natural hazards since it would be outside of their scope to try to mitigate "everything". The committee remains open to adding specific points from an emergency management standpoint that could be easily integrated, possibly in an appendix. They discussed looking at the Emergency Plan, but thought it might be confidential. Mr. Missel will contact Chief Spera to see if he can obtain that plan and a list of critical facilities.

IV. INVENTORY

A. Orient to Plan Elements

REVIEW OF APPENDIX II: GOALS & IMPLEMENTATION

The committee picked up with Goal 2, Objective 2, Supporting Task 3 and ended with Goal 2, Objective 3, Supporting Task 5.

B. Interview Officials, Volunteers, Community

The Committee stated that it would like to interview the Director of Public Works and perhaps representatives of adjacent towns.

C. Catalog Facilities, Resources and Assets

The Committee asked Ms. Nelson to contact Mr. Welchel to set up a time to present TNC's Coastal Resilience Tool in October or November.

VII. ADJOURNMENT

<p>MOTION to adjourn to a special meeting on Wednesday, October 26, 2011 at 2:00 p.m., CRERPA Offices, Saybrook Junction Marketplace, 455 Boston Post Road; MADE by R. Missel; SECONDED by C. Flanagan; APPROVED by R. Missel, C. Flanagan, J. Talbott, J. Brophy. (4-0-0).</p>

Respectfully submitted,

Susan Graham, Administrative Clerk



TOWN OF OLD SAYBROOK
Planning Commission
NATURAL HAZARD MITIGATION COMMITTEE

302 Main Street • Old Saybrook, Connecticut 06475-1741
Telephone (860) 395-3131 • FAX (860) 395-3125

SPECIAL MEETING
MINUTES
Wednesday, October 26, 2011, 2:00-3:30 P.M.
CRERPA Offices, Saybrook Junction Marketplace
455 Boston Post Road

I. CALL TO ORDER

The meeting was called to order at 2:05 P.M.

II. ROLL CALL

Present: Bob Missel, Planning Commission; John Talbott, Zoning Commission; Janis Esty, Planning Commission; Cathy Flanagan, Planning Commission

Absent: Jerry Brophy, Conservation Commission

Staff: Jay Northrup, Planner, CRERPA; Christine Nelson, Town Planner, Old Saybrook

III. REGULAR BUSINESS

A. Minutes

The committee approved the minutes of 10/05/2011.

B. Correspondence

None.

C. Staff Reports

Mr. Northrup reported that Torrance Downs will be working on another project and will not be able to continue on this committee due to time constraints.

IV. INVENTORY

A. Orient to Plan Elements

REVIEW OF APPENDIX II: GOALS & IMPLEMENTATION

At the request of Mr. Northrup, the staff of the Land Use Department took the notes of the past few meetings and prepared statements as to the actual status of each task assigned by the current plan.

Mr. Northrup stated that FEMA will want this information in a particular format to compare to the tasks of the current plan carried forward or added in the next revision so that they can quickly and easily identify common denominators to track progress from one report to the next. If an item is modified, then it should be noted as redirected or eliminated so that it can be tracked.

The committee resumed with Goal 2, Objective 3, Supporting Task 5 and completed the section. Each objective was reviewed and its current status noted.

B. Catalog Facilities, Resources and Assets

C. Interview Officials, Volunteers, Community

Adam Whelchel, Director of Conservation Programs at The Nature Conservancy, will be asked to make his presentation on the effects of the rise of sea level and how it impacts the community. He will demonstrate a simulation tool that portrays various scenarios should there be a natural disaster such as a hurricane in conjunction with sea level rise. Ms. Nelson will email a link for the online tool to the committee members before the next meeting. Mr. Northrup mentioned that since Old Saybrook is a pilot town, the tool can be customized to meet Old Saybrook's needs. This can qualify as a study that informs the Natural Disaster Mitigation Plan.

V. MITIGATION ANALYSIS

VI. PLAN DRAFTING

Mr. Northrup said that he will now look at the guidance given for the Mitigation Plan and present an outline of the Plan requirements.

VII. IMPLEMENTATION

VIII. ADJOURNMENT

The meeting was adjourned at 3:35 P.M.

<p>MOTION to adjourn to a special meeting on Wednesday, November 9, 2011 at 2:00 p.m., CRERPA Offices, Saybrook Junction Marketplace, 455 Boston Post Road; MADE by C. Flanagan; SECONDED by J. Esty; APPROVED by R. Missel, C. Flanagan, J. Talbott, J. Esty. (4-0-0).</p>

Respectfully submitted,

Susan Graham, Clerk



TOWN OF OLD SAYBROOK
Planning Commission
NATURAL HAZARD MITIGATION COMMITTEE

302 Main Street • Old Saybrook, Connecticut 06475-1741
Telephone (860) 395-3131 • FAX (860) 395-3125

SPECIAL MEETING
MINUTES
Wednesday, November 9, 2011, 2:00 P.M.
CRERPA Offices, Saybrook Junction Marketplace
455 Boston Post Road

I. CALL TO ORDER

The Chairman called the meeting to order at 2:05 P.M.

II. ROLL CALL

Present: Bob Missel, Planning Commission; John Talbott, Zoning Commission; Janis Esty, Planning Commission; Cathy Flanagan, Planning Commission; Jerry Brophy, Conservation Commission

Staff: Jay Northrup, Planner, CRERPA; Christine Nelson, Town Planner, Old Saybrook; Sandy Prisloe, Environmental Planner

III. REGULAR BUSINESS

A. Minutes

The committee accepted the minutes of 10/26/2011.

B. Correspondence

None.

C. Staff Report

Ms. Nelson is still updating the Review of Status, which puts the objectives from the Natural Hazard Mitigation Plan in a different format so that they can be reviewed for common denominators. The analysis stage is ready to be started.

IV. INVENTORY

A. Orient to Plan Elements

B. Catalog Facilities, Resources and Assets

C. Interview Officials, Volunteers, Community

Adam Whelchel, Director of Conservation Programs, and Holly Drinkuth, Quinebaug Highlands Project Director, from The Nature Conservancy attended as invited guests to present the effects of the rise of sea level on the community. He demonstrated an online simulation tool that portrays various scenarios should there be a natural disaster, such as a hurricane, in conjunction with sea level rise. (The online tool is accessible through www.coastalresilience.org. Click on "Geographies", then "New York and Connecticut", and then "Future Scenario Map".)

Mr. Northrup pointed out that the implications of this resource on hazard mitigation can be useful for public awareness should structural modifications be planned.

Mr. Talbott would like to see this presentation given again to the Zoning Commission. Ms. Nelson thought it might be presented at a quarterly Land Use meeting for a larger audience.

V. MITIGATION ANALYSIS

VI. PLAN DRAFTING

Mr. Northrup reported that there might be a delay in submitting the mitigation plan because each town in the region is doing a separate plan, which FEMA requires to be incorporated into one regional plan.

VII. IMPLEMENTATION

VIII. ADJOURNMENT

<p>MOTION to adjourn to a special meeting on Wednesday, November 23, 2011 at 2:00 p.m., CRERPA Offices, Saybrook Junction Marketplace, 455 Boston Post Road; MADE by C. Flanagan; SECONDED by J. Talbott; APPROVED by R. Missel, C. Flanagan, J. Talbott, J. Esty, J. Brophy. (5-0-0).</p>
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Respectfully submitted,

Susan Graham
Administrative Clerk



TOWN OF OLD SAYBROOK
Planning Commission
NATURAL HAZARD MITIGATION COMMITTEE

302 Main Street • Old Saybrook, Connecticut 06475-1741
Telephone (860) 395-3131 • FAX (860) 395-3125

SPECIAL MEETING
MINUTES
Wednesday, November 30, 2011, 2:00 P.M.
2nd Floor Conference Room
302 Main Street

I. **CALL TO ORDER**

The Chairman called the meeting to order at 2:09 P.M.

II. **ROLL CALL**

Present: Bob Missel, Planning Commission; John Talbott, Zoning Commission; Janis Esty, Planning Commission; Jerry Brophy, Conservation Commission (arrived 2:45)

Absent: Cathy Flanagan, Planning Commission

Staff: Jay Northrup, Planner, CRERPA; Christine Nelson, Town Planner, Old Saybrook; Sandy Prisloe, Environmental Planner

III. **REGULAR BUSINESS**

A. **Minutes**

MOTION to accept the minutes from meeting 11/9/2011; **MADE** by J. Esty; **SECONDED** by J. Talbott; **APPROVED** by R. Missel, J. Talbott, J. Esty. (3-0-0).

B. **Correspondence**

None.

C. **Staff Report**

D.

Jay Northrup reported that he has been in communication with the Boston regional office of FEMA. He has requested a written clarification to determine if the regional mitigation plan must be completed before an individual town can proceed with grant applications once the town's individual mitigation plan is complete.

Sandy Prisloe brought up the issue of flooding at the Elm Street underpass as an ideal candidate for a grant once the mitigation plan is completed.

Ms. Nelson said that Gov. Malloy is issuing initial reports from Tropical Storm Irene that affected the area in the summer.

IV. INVENTORY

A. Catalog Facilities, Resources and Assets

Adam Whelchel, Director of Conservation Programs at The Nature Conservancy, returned to give a more in-depth demonstration of an online simulation tool that portrays various scenarios in Old Saybrook if there were a serious storm, such as a hurricane, in conjunction with sea level rise. The Committee viewed various scenarios and discussed implications on emergency services and critical infrastructure. Ms. Nelson thought this tool could be useful to educate homeowners in more vulnerable neighborhoods. Mr. Northrup mentioned that grant money could help homeowners elevate structures and/or utilities.

Mr. Prisloe mentioned that The Army Corps Of Engineers have maps showing flooding from Tropical Storm Irene. He would like to obtain copies and compare to actual first-hand accounts to see if they are accurate. Ms. Nelson suggested utilizing Don Lucas, the town Building Inspector.

V. MITIGATION ANALYSIS

VI. PLAN DRAFTING

VII. IMPLEMENTATION

VIII. ADJOURNMENT

The meeting was adjourned at 3:45 pm.

<p>MOTION to adjourn to a special meeting on Wednesday, December 14, 2011 at 2:00 p.m., 2nd Floor Conference Room, 302 Main Street; MADE by J. Esty; SECONDED by J. Talbott; APPROVED by R. Missel, J. Talbott, J. Esty, J. Brophy. (4-0-0).</p>

Respectfully submitted,

Susan Graham
Administrative Clerk



TOWN OF OLD SAYBROOK
Planning Commission
NATURAL HAZARD MITIGATION COMMITTEE

302 Main Street • Old Saybrook, Connecticut 06475-1741
Telephone (860) 395-3131 • FAX (860) 395-3125

SPECIAL MEETING
MINUTES
Wednesday, December 14, 2011, 2:00-3:30 P.M.
302 Main Street
2nd Floor Conference Room

I. CALL TO ORDER

The Chairman called the meeting to order at 2:05 P.M.

II. ROLL CALL

Present: Bob Missel, Planning Commission; John Talbott (left at 3:27 pm), Zoning Commission; Janis Esty, Planning Commission; Jerry Brophy, Conservation Commission; Cathy Flanagan, Planning Commission

Staff: Jay Northrup, Planner, CRERPA; Sandy Prisloe, Environmental Planner; Steven Gernhardt, Board of Selectmen; Don Dobson, Fire Marshall

III. REGULAR BUSINESS

A. Minutes

MOTION to accept the minutes from meeting 11/30/2011; **MADE** by J. Brophy, **SECONDED** by C. Flanagan; **APPROVED** by R. Missel, J. Talbott, J. Esty, C. Flanagan, J. Brophy. (5-0-0).

B. Correspondence – none.

C. Staff Reports – none.

IV. INVENTORY

A. Catalog Critical Facilities and Infrastructure

Mr. Northrup gave a summary of the purpose of this committee to update Mr. Gernhardt. He explained that CRERPA is assisting with the revision of the Natural Hazard Mitigation Plan for Old Saybrook and other communities. Old Saybrook has formed this committee, which has been meeting since September of this year, to review and revise the plan.

Mr. Prisloe added that the current plan is in effect until January of 2012 and is updated every five years to be eligible for federal grant money. The committee meets bi-monthly and staff meets during the off weeks.

The committee worked on identifying and mapping critical facilities throughout the town. Staff will follow up with the Ct. Water Company to see how water is supplied during emergency situations. Staff requested a list of hazard material storage sites from the Fire Marshall and will request the location of high-pressure gas lines from Southern Ct. Gas Co. They discussed the location of storage tanks that could contain oil, propane and other hazardous materials. Staff will try to obtain a list of roads that potentially flood during storms from Police Chief Michael Spera.

Fire Marshall Dobson talked about facilities that have generators in town. He recommended that the high school upgrade its generator if it is to be used as a shelter.

V. MITIGATION ANALYSIS

VI. PLAN REVIEW

VII. IMPLEMENTATION

VIII. ADJOURNMENT

The meeting was adjourned at 3:35 pm.

<p>MOTION to adjourn to a special meeting on Wednesday, January 11, 2012 at 2:00 p.m., 2nd Floor Conference Room, 302 Main Street; MADE by C. Flanagan; SECONDED by J. Esty; APPROVED by R. Missel, J. Esty, J. Brophy, C. Flanagan. (4-0-0).</p>
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Respectfully submitted,

Susan Graham



TOWN OF OLD SAYBROOK
Planning Commission
NATURAL HAZARD MITIGATION COMMITTEE

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SPECIAL MEETING
MINUTES
Wednesday, January 11, 2012, 2:00-3:30 P.M.
302 Main Street
2nd Floor Conference Room

I. CALL TO ORDER

The Chairman called the meeting to order at 2:00 P.M.

II. ROLL CALL

Present: Bob Missel, Planning Commission; John Talbott, Zoning Commission; Janis Esty, Planning Commission; Cathy Flanagan, Planning Commission; Thomas Stevenson, Board of Finance; Steven Gernhardt, Board of Selectmen

Absent: Jerry Brophy, Conservation Commission

Staff: Christine Nelson, Town Planner; Jay Northrup, Planner, CRERPA; Sandy Prisloe, Environmental Planner

III. REGULAR BUSINESS

A. Minutes

MOTION to accept the minutes from meeting 12/14/2011; **MADE** by J. Talbott; **SECONDED** by J. Esty; **APPROVED** by R. Missel, J. Talbott, J. Esty, C. Flanagan, S. Gernhardt, T. Stevenson. (6-0-0).

B. Correspondence

Mr. Northrup stated that a Letter of Intent would need to be filed by the Selectmen Office by 1/13/2012 if the Mitigation Plan were ready to be adopted. The letter will not be submitted since it not likely that the plan will be completed by then.

C. Staff Reports

Ms. Nelson spoke with Adam Whelchel from The Nature Conservancy last week. He sent his regrets that he is unable to attend this meeting.

IV. INVENTORY

Mr. Prisløe met with Larry Bonin, of Public Works, and Don Dobson, Fire Marshal, to add more inventory items to the Critical Structures list, including hazardous materials that were identified within the Town.

Mr. Northrup recommended that a summary of the mitigation table be expanded in the Mitigation Plan so that the highest priority items would be highlighted. He mentioned that it is best to include all intended future projects, regardless of time frame, involving natural hazard mitigation so that they could potentially receive grant funding.

V. MITIGATION ANALYSIS

A. Study Impacts on Social Demographics & Cultural Characteristics

Mr. Prisløe provided scenarios with the tool on the website coastalresilience.org that had been previously demonstrated by Adam Welchel. The Committee examined potential flooding impacts on subsets of Town residents and discussed mitigation points.

VI. PLAN REVIEW

VII. IMPLEMENTATION

VIII. ADJOURNMENT

<p>MOTION to adjourn at 3:35 p.m. to a special meeting on Wednesday, January 25, 2012 at 2:00 p.m., 2nd Floor Conference Room, 302 Main Street; MADE by J. Esty, SECONDED by J. Talbott; APPROVED by R. Missel, J. Esty, C. Flanagan, J. Talbott, S. Gernhardt, T. Stevenson. (6-0-0).</p>

Respectfully submitted,

Susan Graham
Administrative Clerk



TOWN OF OLD SAYBROOK
Planning Commission
NATURAL HAZARD MITIGATION COMMITTEE

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SPECIAL MEETING
MINUTES
Wednesday, January 25, 2012, 2:00-3:30 P.M.
302 Main Street
2nd Floor Conference Room

I. CALL TO ORDER

The Chairman called the meeting to order at 2:04 P.M.

II. ROLL CALL

Present: Bob Missel, Planning Commission; John Talbott, Zoning Commission; Janis Esty, Planning Commission; Cathy Flanagan, Planning Commission; Jerry Brophy, Conservation Commission; Thomas Stevenson, Board of Finance; Steven Gernhardt, Board of Selectmen

Staff: Christine Nelson, Town Planner; Jay Northrup, Planner, CRERPA; Sandy Prisloe, Environmental Planner; Don Lucas, Building Inspector; Donn Dobson, Fire Marshal

III. REGULAR BUSINESS

A. Minutes

MOTION to accept the minutes from meeting 1/11/2012; **MADE** by J. Talbott; **SECONDED** by C. Flanagan; **APPROVED** by R. Missel, J. Talbott, J. Esty, C. Flanagan, S. Gernhardt, T. Stevenson, J. Brophy. (7-0-0).

B. Correspondence - none

C. Staff Reports - none

IV. INVENTORY

Mr. Northrup handed out a summary of the action items that were discussed at the last meeting regarding social and demographic mapping from The Nature Conservancy Coastal Resilience web site. The Committee discussed each item on the list and offered input for the actual wording to be used. Mr. Northrup spoke about some of FEMA's grant requirements, especially pertaining to building in coastal areas. Ms. Nelson said she

would prefer that limitations on building within certain zones be part of the Town's planning policy, rather than regulated by zoning laws.

V. MITIGATION ANALYSIS

A. Summarize Impacts on Social Demographics & Cultural Characteristics

Mr. Prisloe demonstrated The Nature Conservancy's Coastal Resilience website and planning tool now that data for Old Saybrook has been specifically added to it.

B. Study Impacts on Value of Infrastructure & Economic Development

Mr. Prisloe discussed Town's Geographic Information System that merges data from The Nature Conservancy's tool with a FEMA estimating tool and tax assessment data. This allows economic loss analyses to be conducted based on assessed values in different storm-related scenarios and sea level rise projections. The Committee discussed loss of tax revenue in the event of a major storm.

Mr. Gernhardt left the meeting at 3:00 p.m.

Mr. Lucas gave his input on the post-effects of Storm Irene and issues related to seasonal dwellings. He noted that approximately 80% of the damaged homes are still not repaired and many would benefit from raising the foundations above flood level. He would be in favor of local grants for this purpose.

C. Collect Data on the Ecological Resources and the Environment

VI. PLAN REVIEW

VII. IMPLEMENTATION

VIII. ADJOURNMENT

<p>MOTION to adjourn at 3:35 p.m. to a special meeting on Wednesday, February 8, 2012 at 2:00 p.m., 2nd Floor Conference Room, 302 Main Street; MADE by C. Flanagan; SECONDED by R. Missel; APPROVED by R. Missel, J. Esty, C. Flanagan, J. Talbott, J. Brophy, T. Stevenson. (6-0-0).</p>

Respectfully submitted,

Susan Graham
Administrative Clerk



TOWN OF OLD SAYBROOK
Planning Commission
NATURAL HAZARD MITIGATION COMMITTEE

302 Main Street • Old Saybrook, Connecticut 06475-1741
Telephone (860) 395-3131 • FAX (860) 395-3125

SPECIAL MEETING
MINUTES

Wednesday, February 8, 2012, 2:00-3:30 P.M.
302 Main Street
2nd Floor Conference Room

I. **CALL TO ORDER**

The Chairman called the meeting to order at 2:03 P.M.

II. **ROLL CALL**

Present: Bob Missel, Planning Commission; John Talbott, Zoning Commission; Janis Esty, Planning Commission; Cathy Flanagan, Planning Commission; Jerry Brophy, Conservation Commission; Thomas Stevenson, Board of Finance

Absent: Steven Gernhardt, Board of Selectmen

Staff: Christine Nelson, Town Planner; Jay Northrup, Planner, CRERPA; Sandy Prisloe, Environmental Planner; Don Lucas, Building Inspector (left at 2:20 p.m.)

III. **REGULAR BUSINESS**

A. **Minutes**

MOTION to accept the minutes from meeting 1/25/2012; **MADE** by J. Talbott; **SECONDED** by C. Flanagan; **APPROVED** by R. Missel, J. Talbott, J. Esty, C. Flanagan, T. Stevenson, J. Brophy. (6-0-0).

B. **Correspondence – none.**

C. **Staff Report**

Mr. Prisloe sent data to The Nature Conservancy (TNC) to be added to the Coastal Resiliency website pertaining to the Town. He said that TNC is developing a product to show a map of roads that could be inaccessible during hurricanes. Mr.

Stevenson would like to be able to get a list of those roads for emergency preparation.

IV. INVENTORY

V. MITIGATION ANALYSIS

- A. Summarize Impacts on Value of Structures & Economic Development
- B. Study Impacts on the Ecological Resources and the Environment

Mr. Prisloe displayed the Coastal Resilience planning tool and showed the locations significant marshes in Town. He mentioned that there are Flood Advancement Zones where rising waters naturally flow.

The Committee generally discussed acquisition of property vs. shoreline hardening or armoring. An engineering cost/benefit analysis would need to be done to determine which is better in each situation and to be eligible for Federal grants.

- C. Study Impacts on Critical Facilities & Infrastructure

Mr. Prisloe demonstrated the Town's Geographic Information System in relation to critical habitats identified by the Department of Environmental Protection. He then combined layers of data from FEMA's 100 Year Flood Plain map with building locations in Town to give more specific information as to the level of damage to expect in storm flood scenarios. Using projected sea level rise combined with a Category 3 Hurricane projected effect, he was able to estimate the flood depth at each 10' x 10' grid on the Town map. The Committee was asked to determine how this information might be useful in developing the Natural Hazard Mitigation Plan. Ms. Nelson said she would like the ability to map the analysis of marsh migration vs. the likelihood of shoreline hardening. Mr. Prisloe said he would try to get that data together.

Mr. Northrup suggested that the Town develop a fund to offer sellers in certain hazardous zones in exchange for the Town to receive first right of refusal. The areas of greater ecological value would need to be identified. Ms. Esty thought that the Town should be broken down into areas and analyzed individually. Ms. Nelson added that maps of recommended focus areas should be included in the Mitigation Plan.

VI. PLAN REVIEW

- A. Read Draft Text about Social Demographics & Cultural Characteristics

Mr. Northrup handed out a list of action items developed from the last meeting. He asked that any additional ideas to be emailed to himself or Ms. Nelson.

Mr. Northrup also provided first draft copies of the Mitigation Plan for the Town. He will insert data from the 2010 Census when it is available. Mr. Missel asked that the members review it and comment at the next meeting.

VII. IMPLEMENTATION

VIII. ADJOURNMENT

<p>MOTION to adjourn at 3:35 p.m. to a special meeting on Wednesday, February 22, 2012 at 2:00 p.m., 2nd Floor Conference Room, 302 Main Street; MADE by C. Flanagan; SECONDED by J. Esty; APPROVED by R. Missel, J. Esty, C. Flanagan, J. Talbott, J. Brophy, T. Stevenson. (6-0-0).</p>
--

Respectfully submitted,

Susan Graham
Administrative Clerk



TOWN OF OLD SAYBROOK
Planning Commission
NATURAL HAZARD MITIGATION COMMITTEE

302 Main Street • Old Saybrook, Connecticut 06475-1741
Telephone (860) 395-3131 • FAX (860) 395-3125

SPECIAL MEETING
MINUTES
Wednesday, February 22, 2012, 2:00-3:30 P.M.
302 Main Street
2nd Floor Conference Room

I. CALL TO ORDER

Ms. Esty, acting as chairman, called the meeting to order at 2:20 p.m.

II. ROLL CALL

Present: John Talbott, Zoning Commission; Janis Esty, Planning Commission;
Thomas Stevenson, Board of Finance, Steven Gernhardt, Board of
Selectmen (left at 3:10 p.m.)

Absent: Bob Missel, Planning Commission; Cathy Flanagan, Planning
Commission; Jerry Brophy, Conservation Commission

Staff: Christine Nelson, Town Planner; Sandy Prisloe, Environmental Planner;
Jay Northrup, Planner, CRERPA;

III. REGULAR BUSINESS

A. Minutes

<p>MOTION to accept the minutes from meeting 2/8/2012; MADE by J. Talbott; SECONDED by J. Esty; APPROVED by J. Talbott, J. Esty, T. Stevenson, S. Gernhardt. (4-0-0).</p>

B. Correspondence

Ms. Nelson and Mr. Prisloe have not received the evacuation route layers from The Nature Conservancy as of yet. Instead, they have formulated a set using the Town mapping resources.

C. Staff Report

Ms. Nelson was contacted by the Borough of Fenwick, inquiring about inclusion in the Natural Hazard Mitigation Plan. Since Fenwick is under a different

jurisdiction than the Town it was determined that the Borough would not be included this time, but it could be possible in the future.

IV. INVENTORY

Mr. Prisloe supplied maps of the Town showing consolidated data from FEMA and land records. He highlighted roads that were flooded after Storm Irene, in 2011, from information provided by Larry Bonin, Public Works Director. The Committee looked at low points on the map and discussed specific locations most affected by flooding. Items on the inventory list in the plan were compared to the map. Other hazards were listed and discussed in relation to where they are most likely to have great impact.

V. MITIGATION ANALYSIS

- A. Summarize Impacts on the Ecological Resources and the Environment
- B. Study Impacts on Critical Facilities & Infrastructure
- C. Collect Data on Other Natural Hazards

VI. PLAN REVIEW

- A. Read Draft Text about Social Demographics & Cultural Characteristics
- B. Read Draft Text about Structures & Economic Development

VII. ADOPTION

- A. Discuss Public Informational Meeting and Outreach

VIII. ADJOURNMENT

MOTION to continue agenda items V. through VII. To the next special meeting Wed., March 14, 2012, 2:00 p.m., 2nd Flr. Conf. Rm., 302 Main St.; **MADE** by J. Talbott; **SECONDED** by J. Esty; **APPROVED** by J. Talbott, J. Esty, T. Stevenson. (3-0-0).

MOTION to adjourn at 3:30 to a special meeting on Wed., March 14, 2012 at 2:00 p.m., 2nd Flr. Conf. Rm., 302 Main St.; **MADE** by J. Talbott; **SECONDED** by J. Esty; **APPROVED** by J. Talbott, J. Esty, T. Stevenson. (3-0-0).

Respectfully submitted,

Susan Graham
Administrative Clerk



TOWN OF OLD SAYBROOK
Planning Commission
NATURAL HAZARD MITIGATION COMMITTEE

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**SPECIAL MEETING
MINUTES**

Wednesday, March 14, 2012, 2:00-3:30 P.M.
302 Main Street
2nd Floor Conference Room

I. CALL TO ORDER

The Chairman called the meeting to order at 2:15 p.m.

II. ROLL CALL

Present: Bob Missel, Planning Commission; John Talbott, Zoning Commission;
Janis Esty, Planning Commission; Thomas Stevenson, Board of Finance

Absent: Cathy Flanagan, Planning Commission; Jerry Brophy, Conservation
Commission; Steven Gernhardt, Board of Selectmen

Staff: Christine Nelson, Town Planner; Sandy Prisloe, Environmental Planner;
Jay Northrup, Planner, CRERPA

III. REGULAR BUSINESS

A. Minutes

MOTION to accept the minutes from meeting 2/22/2012; **MADE** by J. Talbott; **SECONDED** by J. Esty; **APPROVED** by B. Missel, J. Talbott, J. Esty, T. Stevenson. (4-0-0).

B. Correspondence

Ms. Nelson received communication from the Chalker Beach Improvement Association offering to help implement the Plan once it is finalized.

C. Staff Report

Mr. Prisloe reported that Robert Yust, a Navy engineer, attended the Conservation Commission meeting the previous day and offered his expertise to the Natural Hazard Mitigation Committee (NHMC) since the Navy is also looking at the effects of sea level rise on its facilities. The Committee welcomed input from the community.

Mr. Prisloe has not seen the newest data he supplied to The Nature Conservancy added to the Coastal Resilience web site as of yet, showing roads prone to flooding and GIS data.

IV. INVENTORY

A. Collect Data on Other Natural Hazards

The Committee discussed natural hazards, other than flooding, aiming to complete the list of hazards that might be mitigated. Committee members also discussed community notification systems that were in place in the past for fires or air raids. Mr. Northrup suggested that an inventory of such broadcast systems be included as an action item in the Plan.

Ms. Nelson displayed a Fire Fighting Resources Map, used by the Town for planning purposes, which showed areas serviced by water sources. Areas without water sources within 1000', mainly in the North/Northwest area of Town, were discussed. One possible action item is to retrofit cisterns for fire fighting in areas not served by a water source.

Data collection is now complete and can go the review stage.

(Mr. Stevenson left the meeting at 3:00 pm.)

V. MITIGATION ANALYSIS

A. Summarize Impacts on Critical Facilities & Infrastructure

The Committee agreed to move on to the next agenda item.

VI. PLAN REVIEW

- A. Read Draft Text about Social Demographics & Cultural Characteristics
- B. Read Draft Text about Structures & Economic Development
- C. Read Draft Text about Ecological Resources and the Environment

Mr. Northrup has a draft of the Plan, but will add items from today's discussions and distribute at or before the next meeting.

VII. ADOPTION

A. Adoption Process

Mr. Northrup handed out an adoption process checklist. He will try to have the completed draft ready within one month. Methods for presenting it to the Town

Commissions were discussed. To keep printing costs lower the draft will not include photos. The Committee expressed concern that the timing of the release of this Plan might confuse residents, since the awareness campaign to inform residents of the updated FEMA maps is also due to begin soon. Ms. Nelson called First Selectman Carl Fortuna into the meeting to discuss any grant applications that would hinge on the finalization and adoption of the NHM Plan, so that the release date would not be the same as the FEMA awareness campaign.

(Mr. Talbott left the meeting at 3:30 pm)

Mr. Fortuna joined the meeting to discuss grants. After a discussion with the Committee it was determined that delaying the Plan would not interfere with any pending grant applications. It was decided that a final draft of the Plan by the end of May for adoption by the end of June would be desirable.

B. Outline Outreach and Public Informational Meeting

Ms. Nelson suggested that since the action items in the Plan are to be carried out by staff members, the Committee should present the draft to them as a group. It should also be presented to each Commission, either individually or at one meeting. Copies of the Plan should be posted on the Town web site and placed in the Library, Town Hall, and other public places and copies given to home associations in the community. The Planning Commission would be responsible for approving the final draft and then the Board of Selectmen would adopt it. Mr. Fortuna requested that copies be distributed two months ahead of time to the Selectmen to allow time for review.

VIII. ADJOURNMENT

<p>MOTION to adjourn at 3:50 to a special meeting on Wed., April 11, 2012 at 2:00 p.m., 2nd Flr. Conf. Rm., 302 Main St.; MADE by J. Esty; SECONDED by B. Missel; APPROVED by B. Missel, J. Esty, (2-0-0).</p>

Respectfully submitted,

Susan Graham
Administrative Clerk



TOWN OF OLD SAYBROOK
Planning Commission
NATURAL HAZARD MITIGATION COMMITTEE

302 Main Street • Old Saybrook, Connecticut 06475-1741
Telephone (860) 395-3131 • FAX (860) 395-3125

SPECIAL MEETING MINUTES
Wednesday, April 11, 2012
2:00-3:30 P.M.
Town Hall, 2nd Floor Conference Room
302 Main Street

I. **CALL TO ORDER** - The Chairman called the meeting to order at 2:06 p.m.

II. **ROLL CALL**

Present: Bob Missel, Planning Commission; John Talbott, Zoning Commission;
Janis Esty, Planning Commission; Thomas Stevenson, Board of Finance;
Jerry Brophy, Conservation Commission

Absent: Cathy Flanagan, Planning Commission; Steven Gernhardt, Board of
Selectmen

Staff: Jay Northrup, Planner, CRERPA

III. **REGULAR BUSINESS**

A. **Minutes**

MOTION to accept the minutes from meeting 3/14/2012; **MADE** by J. Talbott; **SECONDED** by J. Esty; **APPROVED** by J. Talbott, J. Esty, B. Missel, T. Stevenson, J. Brophy. (5-0-0)

B. **Correspondence** – none.

C. **Staff Report**

Mr. Northrup reported that he had submitted an updated draft of the Natural Hazard Mitigation Plan (NHMP) to Christine Nelson, Town Planner, and Sandy Prisloe, Environmental Planner, for input. He is ready to draft a public involvement plan and develop a timeline for plan adoption.

VI. **PLAN REVIEW**

A. **Review Draft Plan**

Review of the draft plan will be continued to the next meeting so that Ms. Nelson and Mr. Prisloe can add comments and revisions. Mr. Northrup believes the draft plan will be ready a week before the next meeting on May 9th so that the Committee can review it and comment at the meeting. At that point the NHMC can decide whether to approve the draft and refer it out to the appropriate Boards and Commissions.

B. Develop Public Informational Presentation(s) and other Outreach

The Committee discussed how they should present the draft to the public for community input. They agreed that one public informational meeting should be scheduled, and a second one only if necessary. Copies of the draft plan will be available on the Town's web site and distributed in public places such as Town Hall and the library. Mr. Stevenson suggested distributing the draft on compact disc to save printing and mailing costs. It was mentioned that Ms. Nelson had previously suggested formulation of a Power Point presentation for the Conservation Commission. The Committee thought it would be useful at the public meeting and could also be included on the CD. Mr. Northrup asked that everyone bring ideas to the next meeting for items to be included in the Power Point presentation.

C. Refer Draft Plan to PC and DEEP/FEMA

The Committee discussed which agencies, Boards and Commissions that a draft should be sent to for comment. There were some that could be included in a first phase and then others that could receive a copy updated with initial input. Mr. Northrup suggested sending a copy of the draft, once the Planning Commission approves it, to The Department of Energy and Environmental Protection (DEEP). He also suggested resending a final copy showing any revisions before final approval.

VII. ADOPTION

A. Schedule Adoption Process

VIII. ADJOURNMENT

<p>MOTION to adjourn at 3:05 to a special meeting on Wed., May 9th, 2012 at 2:00 p.m., 2nd Flr. Conf. Rm., 302 Main St.; MADE by J. Talbott; SECONDED by J. Esty; APPROVED by B. Missel, J. Esty, J. Talbott, J. Brophy, T. Stevenson (5-0-0).</p>
--

Respectfully submitted,

Susan Graham
Clerk



TOWN OF OLD SAYBROOK
Planning Commission
NATURAL HAZARD MITIGATION COMMITTEE

302 Main Street • Old Saybrook, Connecticut 06475-1741
Telephone (860) 395-3131 • FAX (860) 395-3125

SPECIAL MEETING MINUTES
Wednesday, May 9, 2012
2:00-3:30 P.M.
Town Hall, 2nd Floor Conference Room
302 Main Street

I. **CALL TO ORDER** - The Chairman called the meeting to order at 2:12 p.m.

II. **ROLL CALL**

Present: Bob Missel, Planning Commission; John Talbott, Zoning Commission;
Janis Esty, Planning Commission; Cathy Flanagan, Planning Commission

Absent: Steven Gernhardt, Board of Selectmen; Thomas Stevenson, Board of
Finance; Jerry Brophy, Conservation Commission

Staff: Jay Northrup, Planner, CRERPA; Christine Nelson, Town Planner;
Sandy Prisloe, Environmental Planner

III. **REGULAR BUSINESS**

A. **Minutes**

MOTION to accept the minutes from special meeting 4/11/2012; **MADE** by J. Talbott; **SECONDED** by J. Esty; **APPROVED** by J. Talbott, J. Esty, B. Missel, C. Flanagan. (4-0-0)

B. **Correspondence**

Mr. Northrup is reviewing suggestions from the Regional Planning Agency regarding language used in the upkeep of the study.

C. **Staff Report**

Ms. Nelson will be working with Mr. Prisloe and Mr. Northrup on Thursday to finish editing the draft of the Mitigation Plan.

IV. **PLAN REVIEW**

A. **Review Draft Plan**

The Plan is still in editing mode.

B. **Develop Public Informational Presentation(s) and other Outreach**

The Committee discussed the scheduling of presentations to Town boards, commissions and staff, as well as to the public. September is a likely month for the first presentation. It was suggested that maps be displayed at the meetings to show which parts of town might be most affected by each natural hazard.

The Committee also worked on a PowerPoint presentation. Staff will add more details to it for review at the next meeting.

Mr. Talbott left the meeting at 3:27 p.m.

C. **Refer Draft Plan to PC and DEEP/FEMA**

V. **ADOPTION**

A. **Schedule Adoption Process**

VI. **ADJOURNMENT**

<p>MOTION to adjourn at 3:40 to a special meeting on Wed., June 13th, 2012 at 2:00 p.m., 2nd Flr. Conf. Rm., 302 Main St.; MADE by C. Flanagan; SECONDED by J. Esty; APPROVED by B. Missel, J. Esty, C. Flanagan (3-0-0).</p>

Respectfully submitted,

Susan Graham
Clerk



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SPECIAL MEETING MINUTES

Wednesday, June 13, 2012

2:00-3:30 P.M.

Town Hall, 2nd Floor Conference Room
302 Main Street

- I. **CALL TO ORDER** - The Chairman, Bob Missel, called the meeting to order at 2:13 p.m.
- II. **ROLL CALL**
- Present: Bob Missel, Planning Commission; Thomas Stevenson, Board of Finance
- Absent: Steven Gernhardt, Board of Selectmen; Jerry Brophy, Conservation Commission; John Talbott, Zoning Commission; Janis Esty, Planning Commission; Cathy Flanagan, Planning Commission
- Staff: Jay Northrup, Planner, CRERPA; Sandy Prisloe, Environmental Planner; Susan Graham, Administrative Clerk
- III. **REGULAR BUSINESS**
- A. **Minutes**
- Discussion of the minutes from special meeting on May 9 was tabled to the next meeting on July 11.
- B. **Correspondence**
- None.
- C. **Staff Report**
- Mr. Northrup reported that the editing process of the Natural Hazard Mitigation Plan is roughly 2/3 complete and has been very laborious. The action items are completed and the descriptive language is still in the works. He has been working with Mr. Prisloe and Ms. Nelson to reorganize the Plan to make it less repetitive. It was noted that Ms. Nelson is going on maternity leave at the end of this week and that Mr. Northrup will continue to work with Mr. Prisloe.

VI. PLAN REVIEW

A. Review Draft Plan

Mr. Northrup reviewed the rough draft of the Plan with the Committee. He explained the layout of the sections and discussed items yet to be streamlined. Mr. Stevenson inquired about the FEMA flood maps and their relevance to the Plan. Mr. Northrup said that they are used for discussion of flooding and hazardous areas and that the process to adopt new maps will be described.

The Committee was asked for suggestions for Plan Maintenance. Mr. Stevenson mentioned that Mike Gardner, from the Police Dept., will be taking over IT duties and might be able to help with the web site. He also suggested that grant writers be identified to apply when appropriate.

Mr. Prisloe discussed changes to the FEMA mapping and the large impact it has on the Town. Many more properties will be designated in the 100-year Flood Zone.

Mr. Stevenson will check on the viability of a rainy day fund to keep the Town operating in the event of a disaster.

B. Develop Public Informational Presentation(s) and other Outreach

The presentation is not ready at this time.

C. Refer Draft Plan to PC and DEEP/FEMA

VII. ADOPTION

A. Schedule Adoption Process

VIII. ADJOURNMENT

Mr. Missel adjourned the meeting at 3:25 p.m.

Respectfully submitted,

Susan Graham
Clerk



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Planning Commission
NATURAL HAZARD MITIGATION COMMITTEE

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SPECIAL MEETING MINUTES

Wednesday, July 11, 2012
2:00-3:30 P.M.
Town Hall, 2nd Floor Conference Room
302 Main Street

I. **CALL TO ORDER** - Chairman Bob Missel called the meeting to order at 2:08 p.m.

II. **ROLL CALL**

Present: Bob Missel, Planning Commission; Janis Esty, Planning Commission;
John Talbott, Zoning Commission

Absent: Steven Gernhardt, Board of Selectmen; Thomas Stevenson, Board of
Finance; Jerry Brophy, Conservation Commission; Cathy Flanagan,
Planning Commission

Staff: Jay Northrup, Planner, CRERPA; Sandy Prisloe, Environmental Planner;
Susan Graham, Administrative Clerk

There were two members of the audience present, Judy Goldfarb and Dick Foster.

III. **REGULAR BUSINESS**

A. **Minutes**

MOTION to accept the minutes from special meeting 5/9/2012; **MADE** by J. Talbott; **SECONDED** by J. Esty; **APPROVED** by J. Talbott, J. Esty, B. Missel. (3-0-0)

MOTION to accept the minutes from special meeting 6/13/2012; **MADE** by B. Missel; **SECONDED** by J. Talbott; **APPROVED** by J. Talbott, J. Esty, B. Missel. (3-0-0)

B. **Correspondence**

None.

C. **Staff Report**

Mr. Prisloe reported that he had viewed the Mitigation Plan for the Town of Guilford online and liked some of the elements used in the maps. He displayed copies of revised maps for the Committee. The maps/data included:

1. Critical Facilities
2. General Land Use
3. Primary Structure Locations (on land parcels)
4. Written Summary of Analyses
5. Zoning Map
6. Critical Habitats Identified by DEEP
7. Hurricane Inundation Areas
8. Table Summary of Natural Hazard Events & Impacts

Mr. Prisloe asked the Committee to submit comments for future revision, if needed. Mr. Foster, an Old Saybrook resident, inquired about long-term planning pertaining to rising sea levels. Mr. Missel explained that it had been discussed, but is limited by financial and land use constraints. Mr. Prisloe added that the Plan covers a 5-year period and will again be updated.

VI. PLAN REVIEW

A. Review Draft Plan

Mr. Northrup reviewed the rough draft of the Plan with the Committee, starting with the section titled "The Environment & Ecological Resources". He took note of minor changes and corrections. The next section, "NFIP & Continuance", was distributed for review before the next meeting.

- B. Develop Public Informational Presentation(s) and other Outreach
- C. Refer Draft Plan to PC and DEEP/FEMA

VII. ADOPTION

A. Schedule Adoption Process

VIII. ADJOURNMENT

<p>MOTION to adjourn at 3:30 to a special meeting on Wed., Aug. 8th, 2012 at 2:00 p.m., 2nd Flr. Conf. Rm., 302 Main St.; MADE by J. Talbott; SECONDED by J. Esty; APPROVED by J. Talbott, J. Esty, B. Missel. (3-0-0)</p>
--

Respectfully submitted,

Susan Graham
Clerk



TOWN OF OLD SAYBROOK
Planning Commission
NATURAL HAZARD MITIGATION COMMITTEE

302 Main Street • Old Saybrook, Connecticut 06475-1741
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SPECIAL MEETING MINUTES
Wednesday, August 8, 2012
2:00-3:30 P.M.
Town Hall, 2nd Floor Conference Room
302 Main Street

I. **CALL TO ORDER** - Chairman Bob Missel called the meeting to order at 2:00 p.m.

II. **ROLL CALL**

Present: Bob Missel, Planning Commission; Janis Esty, Planning Commission;
Thomas Stevenson, Board of Finance

Absent: Steven Gernhardt, Board of Selectmen; John Talbott, Zoning
Commission; Jerry Brophy, Conservation Commission; Cathy Flanagan,
Planning Commission

Staff: Jay Northrup, Planner, CRERPA; Susan Graham, Clerk

III. **REGULAR BUSINESS**

A. **Minutes**

MOTION to accept the minutes from special meeting 7/11/2012; **MADE** by B. Missel; **SECONDED** by J. Esty; **APPROVED** by J. Esty, B. Missel; **ABSTAINED** by T. Stevenson. (2-0-1)

B. **Correspondence**

The Committee discussed correspondence from Don Lucas, Building Official, commenting on the rough draft of the Natural Hazard Mitigation Plan. Mr. Northrup will incorporate some of his ideas into the Plan and will clarify the year of the FEMA report (2008 or 2012) which shows that 12% of the Town is located in a flood plain.

Mr. Missel gave Mr. Northrup a copy of The Coastal Area Management Act, which he had obtained from ZEO Costa. Mr. Northrup will review it for additional data that could be incorporated into the Plan.

C. **Staff Report**

Mr. Northrup displayed Town maps that Mr. Prisloe had been working on for inclusion in the Plan and asked the Committee for input as to readability. The Committee agreed that they were acceptable as is.

IV. **PLAN REVIEW**

A. **Review Draft Plan**

Mr. Northrup and the Committee discussed the "Natural Hazard" section of the Plan and noted comments and minor corrections. The Committee agreed that they were satisfied with the draft.

B. **Develop Public Informational Presentation(s) and other Outreach**

Mr. Northrup and Mr. Prisloe are still developing an outreach plan.

C. **Refer Draft Plan to PC and DEEP/FEMA**

It is expected that the Plan will be presented to the Planning Commission in November.

V. **ADOPTION**

A. **Schedule Adoption Process**

Tabled to later time.

VI. **ADJOURNMENT**

<p>MOTION to adjourn at 3:00 p.m. to a special meeting on Wednesday, September 12th, 2012 at 2:00 p.m., 2nd Flr. Conf. Rm., 302 Main St.; MADE by B. Missel; SECONDED by J. Esty; APPROVED by J. Esty, B. Missel, T. Stevenson. (3-0-0)</p>

Respectfully submitted,

Susan Graham
Administrative Clerk



TOWN OF OLD SAYBROOK
Planning Commission
NATURAL HAZARD MITIGATION COMMITTEE

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Telephone (860) 395-3131 • FAX (860) 395-1216

SPECIAL MEETING MINUTES
Wednesday, September 12, 2012
2:00-3:30 P.M.
Town Hall, 2nd Floor Conference Room
302 Main Street

I. **CALL TO ORDER** - Chairman Bob Missel called the meeting to order at 2:05 p.m.

II. **ROLL CALL**

Present: Bob Missel, Planning Commission; Janis Esty, Planning Commission;
Thomas Stevenson, Board of Finance; John Talbott, Zoning Commission;
Cathy Flanagan, Planning Commission

Absent: Steven Gernhardt, Board of Selectmen; Jerry Brophy, Conservation
Commission

Staff: Jay Northrup, CRERPA; Sandy Prisloe, Environmental Planner; Susan
Graham, Clerk; Meryl Tsagronis, Clerk

III. **REGULAR BUSINESS**

A. **Minutes**

MOTION to accept the minutes from special meeting 8/8/2012; **MADE** by J. Esty; **SECONDED** by B. Missel; **APPROVED** by J. Esty, B. Missel, T. Stevenson; **ABSTAINED** by J. Talbott, C. Flanagan. (3-0-2)

B. **Correspondence** - none.

C. **Staff Report** - none.

IV. **PLAN REVIEW**

A. **Review Draft Plan**

Mr. Northrup and the Committee continued discussion of the "Natural Hazard" section of the Plan, starting with the section titled "Hurricanes". He will insert additional previous occurrences of hurricanes to the list. The wording of the section titled "Sea Level Rise" was discussed and modified. The Committee discussed the terminology of using the data from a 500-year flood, rather than a 100-year flood plain estimate. Mr. Prisloe suggested checking in 5 years, when the Plan is updated, to see if Sea Level Rise really has an impact on the community, and, if so, that a committee be formed to further study the impact. Mr. Northrup has included a recommendation in the Plan.

The Committee ended with a discussion of the "Tsunami" section.

- B. Develop Public Informational Presentation(s) and other Outreach
- C. Refer Draft Plan to PC and DEEP/FEMA

V. **ADOPTION**

- A. Schedule Adoption Process

VI. **ADJOURNMENT**

<p>MOTION to adjourn at 3:20 p.m. to a special meeting on Wednesday, October 10th, 2012 at 2:00 p.m., 2nd Flr. Conf. Rm., 302 Main St.; MADE by C. Flanagan; SECONDED by J. Esty; APPROVED by J. Esty, B. Missel, T. Stevenson, J. Talbott, C. Flanagan. (5-0-0)</p>
--

Respectfully submitted,

Susan Graham
Administrative Clerk



TOWN OF OLD SAYBROOK
Planning Commission
NATURAL HAZARD MITIGATION COMMITTEE

302 Main Street • Old Saybrook, Connecticut 06475-1741
Telephone (860) 395-3131 • FAX (860) 395-1216

SPECIAL MEETING MINUTES
Wednesday, October 24, 2012
2:00-3:30 P.M.
Town Hall, 2nd Floor Conference Room
302 Main Street

I. **CALL TO ORDER** - Chairman Bob Missel called the meeting to order at 2:02 p.m.

II. **ROLL CALL**

Present: Bob Missel, Planning Commission; Janis Esty, Planning Commission;
Thomas Stevenson, Board of Finance; John Talbott, Zoning Commission;
Jerry Brophy, Conservation Commission

Absent: Steven Gernhardt, Board of Selectmen; Cathy Flanagan, Planning
Commission

Staff: Torrance Downes, Connecticut River Valley Council of Governments;
Jeremy DeCarli, Connecticut River Valley Council of Governments;
Sandy Prisloe, Environmental Planner; Christine Nelson, Town Planner;
Meryl Tsagronis, Clerk

III. **REGULAR BUSINESS**

A. **Minutes**

MOTION to accept the minutes from special meeting 9/12/2012; **MADE** by J. Talbott; **SECONDED** by J. Esty; **ABSTAINED** 0; **APPROVED** by J. Esty, B. Missel, J. Talbott, T. Stevenson, J. Brophy. (5-0-0)

B. **Correspondence** - none.

C. **Staff Report**

Mr. Torrance Downes of Connecticut River Valley Council of Governments, RiverCOG, reported to the Committee the next steps in the review process of the "Natural Hazard Mitigation Plan," stating the Plan is far enough along that it can now be sent to Karen Michaels of DEEP. Once reviewed by Ms. Michaels the Plan will be sent back to the Planning Commission for revisions. The revised

Plan then goes back to Ms. Michaels who then forwards it to FEMA. The FEMA review process may take up to 2 months. FEMA sends the Plan back to the Planning Commission for final changes. The Plan goes again to FEMA for final confirmation and at that point, if FEMA approves the Plan, the Plan would be taken through the town meeting process.

Mr. Downes stated he would advise the Commission about funding details, as well as what the public meeting needs to include.

D. 2013 Meeting Dates

MOTION to approve 2013 meeting dates; **MADE** by J. Talbott; **SECONDED** by J. Esty; **ABSTAINED** 0; **APPROVED** by J. Esty, B. Missel, J. Talbott, T. Stevenson, J. Brophy. (5-0-0)

IV. PLAN REVIEW – none.

V. ADJOURNMENT

MOTION to adjourn at 2:30 p.m. to a special meeting on Wednesday, November 21, 2012 at 2:00 p.m., 2nd Flr. Conf. Rm., 302 Main St.; **MADE** by J. Talbott; **SECONDED** by J. Esty; **ABSTAINED** 0; **APPROVED** by J. Esty, B. Missel, J. Talbott, T. Stevenson, J. Brophy. (5-0-0)

Respectfully submitted,

Meryl Tsagronis
Administrative Clerk

Appendix V – Public Survey Questions (A.3)

The following pages contain screen shots of the online survey that was used to gather public opinion. The survey was posted on the Old Saybrook Town website, along with its facebook page, the RiverCOG's facebook page, and area businesses and organizations facebook pages. The survey was also sent out via email blasts to various commission members, Chamber of Commerce members town officials in Town and the neighboring towns of Westbrook, Essex, and Old Lyme. The survey was online from June 13, 2013 to June 26, 2013. During this time, 163 responses were gathered. The full response report is located in Appendix V. Appendix VI is a compilation of screen shots showing the Old Saybrook Hazard Mitigation Webpage as well as other webpages showing links to the location of the Old Saybrook and Fenwick Natural Hazard Mitigation Plan Update, 2014 Survey. The survey itself was located at:

https://www.surveymonkey.com/s/OS_NHMP

Old Saybrook Natural Hazard Mitigation Plan

Purpose

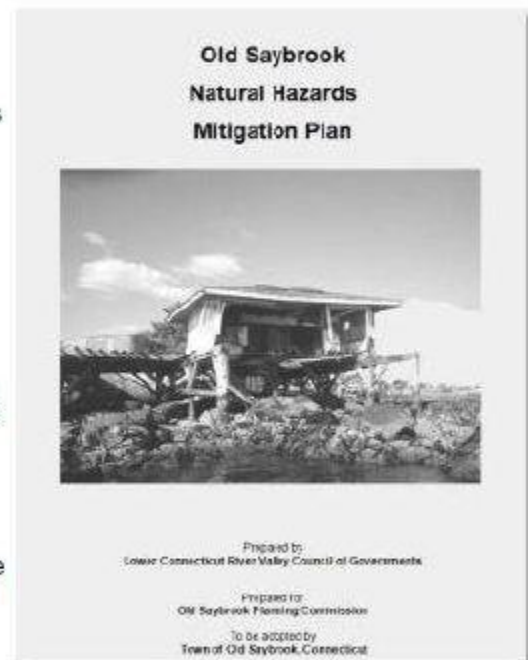
People and property in Old Saybrook periodically are exposed to damages from natural hazards including coastal floods, hurricanes, tropical storms, winter storms, nor'easters and similar events. In the last two years alone, coastal residents have suffered significant losses from Tropical Storm Irene and Superstorm Sandy while residents elsewhere have had to deal with downed trees, prolonged power outages, impassable roads and lack of services.

To help reduce and avoid damages from natural hazards, the Town prepared and adopted in 2006 a "**Natural Hazards Mitigation Plan**" (NHMP). The plan identified actions that could and should be taken by residents and the Town to prepare for and reduce natural hazard related impacts. FEMA, the Federal Emergency Management Agency, requires towns to update these plans every 5 years to remain eligible for planning and mitigation grants.

This survey has been prepared by the Old Saybrook Planning Commission's NHMP Committee to obtain public comments and suggestions concerning updates the Town's Plan. The general purpose of the survey is to help measure public opinion and support for natural hazard mitigation actions and to collect comments and ideas on how we can better protect people and property from future hazards.

Please take a few minutes to complete the survey and provide the NHMP Committee with your inputs.

Thanks in advance for your help!



Old Saybrook Natural Hazard Mitigation Plan

About You

This section of the survey asks questions that will help the NHMP Committee characterize categories of respondents.

***1. Are you responding as:**

- Old Saybrook Resident
- Old Saybrook Business
- Old Saybrook Community Organization
- Old Saybrook Community Official
- Community Official from a Neighboring Town or Regional, State or Federal Agency

Old Saybrook Natural Hazard Mitigation Plan

Questions for Community Officials from outside Old Saybrook

These questions are intended to help the NHMP Committee assess the degree to which mitigation actions may extend beyond Old Saybrook.

2. For what town or agency do you work?

Essex

Old Lyme

Westbrook

Other Town or Governmental Agency (please specify)

3. Are you actively involved in Natural Hazard Mitigation?

No

Yes

4. Have natural hazards in Old Saybrook impacted your town, region or agency?

No

Yes (please specify)

5. Please add any suggestions, ideas, concerns or comments that you would like the Old Saybrook NHMP Committee to consider.

*6. Are there inter-town or regional mitigation actions that need to be coordinated?

No

Yes (please specify)

Old Saybrook Natural Hazard Mitigation Plan

Questions for Old Saybrook Respondents

7. If you are responding as a resident or business, please indicate the neighborhood or general area of Old Saybrook in which you are located:

Neighborhood / Area

Please select an area from the drop-down list.

8. If you are a resident of Old Saybrook, please indicate for what portion of the year you live here.

- Year-round
- Weekends
- Seasonal
- Other (please specify)

9. There are many types of natural hazards that have affected or could affect Old Saybrook. From the list below, please indicate each hazard that you have experienced in Old Saybrook.

	I have experienced this natural hazard
Flood	<input type="checkbox"/>
Hurricane or Tropical Storm	<input type="checkbox"/>
Tornado	<input type="checkbox"/>
Winter Storm	<input type="checkbox"/>
Nor'easter	<input type="checkbox"/>
Drought	<input type="checkbox"/>
Wildfire	<input type="checkbox"/>
Earthquake	<input type="checkbox"/>
Heat Wave	<input type="checkbox"/>
Tsunami	<input type="checkbox"/>
Sea Level Rise	<input type="checkbox"/>

Old Saybrook Natural Hazard Mitigation Plan

10. From the list of natural hazards, please indicate if you have had any losses from the hazard category.

	I have suffered losses due to this type of event	I have been inconvenienced but have not suffered any losses	I have neither been inconvenienced nor had any losses
Flood	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hurricane or Tropical Storm	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tornado	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Winter Storm	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Nor'easter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Drought	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wildfire	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Earthquake	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Heat Wave	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tsunami	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sea Level Rise	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

11. From the list of natural hazards on the left, please indicate your level of concern about the hazard recurring in the future.

	I am not concerned	I am somewhat concerned	I am very concerned
Flood	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hurricane or Tropical Storm	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tornado	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Winter Storm	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Nor'easter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Drought	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wildfire	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Earthquake	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Heat Wave	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tsunami	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sea Level Rise	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Old Saybrook Natural Hazard Mitigation Plan

MITIGATION for Future NATURAL HAZARDS

Mitigation includes actions taken to prevent or reduce losses from future natural hazards. It includes such things as elevating buildings in flood prone areas, requiring all new construction in flood prone areas to meet National Flood Insurance Program standards, trimming and/or removing trees that could cause damage if they were to fall during a storm and similar proactive actions.

Your answers to the next few questions will help the NHMP Committee understand what residents and businesses are doing as well as what they might be willing to do to reduce or eliminate future damages.

12. What are the best ways for you to get information about what you can do to prevent future losses from natural hazards?

Please check all that apply.

- Newspaper stories about what other people have done
- Public meetings / Informational workshops
- Schools
- TV news
- TV public service announcements
- Radio news
- Radio public service announcements
- Old Saybrook Internet website
- Other Internet websites (e.g. NOAA, NWS, weather radar, FEMA, State of CT)
- Chamber of Commerce
- Church
- Library
- Old Saybrook Police Dept.
- Old Saybrook Fire Dept.
- Old Saybrook Land Use Dept.
- Old Saybrook Building Dept.
- Other (please specify below)

Other (please specify)

Old Saybrook Natural Hazard Mitigation Plan

13. Have you taken actions (e.g. replacing windows with wind resistant glass, removing large trees close to your house or business, etc.) to protect your home or business from natural hazards that might occur?

No

Yes (please specify)

14. What financial incentives would motivate you to mitigate against natural hazards to your home or business?

Homeowner's/Property insurance discount

Low interest rate loan to floodproof a structure

Mortgage rate discount

Income tax credit/deduction

Nothing

Other (please specify)

15. Are you in favor of spending public funds on mitigation projects (e.g. elevating flood prone roads, improving capabilities at the High School emergency shelter, strengthening seawalls, etc.) for the benefit of the entire community?

No

Yes

Not sure

Comments

Old Saybrook Natural Hazard Mitigation Plan

Flooding

Flooding poses a significant threat for a large number of Old Saybrook residents. Flooding can arise from storms including hurricanes, tropical storms and nor'easters and can occur, albeit to a lesser degree, from astronomical high tides. Coupled with sea level rise, future flooding may increase in frequency and magnitude.

The next few questions deal specifically with flood-related issues in Old Saybrook. Your answers will help the NHMP Committee better understand the extent of the problem and short and long term approaches to dealing with it.

16. Is your home or business located in a flood zone?

- No
- Yes
- I don't know

Old Saybrook Natural Hazard Mitigation Plan

Flooding Page 2

17. What flood zone is your home or business located in?

- Zone A
- Zone AE
- Zone AO
- Zone VE
- I don't know

18. Do you currently have flood insurance?

- No
- Yes, it is required by my mortgage lender
- Yes, I voluntarily purchased it

Comments

19. In the event that a severe flood is forecast, would you evacuate to a safer location?

- No, I'd stay and ride out the storm
- Yes, I'd evacuate to the Town shelter at the High School
- Yes, I'd evacuate to the home of a friend or relative outside the flood area
- I don't know what I would do

Comments

20. If your home or business were to experience repeated flood damage, would you consider moving from the affected area if you could sell your property at a fair market value as reimbursement for it to become open space?

- No
- Yes

Comments

Old Saybrook Natural Hazard Mitigation Plan

21. If you live/were to live in a flood hazard area, would you be willing to elevate your house to prevent flood damage?

- No
- Don't know
- Yes
- I already have elevated my house

Comments

22. Are you concerned about sea level rise?

- No
- Yes
- I don't think sea level is rising

Comments

Mitigation Actions

This question is open ended and asks for your ideas about additional actions the Town and / or individuals can take to reduce future losses from natural hazards.

23. Please add any suggestions you may have about how individuals and the Town can reduce or eliminate damages from future natural hazard events.

Exit or Continue to Specific Mitigation Action Items

The Draft NHMP includes an extensive list of close to 100 actions that the Town can pursue to reduce future losses from natural hazards. If you would like to rank each of these items, please answer Yes in the question below. If you would prefer to exit and submit the survey without going through the 100 action items, then select No in the question below.

24. Do you want to review all proposed mitigation action items?

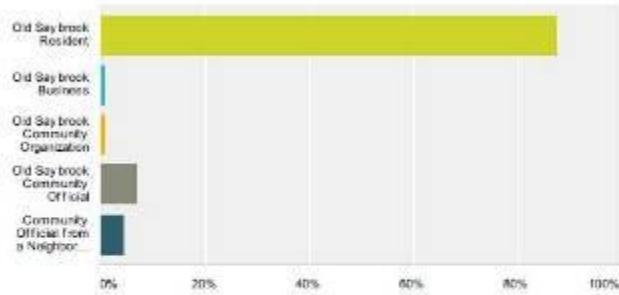
- Yes
- No

Appendix VI – Natural Hazards Mitigation Survey Results

Old Saybrook Natural Hazard Mitigation Plan

Q1 Are you responding as:

Answered: 103 Skipped: 0

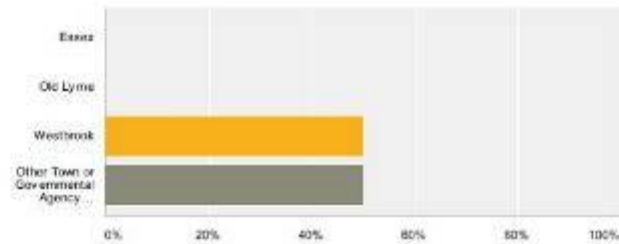


Answer Choices	Response	
Old Saybrook Resident	87.73%	103
Old Saybrook Business	0.91%	1
Old Saybrook Community Organization	0.91%	1
Old Saybrook Community Official	6.79%	11
Community Official from a Neighboring Town or Regional, State or Federal Agency	4.28%	7
Total		103

#	Other (please specify)	Date
	There are no responses.	

Q2 For what town or agency do you work?

Answered: 4 Skipped: 103

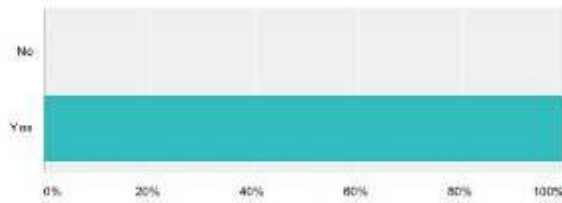


Answer Choices	Response	
Essex	0%	0
Old Lyme	0%	0
Westbrook	50%	2
Other Town or Governmental Agency (please specify)	50%	2
Total		4

#	Other Town or Governmental Agency (please specify)	Date
1	Borough of Fenwick	6/18/2013 1:20 PM
2	River CDC	6/13/2013 3:34 PM

Q3 Are you actively involved in Natural Hazard Mitigation?

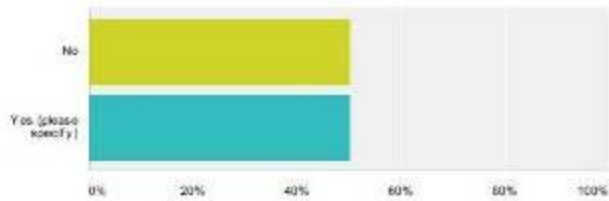
Answered: 4 Skipped: 159



Answer Choices	Response	
No	4%	0
Yes	100%	4
Total		4

Q4 Have natural hazards in Old Saybrook impacted your town, region or agency?

Answered: 4 Skipped: 155



Answer Choices	Response	
No	50%	2
Yes (please specify)	50%	2
Total		4

#	Yes (please specify)	Date
1	Beach erosion that threatens the roads, pier and salt marshes of Fenwick. The roads have been under water during storms and have incurred major damage.	6/18/2013 1:20 PM
2	In addressing the issues of insurance in areas that are on the shoreline	6/13/2013 3:34 PM

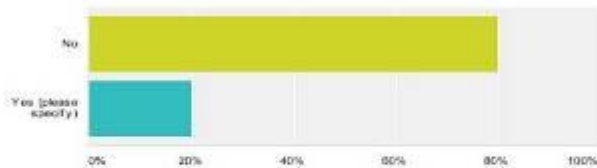
Q5 Please add any suggestions, ideas, concerns or comments that you would like the Old Saybrook NHMP Committee to consider.

Answered: 1 Skipped: 162

#	Responses	Date
1	Excellent lay out	6/23/2013 12:52 PM

Q6 Are there inter-town or regional mitigation actions that need to be coordinated?

Answered: 5 Skipped: 158

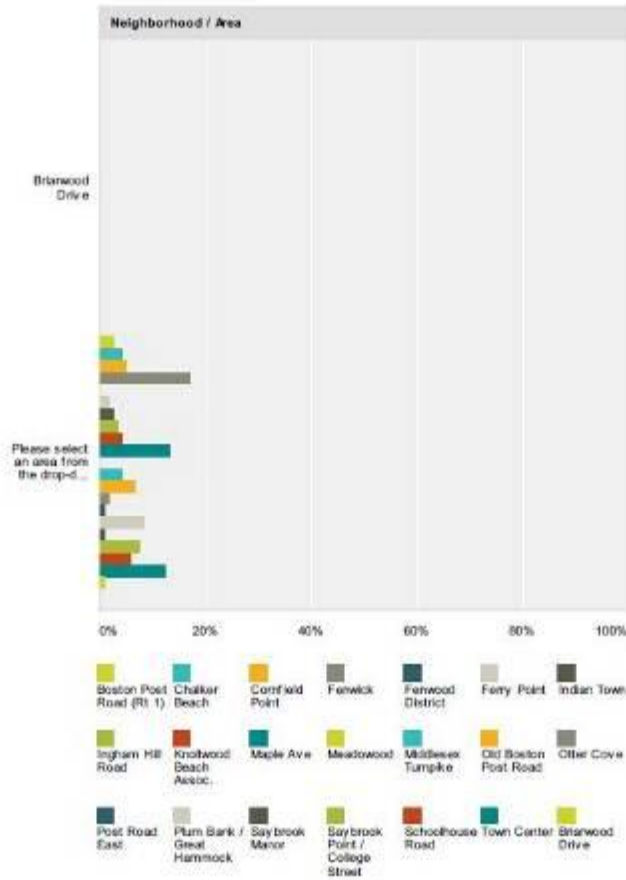


Answer Choices	Response	
No	80%	4
Yes (please specify)	20%	1
Total		5

#	Yes (please specify)	Date
1	Under consideration, will follow through when appropriate Thank you - Emergency Management	6/23/2013 12:52 PM

Q7 If you are responding as a resident or business, please indicate the neighborhood or general area of Old Saybrook in which you are located:

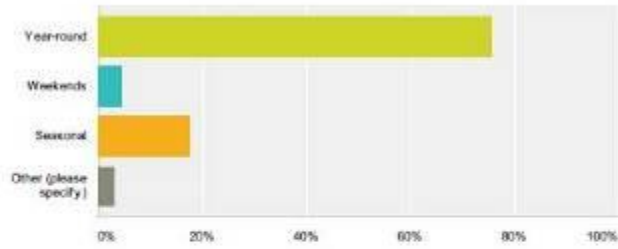
Answered: 124 Skipped: 30



Neighborhood / Area																				
	Boston Post Road (Rt 1)	Chalker Beach	Cornfield Point	Fenwick	Ferwood District	Ferry Point	Indian Town	Ingham Hill Road	Knollwood Beach Assoc.	Maple Ave	Meadowood	Middlesex Turnpike	Old Boston Post Road	Otter Cove	Post Road East	Plum Bank / Great Hammock	Saybrook Manor	Saybrook Point / College Street	Schoolhouse Road	
Branwood Drive	0% 0	0% 0	0% 0	0% 0	0% 0	0% 0	0% 0	0% 0	0% 0	0% 0	0% 0	0% 0	0% 0	0% 0	0% 0	0% 0	0% 0	0% 0	0% 0	
Please select an area from the drop-down list.	2.42% 3	4.03% 5	4.84% 6	16.94% 21	0% 0	1.61% 2	2.42% 3	3.23% 4	4.83% 6	12.90% 16	0% 0	4.03% 5	6.45% 8	1.61% 2	6.81% 9	8.06% 10	0.81% 1	7.26% 9	5.65% 7	

Q8 If you are a resident of Old Saybrook, please indicate for what portion of the year you live here.

Answered: 139 Skipped: 24

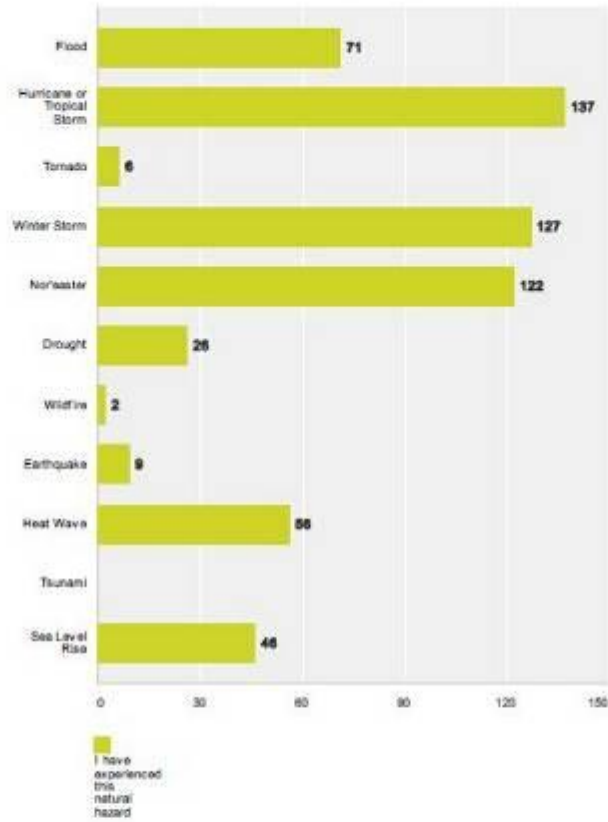


Answer Choice	Responses
Year-round	75.54% 105
Weekends	4.32% 6
Seasonal	17.27% 24
Other (please specify)	2.88% 4
Total	139

#	Other (please specify)	Date
1	Year round and seasonal dwelling	6/18/2013 5:26 PM
2	6 month	6/18/2013 4:20 PM
3	June through September and weekends	6/18/2013 2:56 PM
4	sporadic throughout the year	6/14/2013 6:47 PM

Q9 There are many types of natural hazards that have affected or could affect Old Saybrook. From the list below, please indicate each hazard that you have experienced in Old Saybrook.

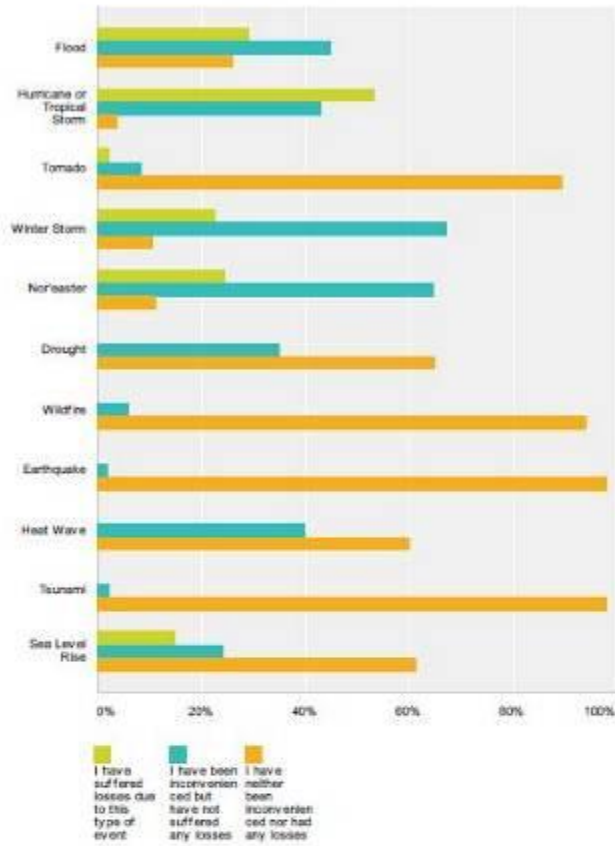
Answered: 141 Skipped: 22



	I have experienced this natural hazard	Total Respondents
Flood	100% 71	71
Hurricane or Tropical Storm	100% 137	137
Tornado	100% 6	6
Winter Storm	100% 127	127
Nor'easter	100% 122	122
Drought	100% 26	26
Wildfire	100% 2	2
Earthquake	100% 9	9
Heat Wave	100% 56	56
Tsunami	0% 0	0
Sea Level Rise	100% 46	46

Q10 From the list of natural hazards, please indicate if you have had any losses from the hazard category.

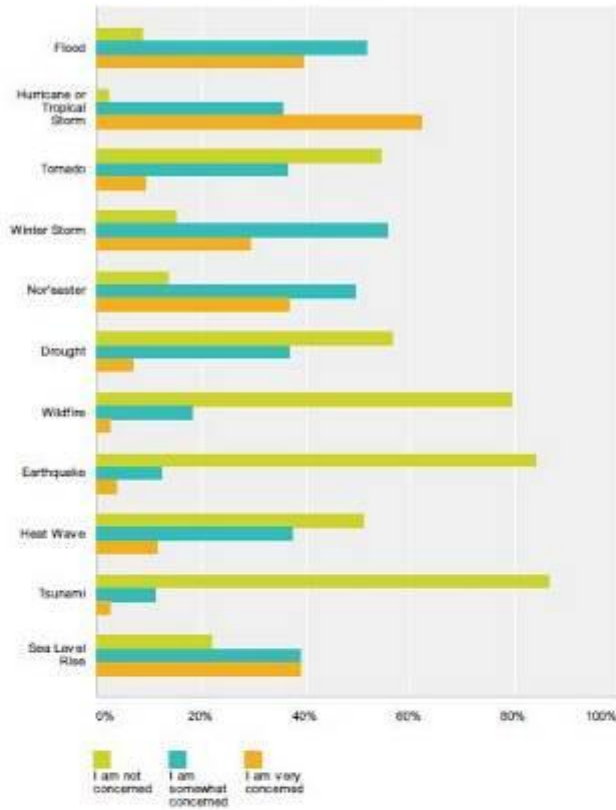
Answered: 138 Skipped: 24



	I have suffered losses due to this type of event	I have been inconvenienced but have not suffered any losses	I have neither been inconvenienced nor had any losses	Total
Flood	29.60% 20	45% 45	26% 26	100
Hurricane or Tropical Storm	53.33% 72	42.96% 58	3.70% 5	135
Tornado	2.66% 1	8.33% 4	89.56% 43	48
Winter Storm	22.40% 28	67.20% 84	10.40% 13	125
Nor'easter	24.37% 29	64.71% 77	10.92% 13	119
Drought	0% 0	35% 21	65% 39	60
Wildfire	0% 0	5.88% 3	94.12% 48	81
Earthquake	0% 0	1.82% 1	98.18% 54	55
Heat Wave	0% 0	40% 28	60% 42	70
Tsunami	0% 0	1.06% 1	98.04% 50	51
Sea Level Rise	14.67% 11	24% 18	61.33% 46	75

Q11 From the list of natural hazards on the left, please indicate your level of concern about the hazard recurring in the future.

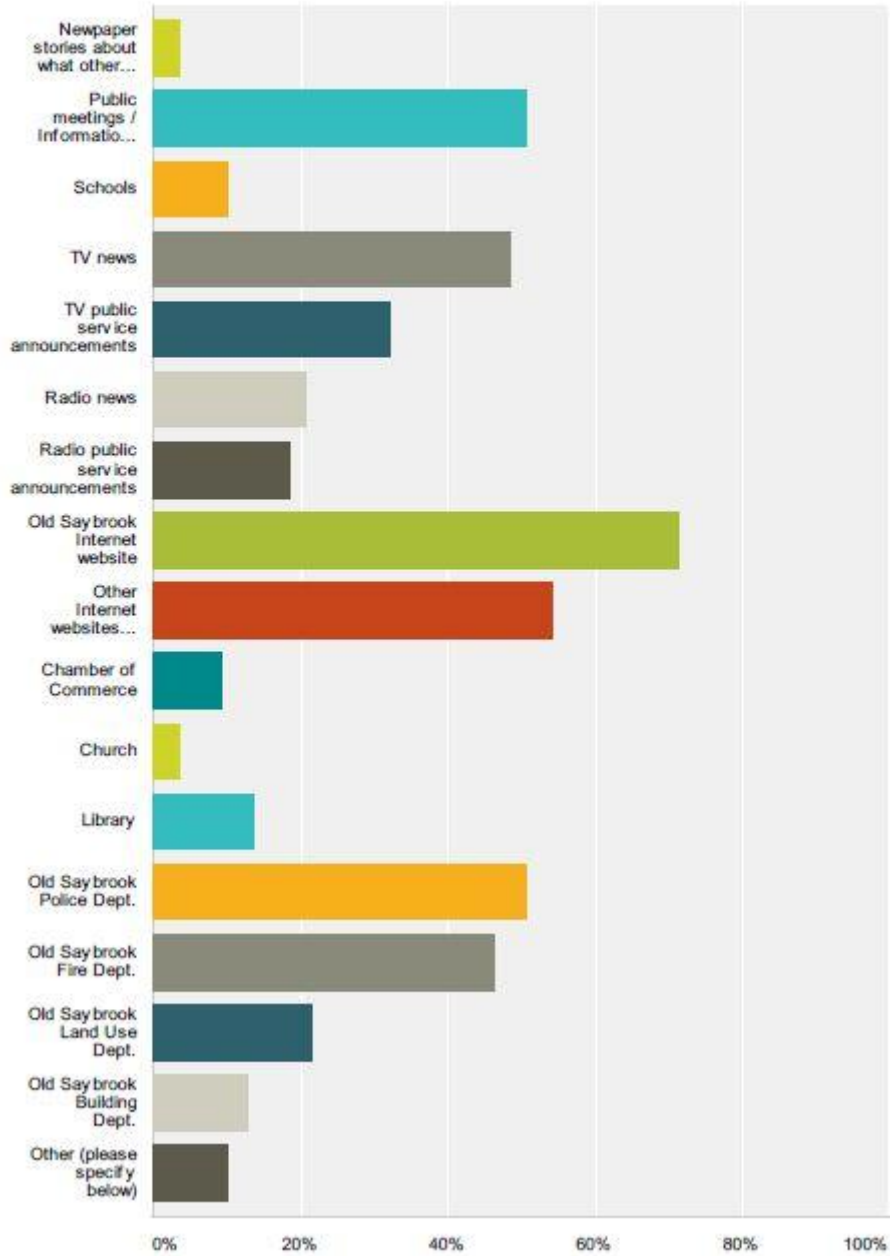
Answered: 140 Skipped: 23



	I am not concerned	I am somewhat concerned	I am very concerned	Total
Flood	8.73% 11	51.50% 60	39.68% 50	120
Hurricane or Tropical Storm	2.17% 3	35.51% 48	62.32% 86	138
Tornado	54.55% 48	36.36% 32	9.09% 8	98
Winter Storm	15.00% 10	55.56% 70	29.37% 37	128
Nor'easter	13.60% 17	48.60% 62	36.80% 48	125
Drought	56.67% 51	36.67% 33	6.67% 6	90
Wildfire	79.52% 60	18.07% 15	2.41% 2	83
Earthquake	84.15% 69	12.20% 10	3.66% 3	82
Heat Wave	51.04% 49	37.50% 38	11.46% 11	98
Tsunami	86.59% 71	10.96% 9	2.44% 2	82
Sea Level Rise	21.82% 24	39.09% 43	39.09% 43	110

Q12 What are the best ways for you to get information about what you can do to prevent future losses from natural hazards? Please check all that apply.

Answered: 140 Skipped: 23

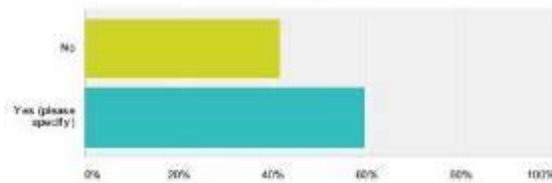


Answer Choices	Responses	
Newspaper stories about what other people have done	3.57%	5
Public meetings / Informational workshops	50.71%	71
Schools	10%	14
TV news	48.57%	68
TV public service announcements	32.14%	45
Radio news	20.71%	29
Radio public service announcements	18.57%	26
Old Saybrook Internet website	71.43%	100
Other Internet websites (e.g. NOAA, NWS, weather radar, FEMA, State of CT)	54.29%	76
Chamber of Commerce	9.29%	13
Church	3.57%	5
Library	13.57%	19
Old Saybrook Police Dept.	50.71%	71
Old Saybrook Fire Dept.	48.43%	68
Old Saybrook Land Use Dept.	21.43%	30
Old Saybrook Building Dept.	12.86%	18
Other (please specify below)	10%	14
Total Respondents: 140		

#	Other (please specify)	Date
1	StormSandy.com	6/25/2013 10:31 AM
2	Texts and emails	6/24/2013 8:59 PM
3	Info during Sandy and one other storm was fantastic.	6/24/2013 4:36 PM
4	Facebook has been great.	6/24/2013 2:36 PM
5	Telephone Notifications	6/24/2013 1:10 PM
6	Social Media	6/24/2013 12:29 PM
7	As a federal emergency management specialist for the Coast Guard the automated phone call from the city is the best way I have seen for getting the word out.	6/21/2013 6:22 AM
8	Professionals such as engineers.	6/19/2013 7:46 PM
9	Personal experience and common sense.	6/18/2013 6:23 PM
10	Professional such as engineers.	6/18/2013 5:07 PM
11	up to me to take care of myself and property	6/18/2013 8:13 AM
12	mailings	6/17/2013 10:43 PM
13	Harbor News	6/17/2013 9:53 PM
14	I am a science writer who regularly reads peer-reviewed journals about such issues and I regularly read the New York Times, Wall Street Journal, Scientific American and MIT's Technology Review, all of which have covered these issues in recent years--thanks to global warming.	6/17/2013 7:05 PM
15	local newspaper	6/17/2013 1:13 PM
16	Email	6/17/2013 11:49 AM
17	Newspapers, Internet	6/17/2013 11:23 AM
18	e-mails or Twitter tweets	6/16/2013 12:11 PM
19	mailings and email blasts	6/14/2013 7:58 AM
20	Direct personal email.	6/13/2013 7:02 PM
21	Newspapers, daily and weekly; U.S. Mail; email	6/13/2013 3:58 PM
22	Direct phone call, Direct email message, If no power, house visit by responsible individual.	6/13/2013 3:48 PM
23	Other professionals such as engineers	6/13/2013 3:36 PM
24	reverse 911	6/13/2013 3:17 PM

Q13 Have you taken actions (e.g.replacing windows with wind resistant glass, removing large trees close to your house or business, etc.) to protect your home or business from natural hazards that might occur?

Answered: 138 Skipped: 24



Old Saybrook and Fenwick, CT

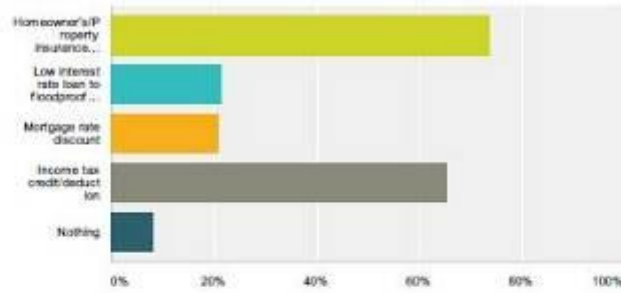
Answer Choices	Responses
No	41.01%
Yes (please specify)	58.99%
Total	

#	Yes (please specify)	Date
1	Removing trees, New sump	6/24/2013 8:59 PM
2	I have precut and measured plywood to put over windows for hurricane damage. I trim trees to keep them healthy. The advantages of the shade to my house in the the summer and the higher resale value of my residence due to healthy trees on property out weigh damage in storm.	6/24/2013 8:13 PM
3	removed trees	6/24/2013 5:03 PM
4	removed trees	6/24/2013 3:20 PM
5	Tree removal and trimming	6/24/2013 2:36 PM
6	We bought a generator and had the whole house wired to run off it, with the main goal of keeping our sump pump running in the case of another hurricane/flood/tropical storm. This will hopefully alleviate the damage done to our property.	6/24/2013 2:07 PM
7	installation of sub pump	6/24/2013 1:11 PM
8	Removing trees that create a hazard.	6/24/2013 1:10 PM
9	Lots of tree work	6/24/2013 1:04 PM
10	Removed large tree	6/24/2013 12:59 PM
11	Tree Removal	6/24/2013 12:57 PM
12	replaced windows	6/24/2013 11:43 AM
13	Have had to remove several large Trees that were damaged and caused a threat to our house.	6/23/2013 7:44 PM
14	We are considering structure elevation but have been frustrated finding information about the FEMA Hazard Mitigation Assistance grant program as it applies to Old Saybrook.	6/21/2013 8:04 AM
15	Upgraded plywood window coverings.	6/20/2013 5:28 PM
16	removed eight trees	6/20/2013 11:28 AM
17	We have bolstered the seawall in front of our house	6/19/2013 11:15 AM
18	On windward addition, built with foundation to roof cables every 6 feet	6/19/2013 10:49 AM
19	Remove trees	6/18/2013 8:58 PM
20	Raised utility equipment of basement	6/18/2013 7:48 PM
21	Removed trees, shored up seawall, replaced storm windows	6/18/2013 7:24 PM
22	Trimmed trees	6/18/2013 7:12 PM
23	tree trimming, storm proofing house	6/18/2013 5:31 PM
24	Tree removal	6/18/2013 5:27 PM
25	Raised utility equipment in basement	6/18/2013 5:07 PM
26	large trees removed replaced windows	6/18/2013 4:22 PM
27	No trees Have wind resistant glass	6/18/2013 3:18 PM
28	New construction- used thermo pane metal clad windows; have a 4ft crawl space below house to accommodate tidal/storm waters	6/18/2013 3:00 PM
29	Installed storm windows and generator	6/18/2013 2:42 PM
30	Had boards built for all windows.	6/18/2013 2:20 PM
31	hurricane proof windows, straps from the framing to the foundation, removal of most trees near the house	6/18/2013 1:56 PM
32	Tree Removal	6/18/2013 1:39 PM
33	removed trees	6/18/2013 1:34 PM
34	We have tried to be responsible about keeping our trees trimmed and taking those down that are old or weakened.	6/18/2013 1:23 PM
35	Removed trees, during storms using sandbags boarding up windows	6/18/2013 1:18 PM
36	I have removed some trees (mostly dead/diseased trees) but when surrounded by 85+ foot trees it can be extremely expensive.	6/18/2013 10:29 AM
37	Tree removal	6/18/2013 9:32 AM
38	tree removal	6/18/2013 9:13 AM
39	We removed a large tree.	6/17/2013 9:53 PM
40	taken down trees intertained with power lines	6/17/2013 3:16 PM
41	Tree removal and sump pump installation	6/17/2013 2:13 PM
42	French drain to help move water, baffles on septic systems to prevent back flows	6/17/2013 2:00 PM
43	Having trees removed	6/17/2013 1:41 PM
44	thinned large tree, raising outdoor structures, raising washer/dryer, investigating raising furnace	6/17/2013 1:13 PM
45	removing hazardous trees	6/17/2013 1:10 PM
46	Tree removal and replacement windows	6/17/2013 12:51 PM
47	Tree Removal	6/17/2013 11:24 AM

40	Tree removal	8/17/2013 11:23 AM
49	cleaned up trees and yard.	8/17/2013 11:07 AM
50	removed trees	8/16/2013 5:44 PM
51	Thinned tree canopy, cabled trees, removed at risk marginal trees.	8/16/2013 3:01 PM
52	remove trees	8/15/2013 7:11 PM
53	Removed one large tree on property. Waiting for town to reply to request about tree on tree belt.	8/15/2013 11:20 AM
54	Tree Removal	8/15/2013 8:16 AM
55	removing trees	8/15/2013 5:17 AM
56	Tree removal.	8/14/2013 3:36 PM
57	removal of trees	8/14/2013 12:56 PM
58	arbor maintenance	8/14/2013 9:28 AM
59	Tree removal	8/14/2013 8:57 AM
60	tree trimming and window coverings	8/14/2013 7:56 AM
61	Replaced windows, doors, removed trees.	8/13/2013 9:28 PM
62	plywood available to board windows and make basement water tight.	8/13/2013 8:16 PM
63	Not all windows but we are working on it. We have removed diseased trees and removed dead limbs.	8/13/2013 7:38 PM
64	Removed trees.	8/13/2013 7:02 PM
65	removed large tree	8/13/2013 6:56 PM
66	removed tree close to our house, had limbs from tree near back of house removed	8/13/2013 6:43 PM
67	Removed trees	8/13/2013 6:32 PM
68	Securing Oyster dock to adjust to flood rise	8/13/2013 5:30 PM
69	Removal of trees, hurricane windows to be in rebuilt home	8/13/2013 5:30 PM
70	Removed large tree	8/13/2013 4:39 PM
71	Removed trees and limbs, replacing windows this summer	8/13/2013 4:23 PM
72	Removal of large tree in proximity to residence. Tree was in poor health. Constant vigilance regarding gutters and downspouts necessary to avoid basement flooding.	8/13/2013 4:00 PM
73	Tree removal	8/13/2013 3:58 PM
74	Understand tree trimming and in some cases removal but am shocked at the number of trees being cut down and the harsh pruning of those standing.	8/13/2013 3:48 PM
75	Removed large trees, purchased generator for sump pumps, plan on installing French drain if need be	8/13/2013 3:41 PM
76	Removed trees	8/13/2013 3:38 PM
77	House siding improved for nor'easter rain	8/13/2013 3:36 PM
78	We have trimmed trees and cut back brush that might cause damage in high winds. We are considering storm shutters for our windows that face the water.	8/13/2013 3:37 PM
79	Raised utility equipment in basement in case of flood.	8/13/2013 3:36 PM
80	windows with impact resistant glass	8/13/2013 3:20 PM
81	Tree removal	8/13/2013 3:02 PM
82	Tree removal, elevate electric devices	8/13/2013 12:31 PM

Q14 What financial incentives would motivate you to mitigate against natural hazards to your home or business?

Answered: 130 Skipped: 27

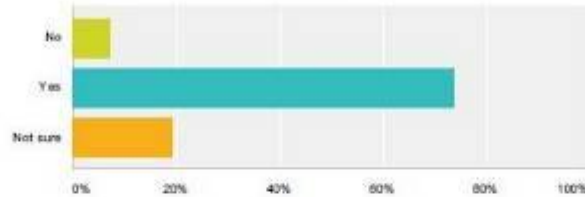


Answer Choices	Responses
Homeowner's/Property insurance discount	73.53% 100
Low interest rate loan to floodproof a structure	21.32% 29
Mortgage rate discount	20.59% 28
Income tax credit/deduction	65.44% 89
Nothing	8.09% 11
Total Respondents: 136	

#	Other (please specify)	Date
1	I don't believe there is anything we could do differently.	6/24/2013 1:13 PM
2	Mandated FEMA insurance reductions	6/24/2013 12:57 PM
3	FEMA HMA grant	6/21/2013 8:04 AM
4	lower taxes	6/19/2013 11:15 AM
5	Rebates	6/18/2013 6:07 PM
6	For my home situation removing trees would help but when surrounded by 80+ foot high trees it is extremely costly.	6/18/2013 10:29 AM
7	I am a renter	6/17/2013 6:54 PM
8	I don't think we need anything done.	6/17/2013 11:49 AM
9	I'm a homeowner and also an investor in quality rental properties in the flood zones. I'm penalized with higher insurance and mortgage rates to provide quality housing and don't understand why I renovate with energy efficiency in mind as well but can not participate in any tax incentives for window replacement, insulation upgrades, energy efficient appliance installation etc. not your problem but definitely mine!	6/18/2013 3:01 PM
10	Don't need incentives	6/13/2013 4:23 PM
11	needs based grants	6/13/2013 3:39 PM

Q15 Are you in favor of spending public funds on mitigation projects (e.g. elevating flood prone roads, improving capabilities at the High School emergency shelter, strengthening seawalls, etc.) for the benefit of the entire community?

Answered: 140 Skipped: 23

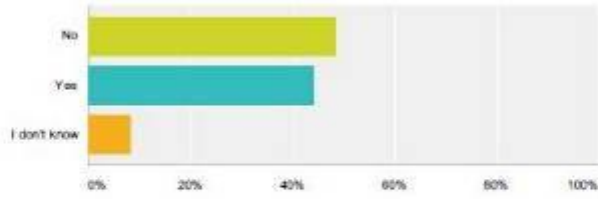


Answer Choices	Responses	
No	7.14%	10
Yes	73.57%	103
Not sure	19.29%	27
Total		140

#	Comments	Date
1	keeping road endings and right of ways open for all is an important reason why I live here, the beauty of Long Island and the CT. River should be shared by all. It is our responsibility to insure they are preserved and added to for the future.	8/24/2013 8:13 PM
2	It would depend on the project.	8/24/2013 3:20 PM
3	Its cheaper to spend the money now improving things than it is after that thing is destroyed.	8/21/2013 8:22 AM
4	For the benefit of the entire community.	8/20/2013 5:28 PM
5	only in terms of long-term impact, not as an annual repair cost to the same item repeatedly.	8/20/2013 11:28 AM
6	improve shelter capabilities	8/19/2013 10:54 AM
7	Protecting sole access routes with no alternative solutions. Some above "hardening".	8/18/2013 8:23 PM
8	Depends on whether the situation does benefit the entire community	8/18/2013 1:34 PM
9	The challenges being created by storms and flooding have to be met institutionally. Individuals acting alone cannot address the problems effectively.	8/18/2013 1:13 PM
10	Depends on the amount of money needed. We can't protect against everything mother nature throws our way. Sometimes common sense has to prevail.	8/18/2013 10:29 AM
11	Depends on what is being proposed. I am not in favor of spending public funds to protect a handful of home owners.	8/16/2013 9:32 AM
12	Cost?	8/17/2013 8:37 PM
13	support measures for town property but not private seawalls, beach assoc etc.	8/17/2013 3:16 PM
14	I can't pay any higher taxes. I am a senior.	8/17/2013 11:48 AM
15	probably necessary but too costly.	8/17/2013 11:07 AM
16	Depends on the program, budget and oversight.	8/16/2013 3:01 PM
17	I would have to see the plans and cost. Also, if properties are privately owned that cost should be paid for by the owner. I'm also concerned about proposed construction North of route 1 that is already causing damage. What will happen in the event of a major storm?	8/13/2013 9:28 PM
18	It would depend on how important these things are to the entire community, not just a select group.	8/13/2013 8:24 PM
19	Would like the public to have a say in how funds get used.	8/13/2013 6:32 PM
20	Support traditional town expenditures. Think it foolish for anyone, homeowners included, to rebuild in flood plain areas. Having a house on stilts is okay for some Pacific Islanders, not Seybrockians.	8/13/2013 3:48 PM
21	Yes if they benefit many community members, like high school emergency improvements. Not if it is to secure a sea wall that will protect a few homes.	8/13/2013 3:41 PM
22	As long as the i.e. improvements are not knee jerk responses, but well thought out long term concepts.	8/13/2013 12:31 PM

Q16 Is your home or business located in a flood zone?

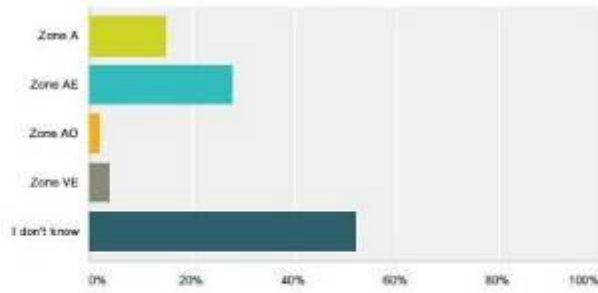
Answered: 137 Skipped: 28



Answer Choices	Responses	
No	48.18%	66
Yes	43.80%	60
I don't know	8.02%	11
Total		137

Q17 What flood zone is your home or business located in?

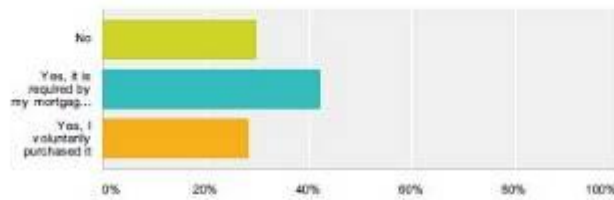
Answered: 54 Skipped: 108



Answer Choices	Responses	
Zone A	14.81%	8
Zone AE	27.78%	15
Zone AD	1.85%	1
Zone VE	3.70%	2
I don't know	51.85%	28
Total		54

Q18 Do you currently have flood insurance?

Answered: 57 Skipped: 106

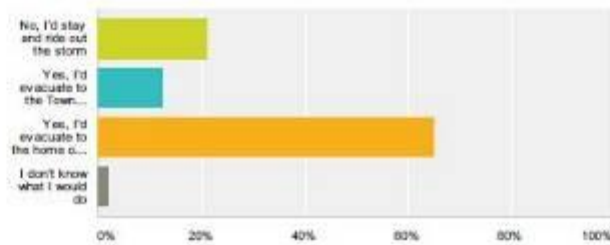


Answer Choices	Response
No	29.82% 17
Yes, it is required by my mortgage lender	42.11% 24
Yes, I voluntarily purchased it	28.07% 16
Total	57

#	Comments	Date
1	It would take a tsunami to flood my complex but we are in AII zone so it's required.	6/24/2013 4:37 PM
2	It is unclear whether we are actually required. We are on top of a hill, so our house is not in danger of being flooded.	6/24/2013 1:02 PM
3	I am a renter	6/17/2013 5:58 PM
4	very expensive	6/15/2013 11:24 AM
5	Although we didn't have a mortgage when we bought the home in 1993 we purchased NFIP.	6/13/2013 9:39 PM
6	Wish I didn't have to pay for it. If I saved that money - would have more than covered water loss.	6/13/2013 9:21 PM
7	no required in '99 but is under new FEMA maps	6/13/2013 9:32 PM

Q19 In the event that a severe flood is forecast, would you evacuate to a safer location?

Answered: 57 Skipped: 106

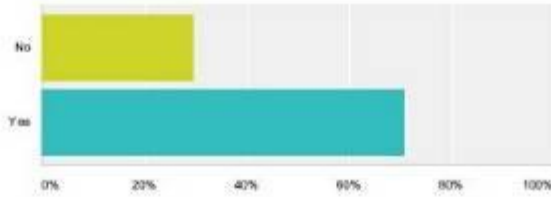


Answer Choices	Response
No, I'd stay and ride out the storm	21.65% 12
Yes, I'd evacuate to the Town shelter at the High School	12.30% 7
Yes, I'd evacuate to the home of a friend or relative outside the flood area	64.91% 37
I don't know what I would do	1.75% 1
Total	57

#	Comments	Date
1	Our house is on top of a hill, and close to the HS evac center. If we get flooded, the HS is being evacuated.	6/24/2013 1:02 PM
2	I might evacuate to a motel/hotel further north	6/19/2013 5:44 PM
3	My family did go to a another neighborhood during sandy. I remained.	6/17/2013 11:09 AM
4	not worried about flooding inside my home	6/15/2013 9:10 AM
5	Have refuge elevation 11' above high tide level	6/13/2013 9:21 PM
6	I evacuated when asked last time but I am 13 ft above sea level!	6/13/2013 5:32 PM
7	We have evacuated before and will continue to if it is recommended by oeb emergency workers	6/13/2013 3:44 PM

Q20 If your home or business were to experience repeated flood damage, would you consider moving from the affected area if you could sell your property at a fair market value as reimbursement for it to become open space?

Answered: 31 Skipped: 112

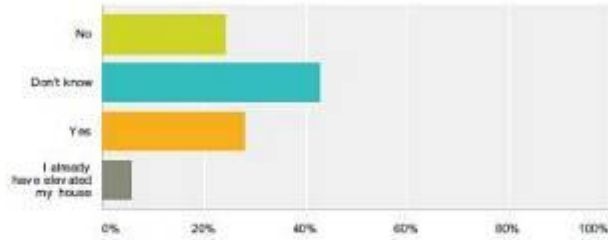


Answer Choices	Responses	
No	29.41%	10
Yes	70.59%	36
Total		51

#	Comments	Date
1	the key is to make sure the land sold stays open space and rehabilitated to become a natural barrier for storm surges to occupy	6/24/2013 8:26 PM
2	Not sure. Would depend on several factors.	6/18/2013 9:01 PM
3	n/a	6/17/2013 5:56 PM
4	I would not allow the government to set the price, as in "Eminent domain" situations, but I would sell at a price that a retail customer would pay.	6/13/2013 9:36 PM
5	maybe	6/13/2013 9:21 PM
6	absolutely	6/13/2013 4:01 PM

Q21 If you live/were to live in a flood hazard area, would you be willing to elevate your house to prevent flood damage?

Answered: 54 Skipped: 109

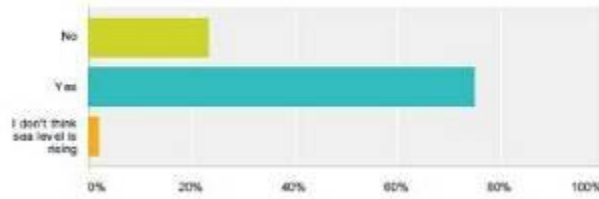


Answer Choices	Responses	
No	24.07%	10
Don't know	42.59%	23
Yes	27.76%	10
I already have elevated my house	5.56%	3
Total		54

#	Comments	Date
1	I would be willing to do so but it would depend on the cost.	6/24/2013 2:12 PM
2	house sits on a hill, it is our front yard that is affected.	6/24/2013 1:02 PM
3	if affordable	6/19/2013 10:56 AM
4	the expense would be huge	6/18/2013 4:23 PM
5	n/a	6/17/2013 5:56 PM
6	it's a mixed ranch and would have to be torn down and rebuilt, not feasible	6/17/2013 2:03 PM
7	never had my home flood even during each of the two major storms.	6/17/2013 11:08 AM
8	unaffordable	6/15/2013 5:18 AM
9	Only if I lived on the waterfront as regularly experienced damage.	6/13/2013 5:39 PM
10	Would elevate - just need lots of money to do that.	6/13/2013 9:21 PM
11	At 13 ft above I don't think it is necessary now.	6/13/2013 5:32 PM
12	In process of elevating	6/13/2013 5:31 PM
13	too expensive	6/13/2013 2:41 PM

Q22 Are you concerned about sea level rise?

Answered: 56 Skipped: 187



Answer Choices	Responses
No	23.21% 13
Yes	79% 42
I don't think sea level is rising	1.79% 1
Total	56

#	Comments	Date
1	I am concerned that we have compromised our wetlands to the point that they can not do what nature has intended. We are cutting down mature trees at such an alarming rate that more damage will be done by wind. We should be planting trees as wind breaks. Groups of trees are stronger than single planted trees. This will hold soil and stop erosion damage due to storm surges.	6/24/2013 6:25 PM
2	I can see by watching high tide in the salt marsh that high tides are higher and the marsh floods more often than when I moved here 42 years ago.	6/17/2013 2:03 PM
3	Long term issue - don't feel immediately threatened	6/13/2013 9:21 PM

Q23 Please add any suggestions you may have about how individuals and the Town can reduce or eliminate damages from future natural hazard events.

Answered: 35 Skipped: 108

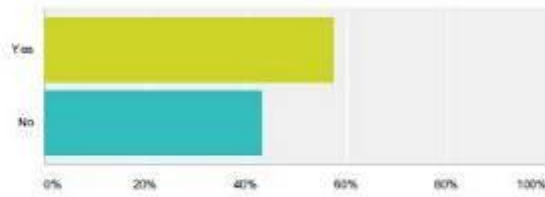
#	Responses	Date
1	Increasing underground electrical in areas prone to downed power lines	6/24/2013 10:06 PM
2	Have equipment capable of going through flood waters to assist fire and emerg crews. Have plan for removing trees after damage. Cut back trees near wires.	6/24/2013 9:02 PM
3	we should be putting monies aside for placing power and communication lines underground. We should be teaming up with other localities to force State and Federal grants for this purpose.	6/24/2013 8:29 PM
4	Tree trimming around electric wires. More DOT trucks on the roads during winter weather	6/24/2013 2:49 PM
5	Raise the elevation of the Mini-Golf course. Re-post damaged or missing flood evacuation signs. Post evacuation routes on Town website Post expected flood levels that would close off evacuation routes (i.e. - something along the lines of "flooding over 3' above normal is expected to close off Great Hammock Road and the Causeway"). Advise individuals who decide to remain after voluntary/mandatory evacuation orders to email/text important information to next of kin or dependable friend - Content should include names/ages/sex of individuals remaining. Text should include instructions to contact OEM after disaster has passed if originator has not contacted next of kin or dependable friend.	6/24/2013 2:45 PM
6	Keep taking sick and diseased trees. Get rid of overhead wires and bury them, especially in areas with lots of trees. Check the SMALL bridges and overpasses for damage after continued water damage. They don't have to flood the road to wear away the supports and concrete over time. Put together community teams to help neighbors. Tree removal is expensive and cost prohibitive to many. Work with the local tree companies to get them down, and community group to do the clean up. An old fashioned barn raising in reverse.	6/24/2013 1:07 PM
7	It makes sense for those close to the ocean to raise their homes.	6/24/2013 1:00 PM
8	It seems the utility company (CL&P) are reluctant to come and remove hazardous tree branches and vegetation when called. I have called NUMEROUS times to request assistance and was even told once I could do it myself! I told them there was NO WAY I was removing vegetation and branches near live wires. They did come out last fall and just cut some vines after many phone calls, but it has not resolved the problem. They need to be more proactive in removing tree branches from around wires!!!!	6/24/2013 12:54 PM
9	When the town calls for an evacuation during a storm please make it mandatory instead of wishy washy. Why risk peoples lives to rescue people who should have already left. Other states and cities ticket people who ignore evacuations.	6/24/2013 12:31 PM
10	Always be aware and continue to plan and prepare	6/24/2013 11:44 AM
11	Three DEEP needs to lighten up and allow shoreline residents to shore up their waterfront property and also to protect from current erosion.	6/20/2013 5:30 PM
12	prohibit new buildings or enlargement of existing buildings (while allowing some raising to meet flood insurance requirements) in the most dangerous flood zones, restrict increases in future dwellings from locating in flood zones.	6/20/2013 11:32 AM
13	Make sure all new Sound/River front building is way higher than the current norm. Build a dike!!	6/19/2013 5:45 PM
14	Far beyond my ability. Would need experts to advise	6/18/2013 9:02 PM
15	Kick funding for natural hazard events up one notch in budgetary planning.	6/18/2013 8:26 PM
16	Noting problem areas and trying to mitigate their exposure by raising roads, building seawalls, etc.	6/18/2013 5:33 PM
17	Honestly, I don't know. We always learn from what didn't occur to us beforehand. Certainly new Homes built on the Sound or along the River should be required to rise substantially higher than current homes. Flood and household insurance should be mandated for those in a flood zone/ or even within range of possible flooding. I don't know how to prevent flooding from high high tides or wild storms along the waterfront. The water is boss when it chooses to be. Do we need dikes??	6/18/2013 4:53 PM
18	work on our Road elevations	6/18/2013 4:23 PM
19	More seawall should be built to protect the public properties.	6/18/2013 3:20 PM
20	Stop letting people build homes in flood zones.	6/18/2013 1:40 PM

Old Saybrook and Fenwick, CT

21	The DEEP needs to allow residents that live on the water to protect their property . The shoreline is in need of protection and flooding from storms occurs even with just rain.	6/18/2013 1:21 PM
22	I feel that the Town does a great job when there are natural hazard events. Emergency management, especially during Sandy, was stellar. Usually the biggest problem is with the public...not heeding warnings, rebuilding without proper elevation, etc. Hard to manage stupidity .	6/18/2013 10:33 AM
23	Force people to evacuate to avoid deaths and injuries. Requires all homes near beaches to have elevated homes, not just new construction.	6/17/2013 10:44 PM
24	Any new building needs to be consistent with the most up-to-date thinking about flood control - for example, building away from the water's edge; building higher buildings still within the 35' height requirement.	6/17/2013 9:55 PM
25	Early warning of impending danger and impressing upon residents the need to take whatever action is appropriate.	6/17/2013 8:06 PM
26	Educate the public about the threat of global warming. This is global as well as local issue—even though the public is usually alarmed when affects only them. In fact, we need a tax on carbon emissions to reduce global warming, which is the base cause of all of these local environmental threats. The other issue is development, which has two effects. First, it often destroys the natural habitat, like marshes, which historically have protected us from natural disasters, like storms and flooding. Second, building in areas that are repeatedly affected by storms is not realistic or sustainable. Why should the public foot the bill of higher insurance rates to help those who cannot accept that where they live is not safe.	6/17/2013 7:11 PM
27	I think this town is well prepared. I think those most affected by flooding know the risk and must be willing to accept their circumstances & the location they chose to buy a home. It would be nice to have underground utilities, but the cost is so great it would be impossible to retro fit the entire town.	6/17/2013 3:29 PM
28	Askin from returning large tracts of land to Mother Nature, the only thing left is to protect low-lying areas the way it is done in Europe. That is so expensive it would take action by the Army Corps of Engineers.	6/17/2013 2:05 PM
29	protect more coastal open space; provide incentives for coastal properties to become open space; educate/provide incentive to residents about important role of healthy, intact coastal wetlands for storm mitigation, provide disincentives to build on shoreline or levy tax to secure funds to mitigate damages	6/17/2013 1:18 PM
30	restrict building/re-building of homes in flood prone areas.	6/17/2013 1:11 PM
31	I believe the town should identify and remove as many trees that have the potential of knocking out power lines.	6/17/2013 12:54 PM
32	Limit rebuilding in high risk flood zones	6/16/2013 3:14 PM
33	I believe more owners would consider raising their homes if they could elevate to 8 or 9 ft above flood stage.	6/16/2013 7:28 AM
34	Sandbagging flood prone areas Start slowly with making sure roads in and around flood areas are able to be used for people leaving to higher ground. Be sure the high school is ready for those out of their homes. A plan for the whole town. Who goes where?	6/15/2013 8:47 PM
35	have the town crew do their hired job of road and tree removal instead of being a wait a be construction co.	6/15/2013 7:13 PM
36	I would like financial assistance to elevate my house	6/15/2013 11:24 AM
37	do not rebuild on same location that has previously been destroyed by tropical storms or hurricanes	6/15/2013 11:22 AM
38	Property owners ought to be more responsible for removing trees on their property that they know are a hazard, i.e. leaning, dying, dead, etc. There ought to be more of an incentive (financial) for people thrown in to the new FEMA flood map to receive monies to elevate their home and larger discounts on flood insurance.	6/15/2013 5:21 AM
39	The town should take a look at streets/roads that have underground utilities and take action trimming trees that are overhanging the roadways... because of the lack of electrical wires, these areas are ignored, yet still hazardous when it comes to snowstorms..... windstorms..... etc.	6/14/2013 3:40 PM
40	education is key. Knowing what hazards exist. Also prevention by not allowing certain construction in flood or hazard prone areas. If you put it there it is on you when damage occurs.	6/14/2013 12:09 PM
41	maintain arbor work maintain catch basins	6/14/2013 9:29 AM
42	educate people on choices and actions	6/14/2013 7:56 AM
43	Stop any future building of structures within a decided proximity of the mean high tide.	6/13/2013 9:51 PM
44	Re-floating propane tanks - recommend an inexpensive harness kit any homeowner can make.	6/13/2013 9:25 PM
45	This is just a note to say how wonderfully I thought the town handled Storm Sandy. I was a brand new resident & went to the shelter during the storm. I was impressed from beginning to end. For a small town, you really did an outstanding job!	6/13/2013 8:28 PM
46	early warning system, town-wide detailing evacuation and shelters early warning system to describe how to protect home/property/personal safety frequent homeland security announcements via phone, etc. regarding safety, storm proximity town/state removal of tree limbs hanging over driveways and roads establish/maintain clear and safe roadways to local clinics and hospitals during storms if possible, more drive-bys of OSPD in neighborhoods to add a sense of security during storms more local info via land lines/ cell phone about progress/problems in town before, during/after storms	6/13/2013 6:51 PM
47	I am concerned about the cost of flood insurance. Old policies are considerably lower than present rates which were required under new FEMA guidelines. I believe equity in assessing property rates should be made. For instance, it's not fair that one neighbor pays \$360 and the other almost \$4000.	6/13/2013 5:35 PM
48	Require flood insurance for properties in flood zones, so property owners are not devastated by natural events and the public is not required to pay for damages. There is a risk to living in a flood prone area and the property owners should assume that risk - not the taxpayers.	6/13/2013 4:43 PM
49	More community tree work... don't wait for the utility companies. With the recent new flood maps our residence is not in a flood zone, but a house two doors away is now in one. We only found out about the rezoning by accident since we do not have a mortgage.....a letter sent by town (or someone) would have helped. There still seems to be a lot of unawareness by our neighbors.	6/13/2013 4:28 PM
50	We need some educational forums for the practical things we can do. For example, what to do about trees and how to pick trees that can withstand different conditions and how to rescue plants and lawn after saltwater inundation. Also, I am wondering if we shouldn't add working outdoor shutters to the house. These are used in other parts of the world.	6/13/2013 4:04 PM
51	Continue to follow the requirements of FEMA in terms of flood standards and regulations. At some point, difficult decisions regarding the insurability of waterfront homes will come into play. Although a difficult path to follow, at some point, waterfront structures damaged more than some level or more than several times should not be permitted to be rebuilt. The details of how to accomplish this protection measure, however, is acknowledged to be quite a challenge.	6/13/2013 4:03 PM
52	Prohibit (re)building where common sense says there will be floods. Strengthen, and enforce, zoning regulations that account for natural hazards.	6/13/2013 3:50 PM
53	I think the town is responding in the correct manner. These frequent weather emergencies are a new occurrence and it will take time to figure out the best solutions.	6/13/2013 3:46 PM
54	Provide easier access to sandbags prior to storm. Ease restrictions for wetland activities. Adding fill, building walls etc.	6/13/2013 3:44 PM
55	Restrict development in know/projected path ways.	6/13/2013 12:38 PM

Q24 Do you want to review all proposed mitigation action items?

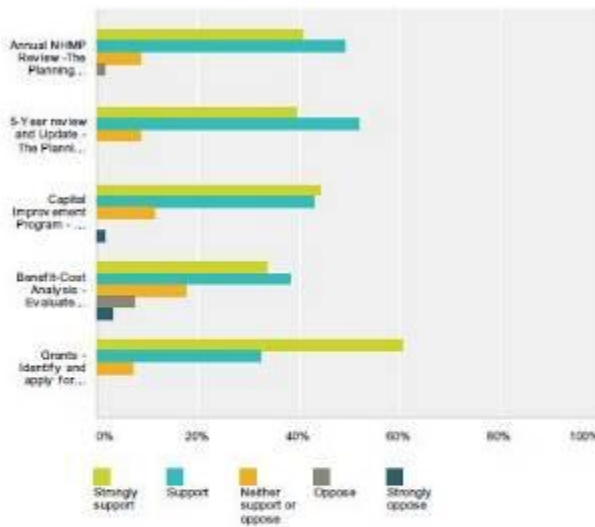
Answered: 133 Skipped: 30



Answer Choice	Response	
Yes	57.14%	76
No	42.86%	57
Total		133

Q25 Please indicate how you feel about each of the mitigation actions listed below.

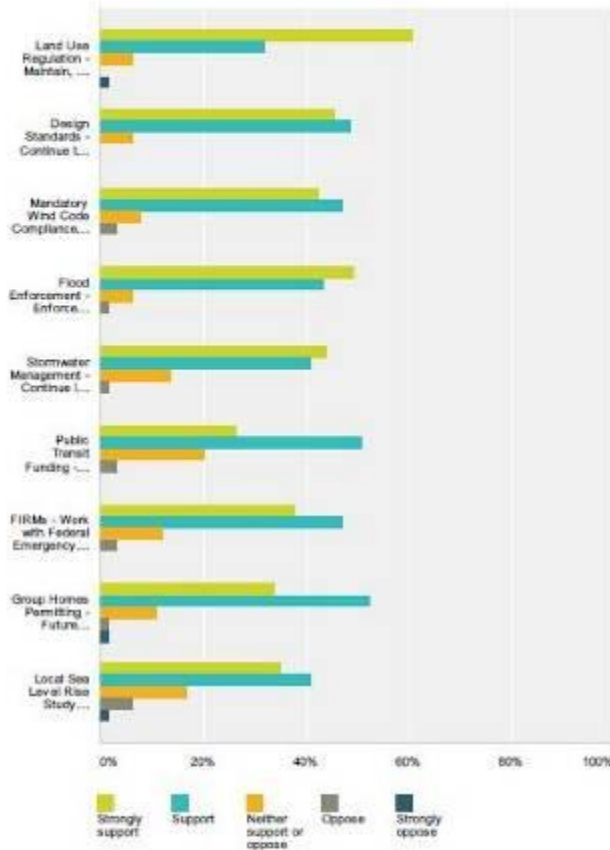
Answered: 71 Skipped: 82



	Strongly support	Support	Neither support or oppose	Oppose	Strongly oppose	Total
Annual NHMP Review -The Planning Commission will monitor and evaluate progress in addressing action items in this Plan and include those accomplishments in its annual report to the Town.	40.85% 29	43.20% 30	8.45% 6	1.41% 1	0% 0	71
5-Year review and Update - The Planning Commission will reconvene its multi-agency Committee every 5 years to update the Plan.	38.44% 28	52.11% 37	8.45% 6	0% 0	0% 0	71
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.	44.29% 31	42.86% 30	11.43% 8	0% 0	1.43% 1	70
Benefit-Cost Analysis - Evaluate opportunities for public funding of mitigation projects on private property where public benefits exceed the cost for RL properties or for properties otherwise eligible for buy-out.	33.82% 23	38.24% 28	17.89% 12	7.35% 5	2.94% 2	68
Grants - Identify and apply for grants to fund infrastructure improvements and other mitigation tasks identified in this plan.	60.56% 43	32.39% 23	7.04% 5	0% 0	0% 0	71

Q26 Please indicate how you feel about each of the mitigation actions listed below.

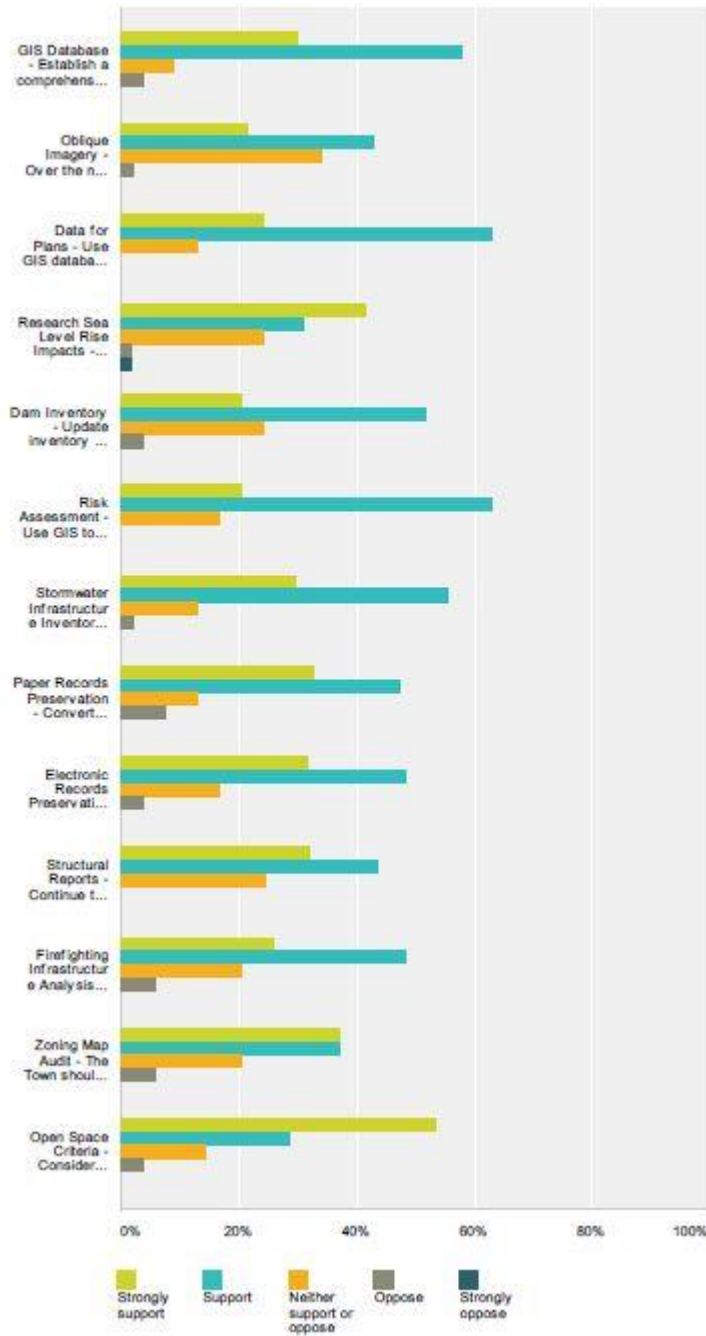
Answered: 88 Skipped: 0



	Strongly support	Support	Neither support or oppose	Oppose	Strongly oppose	Total
Land Use Regulation - Maintain, and strengthen as appropriate, subdivision and zoning regulations to make safer new roads and lots within flood zones.	60.61% 40	31.82% 21	6.06% 4	0% 0	1.52% 1	86
Design Standards - Continue to implement State Building/Fire Code and local Flood Code for construction that minimizes loss of life and property damage due to NHs. Develop guidelines for HDC and ARS to retrofit existing structures in a manner that is respectful to significant or contributing structures and to overall neighborhood preservation.	45.45% 30	48.48% 32	6.06% 4	0% 0	0% 0	66
Mandatory Wind Code Compliance - Ensure all building permit applicants construct their projects to meet 110 mile per hour wind load standard.	42.42% 23	46.97% 31	7.58% 5	3.03% 2	0% 0	86
Flood Enforcement - Enforce through existing zoning, building and flood permitting processes, construction standards to minimize flood risks.	49.26% 33	43.28% 29	5.97% 4	1.69% 1	0% 0	67
Stormwater Management - Continue land use permitting that encourages storm water retention within new and redeveloping areas (rain gardens, curb less roads, etc.).	43.84% 29	46.91% 27	13.64% 9	1.52% 1	0% 0	66
Public Transit Funding - Support regional transportation district (RTD) to facilitate movement of people without means of transportation prior to NH events.	26.15% 17	56.77% 30	20% 13	3.08% 2	0% 0	65
FIRMs - Work with Federal Emergency Management Agency (FEMA) to incorporate updated Flood Insurance Rate Maps (FIRMs) into town's planning, outreach and mitigation actions.	37.88% 25	46.97% 31	12.12% 8	3.03% 2	0% 0	66
Group Homes Permitting - Future permitting of these facilities shall include the requirement for the preparation of a disaster plan tailored to the needs of the specific clientele, or location of these facilities shall be discouraged in areas of known natural hazards.	33.85% 22	52.31% 34	10.77% 7	1.54% 1	1.54% 1	65
Local Sea Level Rise Study Committee - BOS should establish an ad-hoc committee to research medium and long-range impacts to coastal areas from SLR, to investigate possible mitigation actions and to assess legal, financial and policy implications.	34.85% 23	40.91% 27	16.67% 11	6.06% 4	1.52% 1	66

Q27 Please indicate how you feel about each of the mitigation actions listed below.

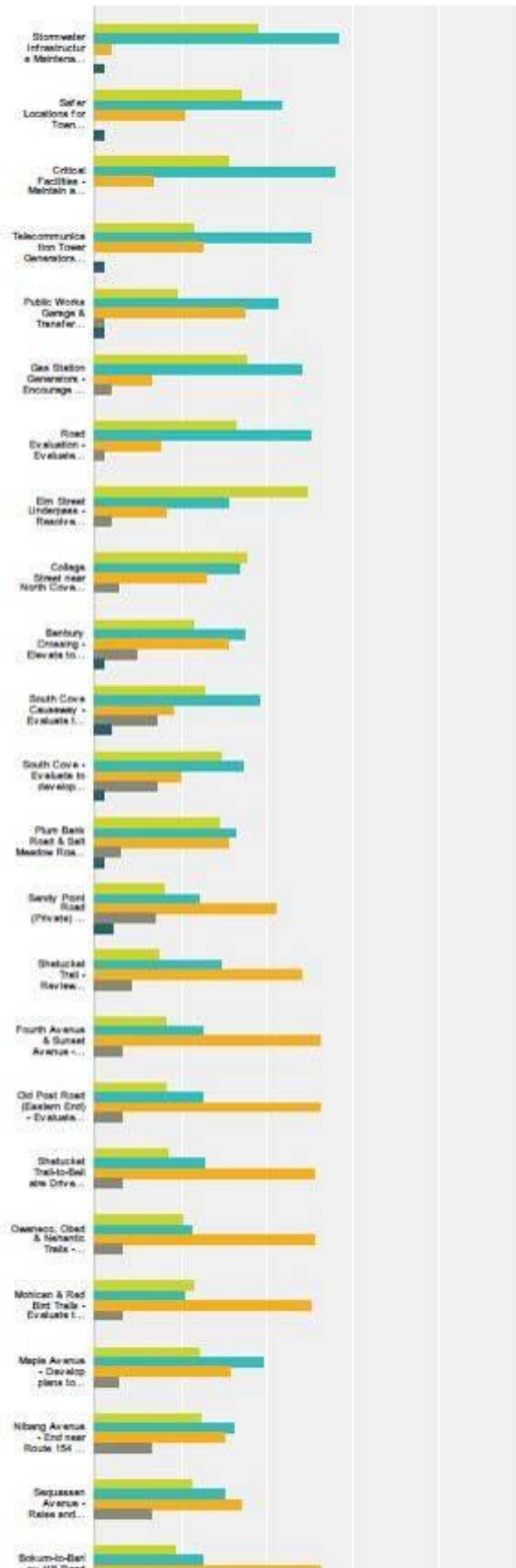
Answered: 60 Skipped: 103

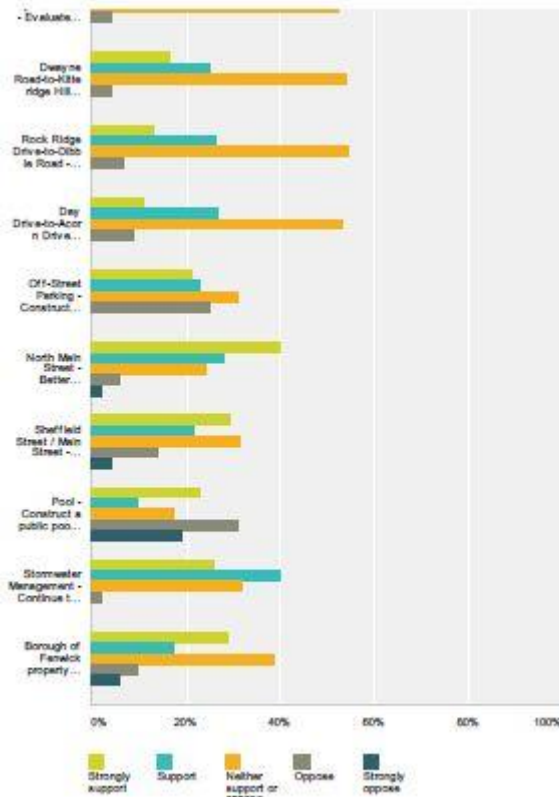


	Strongly support	Support	Neither support or oppose	Oppose	Strongly oppose	Total
GIS Database - Establish a comprehensive GIS database to better identify and assess areas, structures and populations potentially affected by natural disasters. These data will provide the town with information necessary to assess natural hazard risks and develop plans to mitigate risks to people and property.	29.82% 17	57.89% 33	8.77% 5	3.91% 2	0% 0	57
Oblique Imagery - Over the next five (5) years obtain oblique imagery in order to allow for assessment of such factors as extent of fire damage, compliance with building standards, identification of shoreline hardening and shoreline erosion and accretion.	21.43% 12	42.86% 24	33.83% 19	1.79% 1	0% 0	55
Data for Plans - Use GIS database to develop better mitigation plans.	24.97% 13	62.96% 34	12.96% 7	9% 5	0% 0	54
Research Sea Level Rise Impacts - Seek grants funds to collaborate with an academic institution to research and study the social, economic, environmental and policy-related impacts from SLR.	41.26% 24	31.03% 18	24.14% 14	1.72% 1	1.72% 1	58
Dam Inventory - Update inventory of dams and assess downstream risks due to catastrophic failures.	20.37% 11	51.85% 28	24.07% 13	3.70% 2	0% 0	54
Risk Assessment - Use GIS to conduct NH risk assessments that identify potentially affected areas and depicts evacuation routes.	20.37% 11	62.96% 34	16.87% 9	9% 5	0% 0	54
Stormwater Infrastructure Inventory - Implement mapping and monitoring of catch basins, stormwater outfalls and related infrastructure.	29.82% 18	55.56% 30	12.96% 7	1.95% 1	0% 0	54
Paper Records Preservation - Convert 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.	32.73% 18	47.27% 26	12.73% 7	7.27% 4	0% 0	55
Electronic Records Preservation - Design databases for records keeping. Create a back-up of existing electronic records, including geographic information system (GIS) data.	31.48% 17	48.15% 26	16.87% 9	3.70% 2	0% 0	54
Structural Reports - Continue to require structural engineering reports for expansion or alteration of buildings within the V zone.	32.96% 17	43.40% 23	24.53% 13	9% 5	0% 0	53
Firefighting Infrastructure Analysis - Evaluate existing firefighting infrastructure to identify needs for improvement to cover gaps in availability.	25.93% 14	48.15% 26	20.37% 11	5.56% 3	0% 0	54
Zoning Map Audit - The Town should conduct a comprehensive audit of the zoning map to consider what changes might be advisable so that the free market investing is not misguided back towards areas that are at high risk from natural disasters.	37.94% 20	37.94% 20	20.37% 11	5.96% 3	0% 0	54
Open Space Criteria - Consider adding sea level rise to the Town's considerations for preserving as open space those areas that flood waters will inundate.	53.57% 30	28.57% 16	14.29% 8	3.57% 2	0% 0	56

Q28 Please indicate how you feel about each of the mitigation actions listed below.

Answered: 58 Skipped: 107



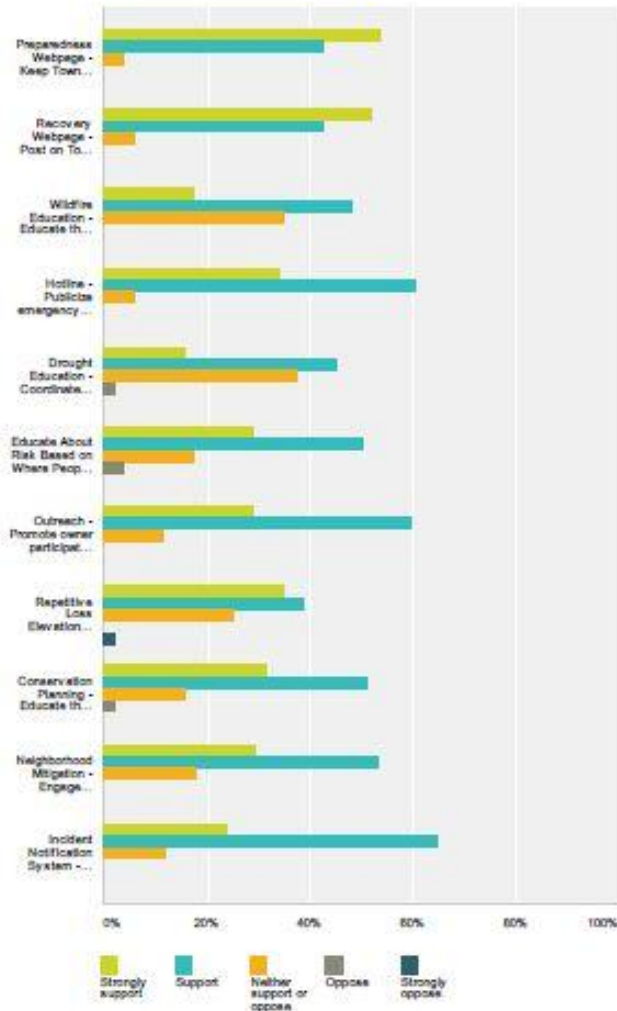


	Strongly support	Support	Neither support or oppose	Oppose	Strongly oppose	Total
Stormwater Infrastructure Maintenance - Provide for annual maintenance of stormwater infrastructure, including catch basins, detention basins and outfalls.	37.74% 20	56.60% 30	3.77% 2	0% 0	1.89% 1	53
Safer Locations for Town Buildings - Future municipal structures should be located outside of known hazardous locations such as floodplains, to the extent possible.	33.96% 18	43.40% 23	39.75% 11	0% 0	1.89% 1	53
Critical Facilities - Maintain and upgrade as necessary all facility mechanicals, such as generators, in municipal and other critical facilities.	30.77% 16	55.77% 29	13.48% 7	0% 0	0% 0	52
Telecommunication Tower Generators (Private) - Evaluate whether generators are needed for back-up power at telecommunications facilities.	23.08% 12	50% 26	25% 13	0% 0	1.82% 1	52
Public Works Garage & Transfer Station Generator - Install a generator for back-up power.	19.23% 10	42.31% 22	34.62% 18	1.92% 1	1.92% 1	52
Gas Station Generators - Encourage all privately-owned gas stations to install and maintain emergency back-up generators to insure availability of fuel during prolonged power outages.	35.19% 19	48.15% 26	12.96% 7	3.70% 2	0% 0	54
Road Evaluation - Evaluate roads to develop plans for improvement or elevation for emergency access and evacuation.	32.69% 17	50% 26	15.38% 8	1.92% 1	0% 0	52
Elm Street Underpass - Resolve drainage/flooding problems to improve emergency access and evacuation.	48.09% 27	30.91% 17	16.36% 9	3.64% 2	0% 0	55
College Street near North Cove Road - Evaluate to develop plans, and improve for emergency access and evacuation.	35.19% 19	33.33% 18	25.93% 14	5.59% 3	0% 0	54
Banbury Crossing - Elevate to improve evacuation options, and explore options for secondary means of emergency access and evacuation.	23.08% 12	34.62% 18	39.77% 18	8.62% 5	1.92% 1	52
South Cove Causeway - Evaluate to improve emergency access and evacuation and potential creation of a harbor of refuge.	25.45% 14	38.18% 21	18.18% 10	14.55% 8	3.64% 2	55
South Cove - Evaluate to develop plans, and improve for emergency access and evacuation potential dredging to improve flood storage capacity and potential creation of a harbor of refuge.	29.09% 16	34.55% 19	29% 11	14.55% 8	1.82% 1	55
Plum Bank Road & Salt Meadow Road near Cornfield Park - Evaluate to develop plans, and improve for emergency access and evacuation.	28.85% 15	32.69% 17	33.77% 18	5.77% 3	1.92% 1	52
Sandy Point Road (Private) - Evaluate to develop plans, and improve for emergency access and evacuation.	16% 8	24% 12	42% 21	14.00% 7	4% 2	50
Shetucket Trail - Review improvements and determine adequacy for emergency access and evacuation.	14.58% 7	29.17% 14	47.92% 23	8.33% 4	0% 0	48
Fourth Avenue & Sunset Avenue - Evaluate to develop plans; improve for emergency access and evacuation.	16.67% 8	25% 12	52.08% 25	6.25% 3	0% 0	48
Old Post Road (Eastern End) - Evaluate to develop plans; improve for emergency access and evacuation.	16.67% 8	25% 12	52.08% 25	6.25% 3	0% 0	48
Shetucket Trail-to-Bellaire Drive - Evaluate to develop plans; improve for emergency access and evacuation.	17.02% 8	25.53% 12	51.06% 24	6.39% 3	0% 0	47
Owaneco, Obed & Nehantic Trails - Evaluate to develop plans; improve for emergency access and evacuation.	20.41% 10	22.45% 11	51.02% 25	6.12% 3	0% 0	49
Mohican & Red Bird Trails - Evaluate to develop plans; improve for emergency access and evacuation.	22.92% 11	20.83% 10	50% 24	6.25% 3	0% 0	48
Maple Avenue - Develop plans to elevate approximately 1000' at northeast and near intersection with Main and College Streets; improve for emergency access and evacuation.	24.07% 13	38.89% 21	31.48% 17	5.56% 3	0% 0	54
Nibang Avenue - End near Route 154 is under water after most big rains and storms and is lower than the land surrounding it. Raise and rebuild.	24.53% 13	32.08% 17	36.19% 18	13.21% 7	0% 0	53

Bokum-to-Barley Hill Road - Evaluate to develop plans; improve for emergency access and evacuation.	16.75%	25%	52.38%	4.17%	0%	
	9	12	25	2	0	48
Dwains Road-to-Kitteridge Hill Road - Evaluate to develop plans; improve for emergency access and evacuation.	16.67%	25%	54.17%	4.17%	0%	
	8	12	26	2	0	48
Rock Ridge Drive-to-Dibble Road - Evaluate to develop plans; improve for emergency access and evacuation.	13.04%	26.09%	54.35%	6.52%	0%	
	8	12	25	3	0	46
Day Drive-to-Acorn Drive (Westbrook) - Evaluate to develop plans; improve for emergency access and evacuation.	11.11%	26.67%	53.33%	8.89%	0%	
	5	12	24	4	0	45
Off-Street Parking - Construct public parking lots to deter on-street parking that hinders emergency access and evacuation in high-density neighborhoods or high-intensity areas.	21.15%	23.08%	30.77%	25%	0%	
	11	12	18	13	0	52
North Main Street - Better organize on-street parking and partner with DOT/Amtrak to site a parking structure within walking distance of the train station.	40%	20.00%	24%	6%	2%	
	20	14	12	3	1	50
Sheffield Street / Main Street - Better organize on-street parking and site a parking garage within walking distance of critical facilities, such as Town Hall, schools, Fire Department and Police Department.	29.41%	21.57%	31.37%	13.73%	3.92%	
	15	11	16	7	2	51
Pool - Construct a public pool to enhance ability to swim of both emergency responders and residents.	23.08%	9.62%	17.31%	38.77%	19.23%	
	12	5	9	16	10	52
Stormwater Management - Continue to use best management practices (BMPs) as described in the Connecticut DEEP Stormwater Management Guidelines on a site-by-site basis as advised by a professional engineer.	26%	40%	32%	2%	0%	
	13	20	16	1	0	50
Borough of Fenwick property north of seawall near Pattsqueaset Ave - Severely scoured in the last 2 major storms. A permanent fix has been recommended by FEMA. Repair based on FEMA recommendations is needed.	28.85%	17.31%	38.46%	9.62%	5.77%	
	15	9	20	5	3	52

Q29 Please indicate how you feel about each of the mitigation actions listed below.

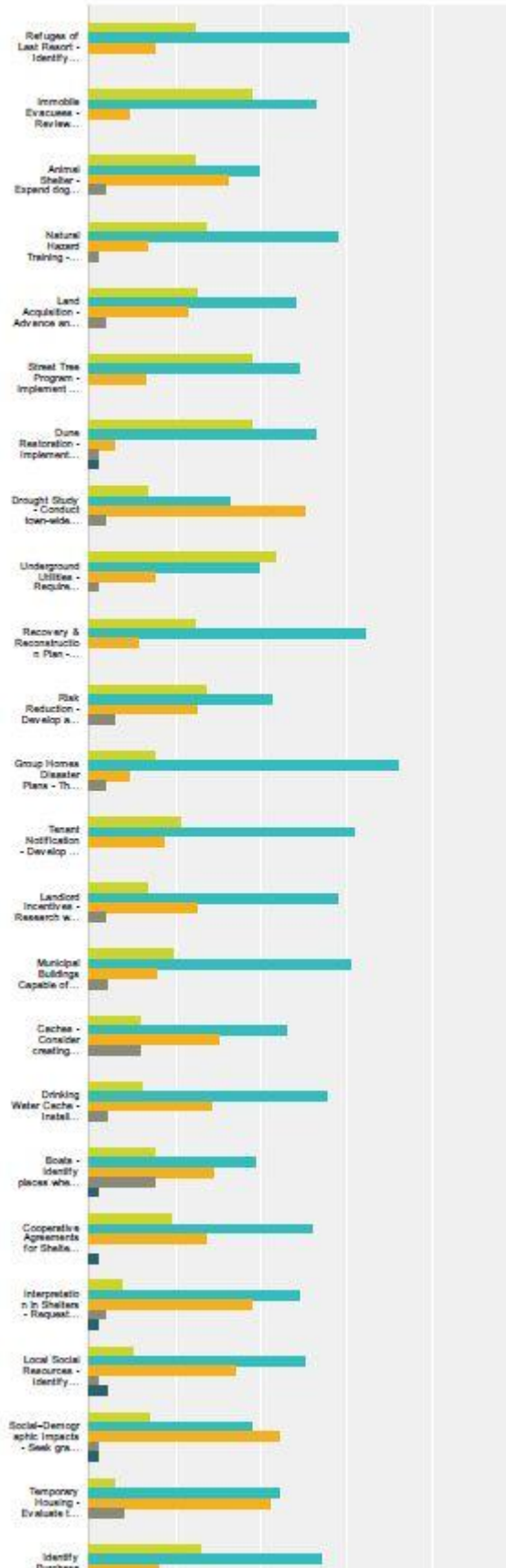
Answered: 54 Skipped: 100

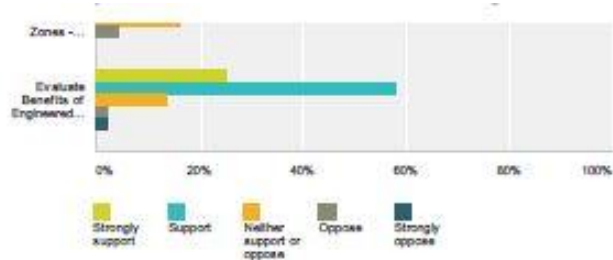


	Strongly support	Support	Neither support or oppose	Oppose	Strongly oppose	Total
Preparedness Webpage - Keep Town website updated with NH preparedness information, including hazard areas, evacuation routes deemed appropriate per NH event and locations of shelters.	53.70% 29	42.59% 23	3.70% 2	0% 0	0% 0	54
Recovery Webpage - Post on Town website information about recovery assistance following NH events.	51.92% 27	42.31% 22	5.77% 3	0% 0	0% 0	52
Wildfire Education - Educate the public about potential hazard of wildfire caused by campfire or open burning.	17.31% 9	46.58% 25	34.62% 18	0% 0	0% 0	52
Hotline - Publicize emergency "hotline" phone number or website for public information and volunteer support.	33.96% 18	60.38% 32	5.66% 3	0% 0	0% 0	53
Drought Education - Coordinate with CWC on public education and public serve announcements during droughts.	15.69% 8	45.10% 23	37.25% 19	1.96% 1	0% 0	51
Educate About Risk Based on Where People Live - Educate residents at high risk due to demographic or social attributes about the risk(s) relative to the areas that they populate.	26.35% 15	50% 26	17.31% 9	3.85% 2	0% 0	52
Outreach - Promote owner participation in mitigation efforts to protect their property.	26.35% 15	56.82% 31	11.54% 6	0% 0	0% 0	52
Repetitive Loss Elevation Funding - Encourage RL property owners to obtain assistance from DEEP and FEMA to acquire hazard mitigation funds to elevate structures where appropriate.	34.62% 18	36.46% 20	25% 13	0% 0	1.92% 1	52
Conservation Planning - Educate the public about how the Town uses planning, regulation, and ordinances to mitigate NHs via LID, aquifer recharge, riparian buffer, rain gardens, open burning ordinances, house numbering, etc.	31.37% 16	50.98% 26	15.69% 8	1.96% 1	0% 0	51
Neighborhood Mitigation - Engage neighborhood associations annually to participate in implementing the NH Mitigation Plan.	26.41% 15	52.94% 27	17.65% 9	0% 0	0% 0	51
Incident Notification System - Enlist public participation through public workshops to develop methods for notification of hazard events and emergencies.	23.53% 12	64.71% 33	11.76% 6	0% 0	0% 0	51

Q30 Please indicate how you feel about each of the mitigation actions listed below.

Answered: 53 Skipped: 110

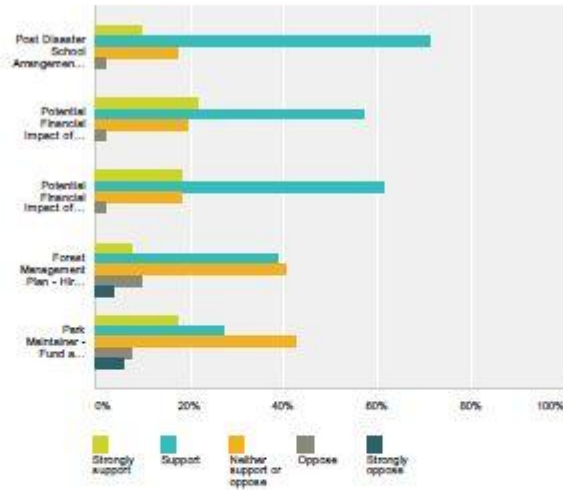




	Strongly support	Support	Neither support or oppose	Oppose	Strongly oppose	Total
Refuges of Last Resort - Identify refuges of last resort for those unable to reach designated shelter.	24.53% 13	60.36% 32	15.09% 8	0% 0	0% 0	53
Immobile Evacuees - Review annually the program to evacuate persons without means of transport, including registration and house numbering.	37.74% 20	52.83% 28	8.43% 5	0% 0	0% 0	53
Animal Shelter - Expand dog pound to shelter more animals/pets and participate in regional pet sheltering center.	24.53% 13	36.62% 21	32.08% 17	3.77% 2	0% 0	53
Natural Hazard Training - Continue to train and educate emergency responders about mitigating NHs.	26.92% 14	57.69% 30	13.46% 7	1.92% 1	0% 0	52
Land Acquisition - Advance an assertive land acquisition plan to reserve vacant land subject to NHs.	25% 13	48.06% 25	23.08% 12	3.85% 2	0% 0	52
Street Tree Program - Implement a tree hazard management program to encourage appropriate planting and maintenance practices to minimize future storm damage to buildings, utilities and streets.	37.74% 20	48.06% 25	13.21% 7	0% 0	0% 0	53
Dune Restoration - Implement dune restoration and marshland protection techniques for flood storage and surge protection.	37.74% 20	52.83% 28	5.66% 3	1.89% 1	1.89% 1	53
Drought Study - Conduct town-wide study of ground- and surface water capacity as it relates to planning for droughts.	13.46% 7	32.69% 17	50% 26	3.85% 2	0% 0	52
Underground Utilities - Require underground utilities for new development; require retrofitting during redevelopment of existing sites to bury utilities where appropriate to mitigate NHs.	43.46% 23	36.62% 21	15.09% 8	1.89% 1	0% 0	53
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" fund in case Federal assistance is insufficient or delayed.	24.53% 13	64.15% 34	11.32% 6	0% 0	0% 0	53
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".	26.92% 14	42.31% 22	25% 13	5.77% 3	0% 0	52
Group Homes Disaster Plans - The Town should offer to work with each of the existing facilities to prepare a disaster plan, if they do not already have one.	15.09% 8	71.70% 38	8.43% 5	3.77% 2	0% 0	53
Tenant Notification - Develop a mechanism for tenants to register for disaster notification.	21.15% 11	61.54% 32	17.31% 9	0% 0	0% 0	52
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.	13.46% 7	57.69% 30	25% 13	3.85% 2	0% 0	52
Municipal Buildings Capable of being Shelters - Future investment in municipal structures should include funding for new construction or renovation that will assure the structure is compliant with the standards for use as a shelter, to the extent possible.	16.61% 10	60.78% 31	15.69% 8	3.92% 2	0% 0	51
Caches - Consider creating stores of emergency supplies in areas of town that will be cut off during major flooding events.	12% 6	46% 23	30% 15	12% 6	0% 0	50
Drinking Water Caches - Install drinking water tanks with a supply of bleach for private well water purification.	12.24% 6	55.10% 27	28.57% 14	4.08% 2	0% 0	49
Boats - Identify places where people could store their boats during flooding and hurricane events that would reduce the damage to them and that they cause to the waterfront infrastructure when they break from moorings.	15.38% 8	36.46% 20	28.85% 15	15.38% 8	1.92% 1	52
Cooperative Agreements for Shelters - Develop supporting documentation and encourage the Board of Selectmen to establish agreements for shelters that can provide specialized services, throughout the region. Shelters with the capacity to provide for companion pets and medical equipment needs for individuals with disabilities are two examples of such specializations.	19.23% 10	51.92% 27	28.92% 14	0% 0	1.92% 1	52
Interpretation in Shelters - Request information regarding the need for providing non-English language speakers during natural disasters from the Old Saybrook School administration; and coordinate a shared service for non-emergency and emergency operations.	7.55% 4	46.06% 24	37.74% 20	3.77% 2	1.89% 1	53
Local Social Resources - Identify local resources to assist with those populations (i.e. elderly, disabled, non-English speakers, who may frequent, reside, or work) in Old Saybrook. Seek grants to provide funding for developing more detailed data to assist in the social - demographic analysis of how Old Saybrook will be affected by natural hazards.	10% 5	50% 25	34% 17	2% 1	4% 2	50
Social-Demographic Impacts - Seek grants to provide funding for developing more detailed data to assist in the social - demographic analysis of how Old Saybrook will be affected by natural hazards.	14.06% 7	38% 19	44% 22	2% 1	2% 1	50
Temporary Housing - Evaluate the need for post-disaster housing for residents displaced by flood or another natural disaster.	6% 3	44% 22	42% 21	8% 4	0% 0	50
Identify Purchase Zones - Evaluate the benefit of purchasing destroyed properties as open space as an alternative to rebuilding. Identify specific areas where such a program could benefit residents and mitigate loss.	26% 13	54% 27	16% 8	4% 2	0% 0	50
Evaluate Benefits of Engineered Town Beach - Investigate benefit cost of engineered designs for Town beaches so they could be eligible for recovery funding.	25% 13	57.69% 30	13.46% 7	1.92% 1	1.92% 1	52

Q31 Please indicate how you feel about each of the mitigation actions listed below.

Answered: 52 Skipped: 111



	Strongly support	Support	Neither support or oppose	Oppose	Strongly oppose	Total
Post Disaster School Arrangements - Establish reciprocal arrangements with other school districts for getting students back into classes during extended recovery periods.	9.62% 5	71.15% 37	17.31% 9	1.92% 1	0% 0	52
Potential Financial Impact of Recent Storms - Provide a reference point; ask the Tax Assessor if he can provide a figure for the lost property value resulting from Tropical Storm Irene and Storm Sandy and the potential lost tax revenue if the structures are not restored before the next taxing period.	21.57% 11	56.96% 29	18.81% 10	1.80% 1	0% 0	51
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" (to paraphrase former First Selectman, Michael Pace) of public funds at all levels of government.	18.37% 9	61.22% 30	18.37% 9	2.04% 1	0% 0	49
Forest Management Plan - Hire a consulting forester to establish a forest management plan to enable ability of firefighters to access forest fires during periods of drought.	7.69% 4	35.46% 20	48.38% 21	8.62% 5	3.85% 2	52
Park Maintainer - Fund a dedicated Park Maintainer to act as steward of public open spaces, including parks, forests, drainage basins, conservation easements, coastal access points, and forests, and to mitigate NHA at Town-owned properties.	17.31% 9	26.92% 14	42.31% 22	7.69% 4	5.77% 3	52

Appendix VII – Screenshots of Websites and Emails Regarding Old Saybrook and Fenwick NHMP

OLD SAYBROOK
Connecticut

On Our Site

- About Old Saybrook
- Town Departments
- Boards & Commissions
- Meetings & Events
- Town Code
- Town Initiatives
- Subscribe to News

Search

✉ ☎ 🏠

Introducing
the Town of Old Saybrook Prescription Discount Card
FREE

FEMA Information

Maps & Assessment Data

Land Records

NEW Tax Bill Lookup

Welcome to Old Saybrook, CT, where the Connecticut River meets the sound.

We are one of the oldest towns in the state, incorporated on July 8, 1654. We have a long history dating back to 1635, when we began as an independent colony known as the Saybrook Plantation.

Read More

Selectmen's Office:
302 Main Street
Old Saybrook, CT 06475
PH: (860) 395-3123
Hours: Mon - Fri 8:30AM - 4:30PM

Natural Hazard Mitigation Plan

DRAFT Materials
[Printer-Friendly Version](#)

This page contains information about and links to DRAFT materials being prepared to update Old Saybrook's Natural Hazard Mitigation Plan. Please note that these materials are draft and are being placed online for public review and comment.

The Natural Hazards Mitigation Plan Committee Members included:
Bob Missel, Planning Commission, NHMP Committee Chairman
Janis Esty, Planning Commission
Cathy Flanagan, Planning Commission
John Talbot, Zoning Commission
Jerry Brophy, Conservation Commission
Steven Gernhardt, Board of Selectmen and
Thomas Stevenson, Board of Finance

Draft Plan Elements:
Executive Summary
[Draft Plan](#) (Please note: this is a large pdf file > 35 MB in size)
[Mitigation Action Items](#) (this is an Excel spreadsheet that summarizes and ranks each action item using FEMA's recommended STAPLEE method)

Draft Plan Maps in PDF format - for printing at 11 by 17 (note: each map is ~ 5 MB in size and may take awhile to download)
[Locational Map](#)
[100-Year Flood Zone Map](#) (the flood zone is based on FIRMs effective February 6, 2013)
[Land Cover](#)
[Land Use](#)
[Critical Facilities](#)
[Buildings at Risk](#)
[Zoning](#)
[Critical Habitats](#)
[Hurricane Inundation Areas](#)
[Buildings Potentially Isolated Due to Flooded Roads](#)

Other Resources:
[CT Coastal Hazards](#) (2009 DEEP Report on the status of coastal hazards in the state)
[Coastal Resilience Program](#) (TNC's interactive mapping site that shows potential cumulative impacts from sea-level rise and hurricanes)
[CT Coastal Hazards](#) (DEEP's website that discusses natural hazards and their impacts on coastal resources)
[CT Coastal Hazards Map](#) (DEEP's interactive mapping site that shows impacts of sea-level rise mean high water and
[Severe Weather Primer](#) (this is a good source of information from NOAA's National Severe Storms Laboratory about various storm types and their impacts)

Real-time Weather Data:
[NWS Radar Image](#) (radar image centered on CT)
[National Hurricane Center](#) (NOAA site useful for tracking tropical storms and hurricane formation and predicted track)
[Severe Weather Predictions](#) (NOAA site that displays current severe weather situations throughout the US)
[My Sound](#) (UConn portal to real-time data about conditions in Long Island Sound)

Figure A – Old Saybrook NHMP Webpage on Town Website

OLD SAYBROOK
Connecticut

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- Town Initiatives
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Read More

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PH: (860) 395-3123
Hours: Mon - Fri 8:30AM - 4:30PM

COMMUNITY SURVEY about Natural Hazard Mitigation

[Printer-Friendly Version](#)

NATURAL HAZARDS

People and property in Old Saybrook periodically are exposed to damages from natural hazards including *coastal floods, hurricanes, tropical storms, winter storms, nor'easters and similar events*. In the last two years alone, coastal residents have suffered significant losses from Tropical Storm Irene and Superstorm Sandy while residents elsewhere have had to deal with *downed trees, prolonged power outages, impassable roads and lack of services*.

What is Natural Hazard Mitigation?

To help reduce and avoid damages from natural hazards, the Town prepared and adopted in 2006 a "Natural Hazards Mitigation Plan" (NHMP). The plan identified *actions that could and should be taken by residents and the Town to reduce impacts to lives and property from natural hazards*.

2013 Natural Hazard Mitigation Plan

FEMA, the Federal Emergency Management Agency, requires towns to update these plans every 5 years to remain eligible for planning and mitigation grants. For the Town of Old Saybrook, the Lower Connecticut River Valley Council of Governments ("RiverCOG") obtained a grant to work with a committee of the Old Saybrook Planning Commission, including representatives of the Conservation Commission, Zoning Commission, Board of Selectmen and Board of Finance to update the Plan.

COMMUNITY SURVEY: Natural Hazard Mitigation

A survey has been prepared by the Old Saybrook Planning Commission's NHMP Committee to obtain public comments and suggestions concerning this update to the Plan. The general purpose of the survey is to help measure public opinion and support for natural hazard mitigation actions and to collect comments and ideas on how we can better protect people and property from future hazards.

Please take a few minutes to [complete the survey](#) and provide the NHMP Committee with your inputs. Thanks in advance for your help!

FOR MORE INFORMATION

Visit the Town's webpage about the Natural Hazard Mitigation Plan.

Old Saybrook
Natural Hazards
Mitigation Plan

Prepared by
Lower Connecticut River Valley Council of Governments

Approved by
Old Saybrook Planning Commission

As directed by
Town of Old Saybrook, Connecticut

Figure B – Survey Webpage on Old Saybrook Town webpage.

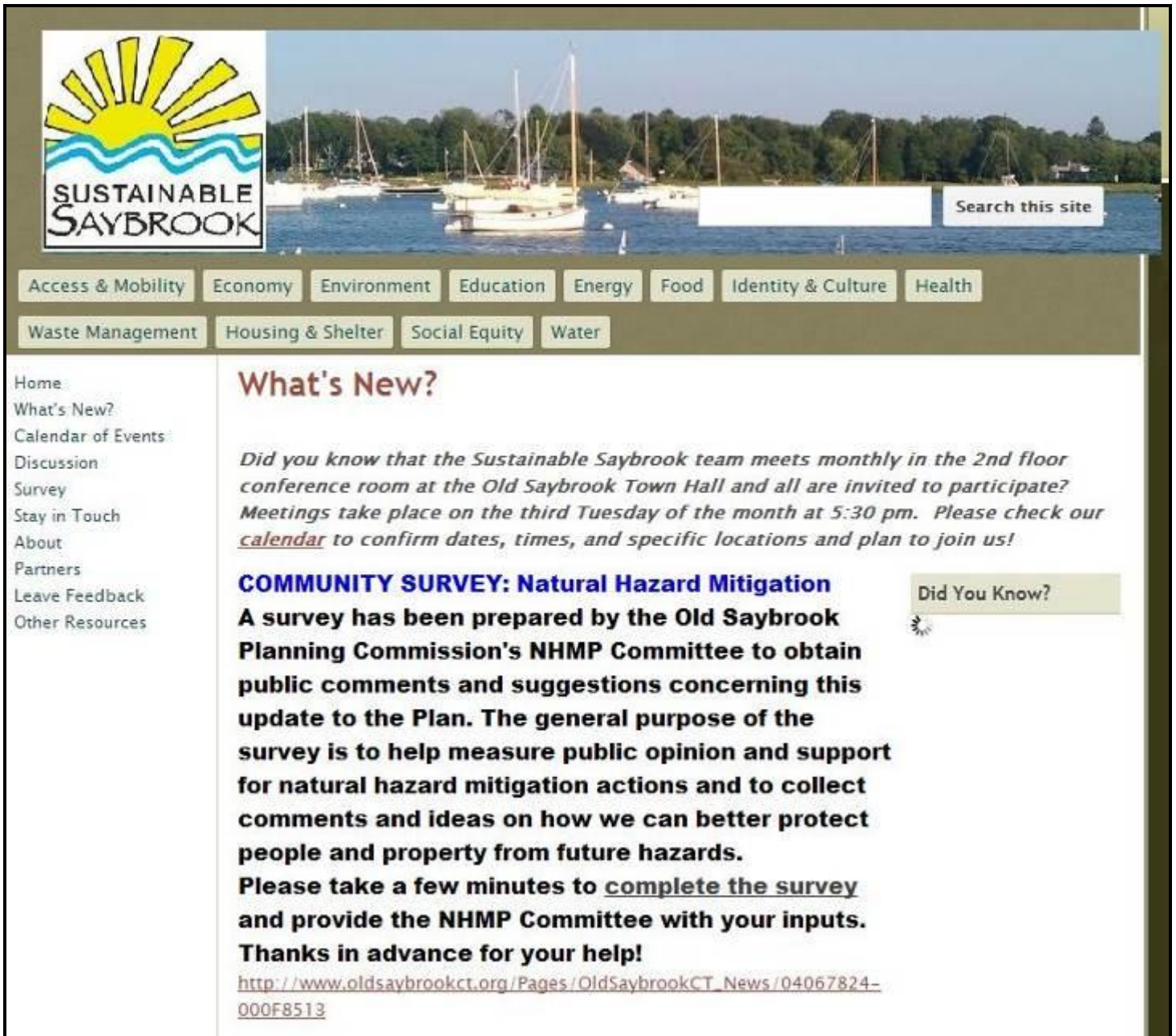


Figure C – Sustainable Saybrook webpage announcing the survey.

Old Saybrook
CHAMBER OF COMMERCE

The Chamber | Member Opportunities | Business Directory | Our Community | Events | Visiting Us

880-888-3288 | MEMBER LOGIN | CONTACT US

JOIN THE CHAMBER

VIEW EVENTS

FIND A BUSINESS

your gateway to sound business

Check out our Continuing Education and Pre-College Summer Courses.

2013-14 GUIDEBOOK

COMMUNITY CALENDAR

- May 28 Art Exhibit by Daniel S. Dahlstrom
- Jun 5 I'm Connecticut
- Jun 26 Middlesex United Way Invites You to Raise Your Voice for the National Day of Action
- Jun 24 Shoreline Works Events for Job Seekers
- Jun 25 Get Messy! Preschool Art Classes

FISHING BOY RAFFLE

Click Here for More Information

50th Annual Old Saybrook Chamber Arts & Crafts Festival
JULY 27 & 28, 2013
10 - 5 on Saturday • 10 - 4 on Sunday
ON THE TOWN GREEN
150 Artists & Crafters

CHAMBER EVENTS

- Jun 26 Ambassador Team Meeting
- Jun 26 Chamber Connections - New England Alliance Mortgage / J.A.M.S.S.
- Jun 25 Coffee Connections - See & Thistle
- Jun 27 Marketing Committee Meeting
- Jun 26 Nongraft Resource Council Meeting
- Jul 8 Chamber Connections - River Cruise

NEW MEMBERS

- Snoisy Signal Wetland Services
- New England Rendition
- Neighborhood Direct Mail
- Scenic-Site Wellness Center
- Sound Mobile
- Recreation & Associates
- SPYING

Newsletter Subscribe

Sign up to receive our newsletter.
*Required field

Name: *

Email: *

Submit

Economic & Legislative Toolkits

Town of Old Saybrook NATURAL HAZARD MITIGATION PLAN COMMITTEE

Residents of the community are requested to participate in a brief survey to collect comments and ideas on how the town can better protect people and property from future hazards. In the last two years alone, coastal residents have suffered significant losses from Tropical Storm Irene and Superstorm Sandy, while residents elsewhere have had to deal with downed trees, prolonged power outages, impassable roads and lack of services. Please take a few minutes to complete the survey and provide the NHMP Committee with your input.

Figure D – Old Saybrook Chamber of Commerce webpage with Survey announcement in bottom right corner.



Figure E – Sustainable Saybrook facebook page announcing the NHMP Survey.



Figure F – RiverCOG facebook page with link to Survey.

From:
Sent: Thursday, June 20, 2013 10:44 AM
To:

Cc:

Subject: Old Saybrook Natural Hazard Mitigation

Good Morning,

As an official in a neighboring community to Old Saybrook, you are invited to explore the Natural Hazard Mitigation Plan currently being finalized in that town. Please be advised that the Town is currently conducting a survey to garner responses not only from Old Saybrook Residents, but officials in neighboring towns as well. Please take a few minutes to complete the online survey regarding the Old Saybrook plan. Please pass this email on to any other town officials that might be interested in the process.

The link to the survey and some information about it is here:

http://www.oldsaybrookct.org/Pages/OldSaybrookCT_News/04067824-000F8513

For more information about the Old Saybrook Natural Hazard Mitigation Plan, please see their NHMP website at:

http://www.oldsaybrookct.org/Pages/OldSaybrookCT_Land/nhmp/nhmp

We thank you in advance for being a part of this very important process!

Jeremy

Jeremy DeCarli
Regional Planner
Lower Connecticut River Valley COG
145 Denrison Rd.
Essex, CT 06426

(860) 581-8554

Please consider the environment before printing.

Figure G – Email sent to Officials in the neighboring towns of Essex, Old Lyme, and Westbrook. (Email addresses have been removed for privacy.)

Subject:

FW: COMMUNITY SURVEY about Natural Hazard Mitigation

Of interest! The Planning Commission's committee on Natural Hazard Mitigation is conducting [a survey](#) to measure community values of recommendations for action in its draft Natural Hazard Mitigation Plan.

-Christine

NATURAL HAZARDS

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To help reduce and avoid damages from natural hazards, the Town prepared and adopted in 2006 a "Natural Hazards Mitigation Plan" (NHMP). The plan identified *actions* that could and should be taken by residents and the Town *to reduce impacts to lives and property* from natural hazards.

2013 Natural Hazard Mitigation Plan

FEMA, the Federal Emergency Management Agency, requires towns to update these plans every 5 years to remain eligible for planning and mitigation grants. For the Town of Old Saybrook, the Lower Connecticut River Valley Council of Governments ("RiverCOG") obtained a grant to work with a committee of the Old Saybrook Planning

(continued on next page)

Commission, including representatives of the Conservation Commission, Zoning Commission, Board of Selectmen and Board of Finance to update the Plan.

COMMUNITY SURVEY: Natural Hazard Mitigation

A survey has been prepared by the Old Saybrook Planning Commission's NHMP Committee to obtain public comments and suggestions concerning this update to the Plan. The general purpose of the survey is to help measure public opinion and support for natural hazard mitigation actions and to collect comments and ideas on how we can better protect people and property from future hazards.

Please take a few minutes to [complete the survey](#) and provide the NHMP Committee with your inputs. Thanks in advance for your help!

FOR MORE INFORMATION

Visit the Town's webpage about the Natural Hazard Mitigation Plan.

Figure H – Email “Blast” sent by the Old Saybrook Town Planner. (Email Addresses have been removed for privacy.)

This email was sent to: Acton Public Library Board, Aquifer Protection Agency, Architectural Review Board, former Bikeways Committee, Board of Finance, Board of Selectmen, former BOS' Council on Environmental Quality, former BOS' Founders Memorial Park Committee, BOS' Land Acquisition Committee, BOS' Route 1 East Committee, BOS' Tree Committee, Conservation Commission, CC's Outreach Committee (“Sustainable Saybrook”), Connecticut River Valley Council of Elected Officials, Economic Development Commission, Harbor Management Commission, Historic District Commission, Inland Wetlands & Watercourses Commission, Land Use Department Barns Survey work group, Land Use Department Education Stations work group, Land Use Department Postcards Perspective work group, Planning Commission, Planning Commission alumni, Planning Commission's Natural Hazard Mitigation Committee, Pension and Employee Benefits Board, Parks & Recreation Commission, Water Pollution Control Authority, Zoning Board of Appeals, and the Zoning Commission. Furthermore, the Borough Warden of the Borough of Fenwick sent it to the Planning and Zoning Commission of the Borough

Appendix VIII – Fenwick Board of Warden and Burgesses Resolution to Adopt.

RESOLUTION

TOWN OF OLD SAYBROOK and BOROUGH OF FENWICK HAZARD MITIGATION PLAN UPDATE, 2014

WHEREAS, the Disaster Mitigation Act of 2000 encourages communities to prepare a Natural Hazard Mitigation Plan to outline natural hazard vulnerabilities and potential mitigation measures; and

WHEREAS, the primary goal of the Natural Hazard Mitigation Plan Update, 2014 is to reduce the loss of or damage to life, property, infrastructure, and natural, cultural, and economic resources from natural disasters; and

WHEREAS, in light of continuing natural disasters that severely impacted public infrastructure and private properties in the Borough of Fenwick, the Borough of Fenwick and Town Of Old Saybrook developed a Natural Hazard Mitigation Plan Update, 2014 to understand local conditions and plan accordingly; and

WHEREAS, meetings were held and a survey distributed to solicit public input and recommendations and to review the plan as required by law;

WHEREAS, the Natural Hazard Mitigation Plan Update, 2014 recommends many hazard mitigation actions that will protect the people and property affected by the natural hazards that potentially face the Borough; and

WHEREAS, some of the recommended mitigation actions may qualify for Federal funding but only if the Borough of Fenwick officially adopts the Natural Hazard Mitigation Plan Update, 2014; and

WHEREAS, the Borough of Fenwick shall implement, maintain, and update the Hazard Mitigation Plan Update, 2014 through the appropriate municipal departments and commissions;

BE IT RESOLVED by the Board of Warden and Burgesses of the Borough of Fenwick that the Natural Hazard Mitigation Plan is hereby adopted as an official plan of the Borough of Fenwick, and that the appropriate municipal departments will report annually on their activities, accomplishments, and progress relative to the Natural Hazard Mitigation Plan Update, 2014 for the Borough of Fenwick.

BE IT FURTHER RESOLVED that the Borough of Fenwick is authorized to apply for and accept any future Federal or State grant assistance to accomplish the goals of the Natural Hazard Mitigation Plan Update, 2014.

Adopted this 7 day of 4 2014 by the Board of Warden and Burgesses of Fenwick, Connecticut



Ethel Davis, Borough Warden

RESOLUTION

TOWN OF OLD SAYBROOK and BOROUGH OF FENWICK HAZARD MITIGATION PLAN UPDATE, 2014

WHEREAS, the Disaster Mitigation Act of 2000 encourages communities to prepare a Natural Hazard Mitigation Plan to outline natural hazard vulnerabilities and potential mitigation measures; and

WHEREAS, the primary goal of the Natural Hazard Mitigation Plan Update, 2014 is to reduce the loss of or damage to life, property, infrastructure, and natural, cultural, and economic resources from natural disasters; and

WHEREAS, in light of continuing natural disasters that severely impacted public infrastructure and private properties in the Town of Old Saybrook, the Town of Old Saybrook and Borough of Fenwick developed a Natural Hazard Mitigation Plan Update, 2014 to understand local conditions and plan accordingly; and

WHEREAS, public information meetings were held to solicit public input and recommendations and to review the plan as required by law;

WHEREAS, the Natural Hazard Mitigation Plan Update, 2014 recommends many hazard mitigation actions that will protect the people and property affected by the natural hazards that potentially face the town; and


WHEREAS, some of the recommended mitigation actions may qualify for Federal funding but only if the Town of Old Saybrook officially adopts the Natural Hazard Mitigation Plan Update, 2014; and

WHEREAS, the Town of Old Saybrook shall implement, maintain, and update the Hazard Mitigation Plan Update, 2014 through the appropriate municipal departments and commissions;

BE IT RESOLVED by the Board of Selectmen of the Town of Old Saybrook that the Natural Hazard Mitigation Plan Update, 2014 is hereby adopted as an official plan of the Town of Old Saybrook, and that the appropriate municipal departments will report annually on their activities, accomplishments, and progress relative to the Natural Hazard Mitigation Plan Update, 2014 for the Town of Old Saybrook.

BE IT FURTHER RESOLVED that the Town of Old Saybrook is authorized to apply for and accept any future Federal or State grant assistance to accomplish the goals of the Natural Hazard Mitigation Plan Update, 2014.

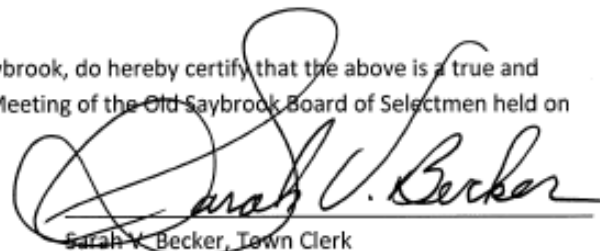
Adopted this 13th day of May 2014 by the Board of Selectmen of Old Saybrook, Connecticut.



Carl P. Fortuna, Jr.
First Selectman

I, Sarah V. Becker, duly appointed Town Clerk of Old Saybrook, do hereby certify that the above is a true and correct copy of a resolution passed and approved at a Meeting of the Old Saybrook Board of Selectmen held on the 13th day of May 2014.

May 14, 2014
Date



Sarah V. Becker, Town Clerk