

SECTION 5 MITIGATION STRATEGIES

Mitigation Strategy	
<p>Requirement: §201.6(c)(3): (The plan must include) a mitigation strategy that provides the jurisdiction’s blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools. This section shall include:</p> <ul style="list-style-type: none"> (i) A description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards. (ii) A section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure. All plans approved by FEMA after October 1, 2008, must also address the jurisdiction’s participation in the NFIP, and continued compliance with NFIP requirements, as appropriate. (iii) An action plan describing how the actions identified in paragraph (c)(3)(ii) of this section will be prioritized, implemented and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs. (iv) For multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan. 	
Element	C1: Does the plan document each jurisdiction’s existing authorities, policies, programs and resources, and its ability to expand on and improve these existing policies and programs?
	C2: Does the Plan address each jurisdiction’s participation in the NFIP and continued compliance with NFIP requirements, as appropriate?
	C3: Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards?
	C4: Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure?
	C5: Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction?
	D2: Was the plan revised to reflect progress in local mitigation efforts? See Maintenance Section
	D3: Was the plan revised to reflect changes in priorities? See Maintenance Section

C1. Existing Authorities, Policies, Programs and Resources

On page 5 - 3 is a summary of existing authorities, policies, programs and resources available to accomplish hazard mitigation. See also the table that follows this summary.

- **Town Manager, Administrator:** Some towns in Knox County have a town manager, others have an administrator whose duties may vary from those of a town manager, In the table below, “MGR” indicates town manager; “A” indicates administrator.
- **Board of Selectmen or Board of Assessors:** If a town has no Town Manager, that role is filled by a Board of Selectmen, or in the case of a plantation, by a Board of Assessors. Depending on the community’s needs and financial resources, the Board might also serve as Road Commissioner.
- **Staff Resources:** Staff resources, where available, usually consist of a planner or community development director. There are no towns in Knox County with staff resources devoted exclusively to hazard mitigation.
- **Public Works Director or Road Commissioner:** Some of the larger towns have a public works director, but most have a road commissioner. The road commissioner might also be the town manager or member(s) of the board of selectmen.
- **Flood Hazard Ordinance:** All of the towns in Knox County are in the Flood Insurance Program and have a flood hazard ordinance in effect. In the following table, the designation “LUPC” indicates that the plantation’s flood plains are under the regulatory jurisdiction of the State’s Land Use Planning Commission (LUPC).
- **All the towns in Knox County** are required to have a shoreland zoning ordinance, whether adopted by the municipality or imposed by the Maine Department of Environmental Protection. The designation LUPC indicates that the plantation’s shorelands are under the regulatory jurisdiction of the State’s Land Use Planning Commission.
- **Form of Government:** In the following table, the letters “ST” indicate the selectmen/town meeting form of government; a “Council” indicates a council form of government and the designation LUPC indicates that Knox County’s portion of the Unorganized Territory is governed by the State’s Land Use Planning Commission.
- **Resources:** In addition to staffing or other expertise, funding resources are from local taxes and/or grants that are funded by taxes or private donations. Hazard Mitigation Assistance Guidance for the *Hazard Mitigation Grant Program (sec 404 & 406)*, *Pre-Disaster Mitigation*, and the *Flood Mitigation Assistance* grant programs can be found here www.fema.gov/hazard-mitigation-assistance.

All jurisdictions in Knox County could expand and improve their existing capabilities if additional funds, beyond their existing tax bases, became available to address hazard mitigation projects listed on the following pages.

Key to table on next page

- “X” - Yes
- “MGR” – Town or City Manager
- “A” - Administrator
- “AA” – Assessors/Annual Town Meeting
- “LUPC” – Maine Land Use Planning Commission
- “ST” – Selectmen/Town Meeting form of government
- “M” – Mayor
- “C” - Council

Blank – not applicable

Authorities, Policies, Programs and Resources Available to Accomplish Hazard Mitigation							
Town	Town or City Manager	Staff involved in Local Planning	Public Works or Road Commissioner	EMA Director	Flood Hazard Ordinance	Shoreland Zoning Ordinance	Form of Government
Appleton			X	X	X	X	ST
Camden	MGR	X	X	X	X	X	ST,MGR
Cushing			X	X	X	X	ST
Friendship			X	X	X	X	ST
Hope			X	X	X	X	ST
Isle au Haut			X	X	X	X	ST
Matinicus Isle Plantation			X	X	LUPC	LUPC	AA
North Haven	A		X	X	X	X	ST,A
Owls Head			X	X	X	X	ST
Rockland	MGR,M	X	X	X	X	X	C,M,MGR
Rockport	MGR	X	X	X	X	X	ST,MGR
St. George	MGR		X	X	X	X	ST,MGR
South Thomaston	A		X	X	X	X	ST,A
Thomaston	MGR		X	X	X	X	ST,MGR
Union	MGR		X	X	X	X	ST,MGR
Unorganized	County Commission	X		X	LUPC	LUPC	LUPC
Vinalhaven	MGR		X	X	X	X	ST,MGR
Warren	MGR		X	X	X	X	ST,MGR
Washington			X	X	X	X	ST

Source: Maine Municipal Association Directory, 2017-2018, Knox County EMA 2019

C2. Participation in the NFIP National Flood Insurance Program

As shown in the table below, all of the municipalities in Knox County are in the Flood Insurance Program and as a condition of participation in the program, have enacted floodplain management ordinances that limit new development in floodplain areas.

All the townships in Knox County's portion of Maine's Unorganized Territory are under the jurisdiction of Maine's Land Use Planning Commission (LUPC). LUPC has agreed to administer and enforce the NFIP for all plantations and townships that are under its control and has modified its requirements to include floodplain management regulations. The table below summarizes the participation of Knox County municipalities in the NFIP.

Key to Table

FHBM: Flood Hazard Boundary Map

FIRM: Flood Insurance Rate Map

Knox County Communities Participating in the NFIP					
Town	Initial FHBM¹	Initial FIRM¹	Current Effective Map Date¹	Regular-Emergency Date¹	Adoption and Enforcement²
Appleton	8-2-74	12-4-85	7-6-16	12-4-85	X
Camden	5-31-74	5-4-88	7-6-16	5-4-88	X
Cushing	1-3-75	7-16-90	7-6-16	7-16-90	X
Friendship	1-3-75	7-16-90	7-6-16	7-16-90	X
Hope	2-21-75	2-19-86	7-6-16	2-19-86	X
Isle au Haut	-	7-6-16	7-6-16	8-28-17	X
Matinicus Isle Pt.	-	7-6-16	7-6-16	4-30-84	X
North Haven	2-28-75	7-16-91	7-6-16	7-16-91	X
Owls Head	9-13-74	6-19-89	7-6-16	6-19-89	X
Rockland	11-8-74	1-5-89	7-6-16	1-5-89	X
Rockport	9-20-74	5-4-89	7-6-16	5-4-89	X
St. George	1-24-75	9-1-89	7-6-16	9-1-89	X
South Thomaston	11-1-74	5-17-89	7-6-16	5-17-89	X
Thomaston	9-6-74	12-4-85	7-6-16	12-4-85	X
Union	9-20-74	3-18-87	7-6-16	3-18-87	X
Unorganized	-	7-6-16	7-6-16	4-30-84	X
Vinalhaven	4-18-75	3-1-87	7-6-16	3-1-87	X
Warren	9-6-74	4-17-85	7-6-16	4-17-85	X
Washington	9-6-74	3-1-04	7-6-16	3-1-04	X

¹ Source: FEMA Community Status Book Report as of 24 January, 2019

² Based on all available information, this community has adopted and continues to enforce a floodplain management ordinance, including regulating new construction in Special Flood Hazard Areas (SFHA). Knox County EMA is not aware of any new construction in the SFHA.

C3. Goals

The Hazard Mitigation Planning Team reviewed the goals contained in the 2012 Hazard Mitigation Plan and determined that these goals should continue to guide this Hazard Mitigation Plan - 2019 Update. The goals relate to the hazards profiled in this plan and include the following:

Severe Summer Storms: Reduce loss of life, injury, and property damage in Knox County caused by severe summer storm events (including hurricanes and coastal erosion resulting from severe storm events).

Severe Winter Storms: Reduce loss of life, injury, and property damage in Knox County caused by severe winter storm events.

Flooding: Reduce loss of life, injury, and property damage in Knox County caused by flooding.

Wildfires: Reduce damage, injury, and loss of life in Knox County caused by wildfires.

Landslides: Reduce damage, injury, and loss of life in Knox County caused by landslides.

C4. Comprehensive Range of Specific Actions and Projects

Addressed in the format of the County Actions table below and in the table of projects by municipality beginning on page 5-13.

C5. Action plan

Addressed in the format of the County Actions table below and in the table of projects by municipality beginning on page 5-13.

COUNTY-WIDE GOALS AND MITIGATION ACTIONS

The Knox County Planning Team identified and analyzed a number of hazard mitigation measures that would benefit the County. As previously noted in the Planning Section, these measures were identified through workshops, during meetings with the elected and appointed public officials, through outreach to the towns and with the Commissioners who represent the Unorganized Territory.

Note:

- A new column, Timeframe, has been added in accordance with FEMA guidelines.
- The designation “2019-2024” in the timeframe column indicates that the action does not have a specific beginning and end date (such as a construction project), but is rather a recurring action that cannot be pinpointed to a specific date or dates. In it are actions that will depend on circumstances which cannot be predicted in advance, such as a flooding threat, rapid snowmelt, or thunderstorm activity. The recurring action can occur at any time during the 5-year period covered by this plan.
- Other actions have been modified to emphasize a County action.
- **Funding.** The major sources of funding for the County actions are financial support for the operation of Knox County EMA (County taxes, FEMA EMPG grants, Homeland Security funds, matching funds provided by time spent by local officials on hazard mitigation).

SEVERE SUMMER STORM EVENTS

The most likely damages caused by a severe summer storm event are the loss of electrical power from downed power transmission lines, the blockage of roads from tree debris, wash-outs caused by water runoff that overwhelms local drainage systems, and erosion resulting from wave action or river flow. There could be injuries or loss of life caused by delayed responses from emergency services, debris falling on an individual, or from storm-related vehicle accidents resulting from downed tree limbs, and road washouts, or erosion. Other types of general damage to personal and real property may be caused by high winds, like those from a hurricane. If power is lost for extended periods of time, severe storm events can shut down businesses, resulting in major losses of income to local businesses and individuals. In fact, the very presence of a coastal storm will shut commerce down, resulting in major losses of income for local businesses.

Goal: Reduce loss of life, injury, and property damage in Knox County caused by severe summer storm events (including hurricanes and coastal erosion resulting from severe storm events).

Activities	Responsibility	Timeline	Status/Rationale if no Action
<p>A. Section 406 Funding. When appropriate, maximize the use of 406 funds through the Public Assistance (PA) Program.</p> <p>Analysis: This is an important aspect of the PA program for several reasons. Because it is written into the PA scope of work and budget, the work can be completed more quickly than by going through the 404 grant program. Because the State pays a 15% share, and the community pays 10%, this lessens the local financial burden after a disaster for infrastructure protection and improvement.</p>	Knox County EMA /Municipal Officials	2019-2024 As 406 funds become available	New
<p>B. Public Education. Continue to work with the media for public service announcements on hazard mitigation topics, and include hazard mitigation information on municipal, or county EMA websites and social media outlets.</p>	Knox County EMA /Municipal Officials	2019-2024 as Needed	New. Extensive social media alerting use; watches, warnings and advisories posted to County website in the “weather” section; updated as needed.
<p>C. Infrastructure Protection. Continue to inform local officials of training exercises, technical assistance and potential funding opportunities aimed at infrastructure protection.</p> <p>Analysis: Since there is constant turnover of public officials and funding resources continually ebb and flow, information exchange is critical to keeping current officials up to date.</p>	Knox County EMA	2019-2024 as opportunities arise	New

Activities	Responsibility	Timeline	Status/Rationale if no Action
<p>D. Generators. Assist interested municipalities in applying for fire or mitigation grant funds for generators at all critical facilities that are not in flood hazard areas.</p> <p>Analysis: As of a FEMA policy change in 2012, generators for critical facilities are eligible for mitigation funding. Generators can ensure the proper functioning of critical facilities during emergencies, thus making the whole community more resilient.</p>	Knox County EMA	2019-2024	New. 7 generators purchased to date; other projects deferred until further funding becomes available.
<p>E. Road Repair Records. Encourage municipalities to maintain road damage repair records, and seek guidance on hydrology and roadway engineering and design, which may include Stormwater Analysis and Management Plans.</p>	Knox County EMA Municipal officials	2019-2024 as needed	Knox County holds periodic workshops on tracking road repair costs
<p>F. Mitigation Grants. Apply for grants to upgrade roads, culverts, ditches, and drainage systems in accordance with plans for making roads safe from summer storms and water runoff.</p>	Knox County EMA Municipal officials	2019-2024 as needed	Lack of complete historical records has made this difficult in meeting BCA; use of the Road System Maintenance Software (RSMS) will help in building better databases.
<p>G. Flood Insurance. Continue to encourage homeowners to purchase insurance for severe storm damages.</p>	Knox County EMA Municipal officials	2019-2024 as needed	This is an ongoing topic at Knox County EMA workshops and occasional public service announcements
<p>H. Requirements for Generators.-Develop/update policies to require new or existing critical public facilities to have a generator.</p>	Municipal officials		Some towns have embraced this idea; others will consider pending funding availability.

SEVERE WINTER STORM EVENTS

The most likely damages caused by a severe winter storm event are the loss of electrical power from downed power transmission lines, the blockage of roads from tree debris, wash-outs caused by ice jams and water runoff that overwhelms local drainage systems, and erosion resulting from wave action or river flow. There could be injuries or loss of life caused by delayed responses from emergency services, the improper use of back-up heat sources, freezing conditions, debris falling on an individual, or from storm-related vehicle accidents resulting from downed tree limbs, road washouts, erosion, or icy conditions. Other types of general damage to personal and real property may be caused by high winds, like those from a blizzard. If power is lost for extended periods of time, severe storm events can shut down businesses, resulting in major losses of income to local businesses and individuals. In fact, the very presence of a blizzard or winter coastal storm will shut commerce down, resulting in major losses of income for local businesses.

Goal: Reduce loss of life, injury, and property damage in Knox County caused by severe winter storm events.

Activities	Responsibility	Timeline	Status/Rationale if no Action
<p>A. Section 406 Funding. When appropriate, maximize the use of 406 funds through the Public Assistance (PA) Program.</p> <p>Analysis: This is an important aspect of the PA program for several reasons. Because it is written into the PA scope of work and budget, the work can be completed more quickly than by going through the 404 grant program. Because the State pays a 15% share, and the community pays 10%, this lessens the local financial burden after a disaster for infrastructure protection and improvement.</p>	Knox County EMA /Municipal Officials	2019-2024 As 406 funds become available	New
<p>B. Public Education. Continue to work with the media for public service announcements on hazard mitigation topics, and include hazard mitigation information on municipal, or county EMA websites and social media outlets.</p>	Knox County EMA/ Municipal Officials	2019-2024 as needed	New. Extensive social media alerting use; watches, warnings and advisories posted to County website in the “weather” section; updated as needed.
<p>C. Infrastructure Protection. Continue to inform local officials of training exercises, technical assistance and potential funding opportunities aimed at infrastructure protection.</p> <p>Analysis: Since there is constant turnover of public officials and funding resources continually ebb and flow, information exchange is critical to keeping current officials up to date.</p>	Knox County EMA	2019-2024 as opportunities arise	New

Activities	Responsibility	Timeline	Status/Rationale if no Action
<p>D. Generators. Assist interested municipalities in applying for fire or mitigation grant funds for generators at all critical facilities that are not in flood hazard areas.</p> <p>Analysis: As of a FEMA policy change in 2012, generators for critical facilities are eligible for mitigation funding. Generators can ensure the proper functioning of critical facilities during emergencies, thus making the whole community more resilient.</p>	Knox County EMA	2019-2024	New. 7 generators purchased to date; other projects deferred until further funding becomes available.
<p>E. Mitigation Grants. Apply for grants to upgrade roads, culverts, ditches, and drainage systems in accordance with plans for making roads safe from summer storms and water runoff.</p>	Knox County EMA Municipal officials	2019-2024 as needed	Lack of complete historical records has made this difficult in meeting BCA; use of the Road System Maintenance Software (RSMS) will help in building better databases.
<p>F. Flood Insurance. Encourage homeowners to purchase insurance for severe storm damages.</p>	Municipal officials County	2019-2024 as needed	This is an ongoing topic at Knox County EMA workshops and in occasional public service announcements
<p>G. Requirement for Generators. Develop/update policy to require new or existing critical public facilities to have a generator.</p>	Municipal officials	2019-2024 as needed	Some towns have embraced this idea; others will consider pending funding availability.

FLOODING. In Knox County, flooding is most often associated with the effects of severe summer storms, ice and snow build-up, and spring run-off. The most likely damages resulting from flooding are the destruction of roads caused by washouts and undercutting. Most communities that have flooding issues have joined the National Flood Insurance Program and are controlling future development through the enforcement of local flood hazard ordinances.

Goal: Reduce loss of life, injury, and property damage in Knox County caused by flooding.

Activities	Responsibility	Timeline	Status/Rational if no Action
<p>A. DAM EAP Plans. Monitor the preparation of Emergency Action Plans (EAPs) for High and Significant Hazard dams, assist with exercises, review the results of dam inspections by the Maine State Dam Engineer.</p>	County EMA Director Dam owners Local EMA directors	2019-2024 as needed	All Dam EAPs current as of - Feb 2019

Activities	Responsibility	Timeline	Status/Rational if no Action
<p>B. Map Education. Improve knowledge of flood insurance rate maps among citizens; offer simple “<i>what’s my risk</i>” and “<i>should I evacuate</i>” mapping applications</p>	<p>County EMA Director, Municipalities</p>	<p>2019-2024 as needed</p>	<p>Local level maps DFIRMS provided; applications developed</p>
<p>C. NFIP Participation. Encourage participation in the flood insurance program, as well as actions needed to ensure continued municipal compliance with NFIP program. Encourage municipal Community Rating System (CRS) upgrades</p>	<p>County EMA Director, Local municipal officials, State Officials, MEMA,</p>	<p>2019-2024 as opportunities arise</p>	<p>Addressed in EMA Directors’ meetings and NFIP information included on County EMA website</p>
<p>D. Local NFIP Enforcement. Implement and enforce local floodplain management ordinances to minimize future flood losses caused by new construction.</p>	<p>Code Enforcement Officers Planning Boards</p>	<p>2019-2024 as needed</p>	<p>Based on available information, municipalities continue to administer and enforce their floodplain management ordinances.</p>
<p>E. Property Mitigation. Encourage homeowners in flood zones to mitigate their properties.</p>	<p>Municipalities Local EMA directors</p>	<p>2019-2024 as opportunities arise</p>	<p>FEMA/NFIP handout materials available online, in town offices and at public education events.</p>
<p>F. Road Repair Records. Encourage municipalities to maintain road damage repair records, seek guidance on hydrology and roadway design, which may include Stormwater Analysis and Management Plans.</p>	<p>Knox County EMA Municipalities</p>	<p>2019-2024 as opportunities arise</p>	<p>Use of RSMS encouraged and supported by County EMA. Coastal Communities grants available and used. County participating in coastal resiliency grant with Island Institute. Improved risk awareness. Some planning done.</p>
<p>G. 406 Funding. Maximize the use of 406 funds through the Public Assistance (PA) Program.</p> <p>Analysis: This is an important aspect of the PA program for several reasons. Because it is written into the PA scope of work and budget, the work can be completed more quickly than by going through the 404 grant program. Because the State pays a 15% share, and the community pays 10%, this lessens the local financial burden after a disaster for infrastructure protection and improvement.</p>	<p>Knox County EMA</p>	<p>2019-2024 As 406 funds become available</p>	<p>New</p>
<p>H. Infrastructure Protection. Inform local officials of training exercises, technical assistance and potential funding opportunities aimed at infrastructure protection.</p> <p>Analysis: Since there is constant turnover of public officials, and funding resources continually ebb and flow, information exchange is critical to keeping current officials up to date.</p>	<p>Knox County EMA</p>	<p>2019-2024 as opportunities arise</p>	<p>New</p>

WILDFIRE. All parts of Knox County are subject to wildfires/wildland fires in the urban interface, however the northern portion of the county has the least accessibility to the productive forestland due to the lack of roads and development, and the coastal portion of the County has a larger number of homes and businesses within urban interface. The impacts of wildfires include the destruction of woodland forest stands of trees and other vegetation, which when located on steep slopes and/or near watercourses can increase erosion and pollution to water bodies. Loss of income from timber harvesting can occur from wildfires. Although uncommon in Knox County, structures including residences can be damaged or destroyed from wildfires. Temporary road closures may occur when wildfires are close to roadways or cross over roadways.

Goal: Reduce damage, injury, and loss of life in Knox County caused by wildfires.

Activities	Responsibility	Timeline	Status/Rationale if no Action
<p>A. Public Education. Notify local officials of fire prevention workshops offered by the Maine Forest Service (MFS). Include fire prevention information on the EMA website.</p> <p>Analysis: The MFS has a wide variety of resources that can be accessed by the communities and businesses. These range from website information to individual consultations on methods for reducing potential damages from wildfires.</p>	Knox County EMA	2019-2024 as needed	New
<p>B. Building Codes. Introduce building codes requiring fire-retardant roofing and siding materials.</p>	Municipal officials	2019-2024 as opportunities arise	Continue as needed
<p>C. Homeowner Tactics. Educate homeowners on tactics to protect their homes from wildfires.</p>	Code Enforcement Officers Municipal officials	2019-2024 as opportunities arise	Continue support and promotion of Maine Forest Service (MFS) “Defensible Space and Fuel Reduction Program” (Appendix D) See also A, above
<p>D. Island Fire Load. Encourage island communities to seek opportunities to reduce wildland fire load from tree blow-downs and slash; improve fire breaks where possible.</p>	Municipal officials Maine Forest Service Maine LUPC	2019-2024 as opportunities arise	Lack of funding and mitigation costs are prohibitive
<p>E. Fire Ponds. Encourage the construction of Fire Ponds by private landowners in non-hydrant districts.</p>	Municipal officials	2019-2024 as opportunities arise	Municipalities conducting hydrogeological studies of fire pond for ISO rating upgrades
<p>F. Access Roads, Logging Roads. Encourage private landowners to cut back tree growth along access drives, woods and logging roads.</p>	Municipal officials	2019-2024 as opportunities arise	Includes support and promotion of Maine Forest Service (MFS) “Defensible Space and Fuel Reduction Program” Appendix D)
<p>G. Bulk Slash Reduction. Encourage bulk slash reduction through good Forestry Best Management Practices (BMPs).</p>	Municipal officials	2019-2024 as opportunities arise	Not known if steps taken

LANDSLIDE. Landslides are uncommon in Knox County, although several have occurred. Unstable coastal bluffs in excess of 20 feet in height will likely be subject to landslides on a more frequent basis as a result of severe storms, flooding and sea level rise. Coastal bluff stability maps are included in this plan and show areas where a landslide potential exists. The impacts of landslides include the damage or destruction of structures located in landslide prone areas, the potential for injury and loss of life, as well as damage to public infrastructure including roadways and utility lines. Roads are vulnerable to temporary closure when landslides are nearby or cross roadways. If the landslide includes the roadway itself, the closures may be longer term as reconstruction and realignment efforts are undertaken.

Goal: Reduce damage, injury, and loss of life in Knox County caused by landslides.

Activities	Responsibility	Timeline	Status/Rationale if no Action
<p>A. Shoreland Zoning. Encourage enforcement of State-mandated shoreland zoning provisions that restrict future development in landslide prone areas.</p>	<p>Municipal officials Code Enforcement Officers</p>	<p>2019-2024 as opportunities arise</p>	<p>Based on available information, municipalities are enforcing shoreland zoning ordinances</p>
<p>B. Homeowner Education. Educate homeowners on tactics to protect their homes or development sites from landslides, including the use of shoreland stabilization, riprap, and re-grading where state law allows such mitigation.</p>	<p>Code Enforcement Officers Municipal officials</p>	<p>2019-2024 as opportunities arise</p>	<p>This is an ongoing topic at Knox County EMA workshops and in occasional public service announcements</p>

Rating of Actions and Establishment of Priorities

The Knox County Hazard Mitigation Planning Team established priorities by hazard for each of the general mitigation actions set forth on the previous pages. The Team used the following criteria to rank each of the actions:

1. Life and property
2. Percent of population benefited
3. Probability of community acceptance
4. Probability of funding
5. Feasibility of implementation

On a scale of 1-3, each criterion was rated with one being the lowest rating and three being the highest to add up to a total score. Where two or more actions have the same rating, the actions are considered to have equal importance.

Rating of Severe Summer Storm Mitigation Actions						
	Life/ Property	% of Population Benefited	Probability Community Acceptance	Probability of Funding	Feasibility of Implementation	Total Score
A. 406 Funding	2	3	3	3	3	14
B. Public Education	1	1	3	3	3	11
C. Infrastructure Protection	3	3	3	1	1	11
D. Generators	3	2	3	3	3	14
E. Road Repair Records	3	3	3	1	3	13
F. Mitigation Grants	2	3	3	1	2	11
G. Flood Insurance	3	1	1	1	3	9
H. Requirements for Generators	1	1	1	1	3	7

Rating of Severe Winter Storm Mitigation Actions						
	Life/ Property	% of Population Benefited	Probability Community Acceptance	Probability of Funding	Feasibility of Implementation	Total Score
A. 406 Funding	2	3	3	3	3	14
B. Public Education	1	1	3	3	3	11
C. Infrastructure Protection	3	3	3	1	1	11
D. Generators	3	2	3	3	3	14

E. Mitigation Grants	2	3	3	1	2	11
F. Flood Insurance	1	1	3	1	3	9
G. Requirements for Generators	3	1	1	1	2	8

Rating of Flooding Mitigation Actions						
	Life/Property	% of Population Benefited	Probability Community Acceptance	Probability of Funding	Feasibility of Implementation	Total Score
A. DAM EAP Plans	3	1	3	1	2	10
B. Map Education	1	1	2	1	2	7
C. NFIP Participation	3	1	2	1	1	8
D. Local NFIP Enforcement	3	1	1	1	1	7
E. Property Mitigation	3	1	3	1	1	9
F. Road Repair Records	3	3	3	1	3	13
G. 406 Funding	2	3	3	3	3	14
H. Infrastructure Protection	3	3	3	1	1	11

Rating of Wildfire Mitigation Actions						
	Life/Property	% of Population Benefited	Probability Community Acceptance	Probability of Funding	Feasibility of Implementation	Total Score
A. Public Education	3	2	3	3	3	14
B. Building Codes	2	2	1	3	3	11
C. Homeowner Tactics	2	2	3	1	1	9
D. Island Fire Load	3	3	1	1	1	9
E. Fire Ponds	3	3	3	1	1	11
F. Access Roads, Logging Roads	3	3	3	1	1	11
G. Bulk Slash Reduction	2	1	3	1	1	8

Rating of Landslide Mitigation Actions						
	Life/ Property	% of Population Benefited	Probability Community Acceptance	Probability of Funding	Feasibility of Implementation	Total Score
A. Shoreland Zoning	1	1	2	1	1	6
B. Homeowner Education	2	1	2	2	3	10

Prioritized Mitigation Projects in Knox County

Note: The projects included in the Hazard Mitigation Projects by Municipality tables were largely developed with EMA staff working directly with specific municipalities in this county.

Mitigation Projects listed in priority order. Knox County's Hazard Mitigation Plan encompasses 1 city, 16 towns, 1 plantation, and its portion of the Unorganized Territory. Most municipalities in the County identified one or more mitigation projects consistent with the countywide goals, and activities, to mitigate hazards at the local level. The jurisdictions, as well as the specific mitigation projects they will pursue, are listed in priority order in the table on page 5-17. The timeframes shown are based upon acceptance of the project by FEMA and / or the availability of materials and funding. The major change in this part of the update is that the old projects, which were very generic, have been replaced with specific, measureable projects.

Criteria for prioritization – Towns: The list of local mitigation projects was developed and prioritized separately by each municipality. Local officials did not use formal, written criteria for the identification of local projects. Local mitigation officials relied on common sense, local knowledge of the frequency and extent of local damages, local knowledge of which projects were of the highest priority, based on frequency and severity of damages, local knowledge of the weather, the geography and topography of the community, and the technical and financial abilities of their respective communities to address hazards and mitigate the impacts of hazards.

Criteria for prioritization – County-wide: See previous tables beginning on page 5-13.

How the actions will be implemented. The Hazard Mitigation Projects by Municipality tables identify one or more parties who will be responsible for implementation.

Timeframe. Some of the projects have been completed, as indicated in the table of projects. Some are newly listed while the vast majority of projects are carry-overs from the last plan update. An approximate time frame has been assigned to each project, subject to the availability of funds which, in most cases, have not been secured as of this writing. The time frames start when funding becomes available and permitting is completed.

- Short Term: 1-2 years
- Medium Term: 3-4 years
- Long Term: 5 years

Community inaction to date does not mean lack of interest. Most communities do not have the funds to implement the projects, in part because scarce local resources are dedicated to winter and summer road maintenance, school costs and county budgets, to name a few, and community finances are also being squeezed by state funding cutbacks in revenue sharing, education, county jails and other areas

of government. Therefore, for all of the reasons stated above, projects with the status “Deferred – lack of funds” may have to be carried over to the next planning cycle.

The time frames set forth in this plan are subject to change if funding sources become available.

Potential Funding Sources.

Potential funding sources for local projects include, but are not limited to:

- Local tax money
- Maine DOT local road assistance funds
- FEMA Hazard Mitigation Assistance (HMA) grant funds
- Maine Department of Environmental Protection (DEP) culvert grants
- Community Development Block Grant (CDBG) funds
- Other (e.g. private benefactors, emerging grant programs)

D2. Progress in Local Mitigation Efforts

The table below reflects progress in local mitigation efforts. See status column.

D3. Revisions to Reflect Changes in Priorities

The table below reflects progress in local mitigation efforts.

Note: References to culverts on the following pages refer to upsizing or lengthening culverts, unless otherwise stated. Over the years, FEMA has established project useful life standards for typical mitigation project types. FEMA’s project useful life standard for culverts ranges from 25 - 50 years, depending on type of materials used. Other examples are: generators - 19 years, elevations - 30 years, and acquisition/demolitions - 100+ years.

Use of a cost-benefit analysis. Many of the jurisdictions included in this Plan are small towns run by part time staff and / or volunteers. They do not have staff, resources or funding to prepare cost-benefit analyses for the projects included in this Plan. However, in virtually all cases involving expenditure of local funds for implementation, there will be a very rigorous, line-by-line analysis of cost effectiveness during the budget review process and subsequent public discussion through regular and special meetings. This review is at least equal to a formal benefit-cost calculation because each expenditure item will be carefully scrutinized rather than simply being plugged into a formula. Furthermore, MEMA and the County EMA have made it clear to local officials that a formal cost benefit analysis will have to be prepared in the event they apply for mitigation funding.

Status of completed, deleted or deferred projects. The Hazard Mitigation Projects by Municipality tables contain a status column that identifies the completed, deleted or deferred mitigation projects. For deferred projects, the “status” column lists the reason or reasons that no changes occurred.

Hazard Mitigation Projects by Municipality

Goal: Benefit cost analysis

Prior to grant application development, projects will have their cost effectiveness determined by use of the FEMA BCA module. MEMA will provide technical assistance as part of this process. Strategies for hazard mitigation within the County were identified to reduce overall damage in the County, including damage to new and existing buildings and new and existing infrastructure. Although these strategies are aimed at reducing overall damage in the County, each jurisdiction will be responsible for pursuing the actions that are relevant to that jurisdiction. The jurisdictions, along with the specific actions they will pursue, are listed as follows:

Community	Project (in Order of Priority)	Project Lat/Long	Cost estimate in 2018 dollars	Timeline	Responsible Agency	Status of Plan resubmitted 2019
Appleton, Town of	(1) Peabody Rd: Ditch 1,000' and add (1) 18" x 40' HDPE culvert.	44.29391/ -69.22495	\$4,500	Short Term	Road commissioner	In planning phase
	(2) Improve drainage, upsize culvert projects as needed	Various Locations	\$3,000-10,000	Long Term	Road Commissioner	New – deferred pending funding
Camden, Town of	(1.a) Update flood profiles for the Megunticook River drainage basin and determine flow capacity at Various sites prone to flooding	44.223444/ -69.079599	\$50,000 estimate	Short Term	Town Manager (TM) Planning & Dev Director (PDD)	Pending
	(1.b) Determine flood risk impact of Knox Mill Dam, Knowlton Dam, and one additional abandoned barrier		\$50,000	Short Term	TM and PDD	Pending
	(1.c) Evaluate dams for removal		\$200,000	Short Term	TM and PDD	Pending
	(1.d) Assess options for reducing flood hazards associated with privately owned dams on the Megunticook River		\$50,000	Short Term	TM and PDD	Pending

Community	Project (in Order of Priority)	Project Lat/Long	Cost estimate in 2018 dollars	Timeline	Responsible Agency	Status of Plan resubmitted 2019
Camden, Town of	(1.e) Evaluate discrepancies in published reports on the downstream damage likely to occur in the event of breach of Knox Mill Dam	44.223444/ -69.079599	\$25,000	Short Term	TM and PDD	Pending
	(1.f) Evaluate options for making Megunticook East and West dams more resilient.		\$50,000	Short Term	TM and PDD	Pending
	(2.a) Evaluate Route 1 Bridge over Megunticook River for flood resiliency	44.21055/ -69.06433	\$25,000	Short Term	TM and PDD	Pending
	(2.b) implement recommendations of Montgomery Dam Feasibility Study		\$2,000,000	Short Term	TM and PDD	Pending
	(2.c) Redesign of sea wall at Harbor Park to be more resilient and less susceptible to frequent overtopping during high tide events		\$100,000	Short Term	TM and PDD	Pending
	(3) Public Landing and infrastructure redesign in preparation for sea level rise and increased flooding	44.20973/ -69.06326	\$250,000	Short Term	TM and PDD	Pending
	(4) Curtis Avenue; replace rotted and heaved storm drain and extend	44.202099/ -69.071811	\$125,000	Short Term	Public Works	Planned FY-21 Pending funding

Community	Project (in Order of Priority)	Project Lat/Long	Cost estimate in 2018 dollars	Timeline	Responsible Agency	Status of Plan resubmitted 2019
Camden, Town of	(5) Park Street; replace existing deteriorating storm drain	44.20503/ -69.07274	\$125,000	Short Term	Public Works	Planned FY-20 pending funding
	(6) Improve drainage and upsize culvert as needed	Various Locations	\$3,000 - 10,000	Long Term	Public Works	Deferred – pending funding
	(7) Evaluate Wildland Fire Hazard/WUI Study – Curtis Island	44.20192/ -69.04996	\$10,000	Short Term	Fire Chief/ME Forestry	Pending
	(8) Evaluate Wildland Fire Hazard/WUI Study – Ragged Mountain	44.21433/ -69.14533	\$10,000	Short Term	Fire Chief/ME Forestry	Pending
	(9) Evaluate Wildland Fire Hazard/WUI Study – Camden Hills State Park & Mt. Battie	44.24482/ -69.06362	\$10,000	Short Term	Fire Chief/ME Bureau of Parks & Lands	Pending
	(10) Jacobs Ave: Upsize, lengthen and realign existing twin 24" x 40' with 2' x 4' 50' box culvert or according to H&H study and repave, stabilize stream bank 100' x 3'		\$35,000	N/A	Public Works	Completed
	(11) Melvin Heights: replace large rotted cross culvert		\$50,000	N/A	Public Works	Completed
	(12) Spruce Street: replace storm drain and rebuild road		\$124,000	N/A	Public Works	Completed

Community	Project (in Order of Priority)	Project Lat/Long	Cost estimate in 2018 dollars	Timeline	Responsible Agency	Status of Plan resubmitted 2019
Camden, Town of	(13) Rollins Road: Ditching, box culvert installation		\$40,000	N/A	Public Works	Completed
Cushing, Town of	(1) Salt Pond Road: Elevate 180' x 21' x 3' on average, upsize 18" x 40' CMP with 24" x 50' HDPE and repave.	43.997496/ -69.287693	\$50,000	Long Term	Road commissioner	In planning phase- Pending funding
	(2) Improve drainage and upsize culvert projects as necessary	Various Locations	\$3,000- \$10,000	Long Term	Road Commissioner	deferred pending funding
Friendship, Town of	(1) Town Wharf: (Phase 1) Replace piles and (Phase 2) re-deck wharf 60' x 16'.	43.97281/ -69.33701	\$7,000	Short Term	Road commissioner	Phase 1 Complete Phase 2 Deferred, pending funding
	(2) Martins Point Town Landing: Extend cement boat ramp an additional 60 ' and add geo-textile honeycomb chambers, backfill with crushed stone and/or concrete. (Note: first 30 feet of project funded and completed)	43.97967/ -69.35247	\$28,000	Medium Term	Road commissioner	Partially completed. Deferred pending funding.
	(3) Friendship Long Island Town Road; selective wildland timber fuel reduction/fire break. Road drainage improvements	43.96271/ -69.33825	\$55,000	Long Term	Road Commissioner	Deferred; pending funding
	(4) Ditching and Erosion Control for Harbor Rd and Timber Rd	43.97934/ -69.33754 & 44.00782/ -69.34941	\$8,000	Short Term	Road commissioner	Deferred; pending funding

Community	Project (in Order of Priority)	Project Lat/Long	Cost estimate in 2018 dollars	Timeline	Responsible Agency	Status of Plan resubmitted 2019
Friendship, Town of	(5) Improve drainage and upsize culverts as necessary	Various Locations	\$3,500 - \$11,000	Long Term	Road Commissioner	Deferred pending funding
Hope, Town of	(1) Access facility. Procure & Install Generator and ancillary equipment at municipal shelter Hope Elementary School	44.223903/-69.223499	\$50,000	Long Term	EMA Director/School Committee/Select Board	New. Deferred pending funding
	(2) Gillette Rd/ Crabtree Rd: Upsize and lengthen (8) 15" x 40' CMP to 18" x 45' and (6) 24" x 40' CMP to 24" x 50' HDPE, riprap intake and outlets.		\$40,000	N/A	Road commissioner	Completed
	(3) Improve drainage and upsize culverts as necessary	Various Locations	\$3,000 - \$10,000	Long Term	Road Commissioner	pending funding
Isle Au Haut, Town of	(1) Loop Road at Pats Brook: Add (3) 18" x 40' HDPE culverts and elevate 200' x 20' x 2' on average.	44.05205/-68.60759	\$27,000	Medium Term	Road commissioner	In planning phase
	(2) Loop Road at Town Brook Add 4' x 30' squash culvert.	44.05657/-68.64315	\$6,000	Short Term	Road commissioner	In planning phase
	(3) Riches Cove Brook: Upsize to 4' x 40' squash culvert and riprap intake and outlet.	44.07720/-68.60606	\$7,000	Short Term	Road commissioner	In planning phase
	(4) Pond Lookout Road: Install 4' x 5' x 30' bottomless box culvert and riprap intake and outlet.	44.08378/-68.62644	\$40,000	Medium Term	Road commissioner	In planning phase
	(5) Loop Road at Duck Harbor Cross Rd: Add 24" x 30' relief culvert.	44.02417/-68.61917	\$2,500	Short Term	Road commissioner	In planning phase
	(6) Eastern Head Road: Add 30" x 20' culvert.	44.02563/-68.61757	\$2,500	Short Term	Road commissioner	In planning phase

Community	Project (in Order of Priority)	Project Lat/Long	Cost estimate in 2018 dollars	Timeline	Responsible Agency	Status of Plan resubmitted 2019
Isle Au Haut, Town of	(7) Loop Road: at Poor Cybles Install Driveway culvert 48" x 40' squash culvert.	44.07439/ -68.63554	\$6,000	Short Term	Road commissioner	In planning phase
	(8) Dewitt Drainage in Village: Storm water drainage system improvement/upgrade	44.07228/ -68.63630	\$125,000	Long Term	Road commissioner	In planning phase
Matinicus Isle Plantation (Note: No municipal roads)	(1) Install Emergency Generator at island shelter/municipal office. Phase 1: <i>Acquire equipment</i> ; Phase 2: <i>Install/test equipment</i>	43.862131/ -68.891999	P1:\$6,000 P2:\$1,500	Short Term	Assessors	New P1: Completed 2017 P2: Planned 2019
	(2) Forestry: Conduct WUI Study (DACF-Forestry). Selective cutting to reduce fire hazard	Various Locations	\$25,000 - \$150,000	Long Term	Assessors / State / Public/Private Partnership	Updated Project. Deferred; pending funding
	(3) Selective upgrades / replacement of plantation-owned electrical supply system (limited segments)	Various Locations	\$5,000 - 25,000	Long Term	Assessors	Deferred; pending funding
	(4) Improve drainage; install / upsize culverts on plantation-owned ways – projects as needed	Various Locations	\$2,500 - \$10,000	Long Term	Assessors	As Needed-pending funds availability
North Haven, Town of	(1) Purchase and install a standby generator for the Fire Station	44.14477/ -68.87178	\$22,000	Short Term	Select Board	Preparing request for bids
	(2) Stabilize the headland and implement erosion control measures at Pulpit Harbor pier	44.15670/ -68.88103	\$5,000 - \$40,000	Long Term	Select Board	Exploration Phase

Community	Project (in Order of Priority)	Project Lat/Long	Cost estimate in 2018 dollars	Timeline	Responsible Agency	Status of Plan resubmitted 2019
North Haven, Town of	(3) Upgrade drainage and culverts of flood prone roads.	Various Locations	\$10,000-\$25,000	Long Term	Select Board	In Planning Phase
Owls Head, Town of	(1) Obtain a generator for the Town Municipal Building (an implementation item in the school and airport emergency plans, as septic systems depends on pump)	44.06327/-69.09228	\$25,000	Long Term	Select Board	In planning phase
	(2) Re-engineer and construct a new Boat Ramp at the end of Main St (to reduce washouts associated with severe storms and the current poor ramp design)	44.08437/-69.05367	\$25,000	Long Term	Select Board	In planning phase
	(3) Pursue Community Rating System upgrade	Town-wide Policy	\$5,000	Long Term	Select Board/ Planning Board/ Legislative Body	In planning phase
	(4) Town wharf: replace existing tidal guides Piles and connections to float to wharf with stronger units.	44.08478/-69.05314	\$10,000	Medium Term	Harbor Master	Contingency project pending funding for wharf replacement
	(5) Improve drainage, upsize culvert projects-as needed.	Various Locations	\$3,000-\$10,000	Long Term	Select Board	Deferred Pending Funding
Rockland, City of	(1) Assess facility, procure and install generator and ancillary equipment at city shelter facility	44.10527/-69.11227	\$55,000	Long Term	City Manager/Public Services/EMA	New. Deferred pending funding
	(2) Tolman Rd: Ditch 2,500' stone line and add check dams.	44.129496/-69.129618	\$19,000	Medium Term	Services	Deferred: pending funding

Community	Project (in Order of Priority)	Project Lat/Long	Cost estimate in 2018 dollars	Timeline	Responsible Agency	Status of Plan resubmitted 2019
Rockland, City of	(3) West Meadow Rd: Ditch 7,500 blast where needed, add (6) 24" x 40' HDPE culverts.	44.12516/ -69.13078	\$35,000	Medium Term	Services	Deferred: pending funding
	(4) Mountain Rd: Ditch 2,500' and add (2) 24" x 40' HDPE culverts.	44.12071/ -69.14329	\$12,500	Medium Term	Services	Deferred: pending funding
	(5) Bog Rd: Ditch 5,000' and add (4) 24" x 40' HDPE culverts.	44.13589/ -69.13923	\$24,000	Medium Term	Services	Deferred: pending funding
	(6) Thompson Road Bridge: Upgrade bridge	44.11180/ -69.13917	\$60,000	Long Term	Services	Deferred: pending funding
	(7) Rockland Harbor Park (Middle Pier/Buoy Park): to prevent further damage to seawall, remove current asphalt cover, excavate, add bigger fill and more riprap, and recover with asphalt	44.10191/ -69.10667	\$300,000	Long Term	Harbor & Waterfront	Deferred: pending funding
	(8) Municipal Fish Pier: to prevent further damage to seawall, remove current asphalt cover, excavate, add bigger fill and more riprap, and recover with asphalt	44.10308/ -69.10343	\$250,000	Long Term	Harbor & Waterfront	Deferred: pending funding
	(9) Sandy Beach Park: more riprap to prevent further erosion	44.098111/ -69.104999	\$50,000	Long Term	Harbor & Waterfront	Deferred: pending funding
	(10) Improve drainage; upsize culverts as needed	Various Locations	\$3,000 – 10,000	Long Term	Services	Deferred: pending funding

Community	Project (in Order of Priority)	Project Lat/Long	Cost estimate in 2018 dollars	Timeline	Responsible Agency	Status of Plan resubmitted 2019
Rockport, Town of	(1) Grub out and stone line spillway Tolmans Pond Dam and install 24" x 40' overflow culvert and repave.	44.17515/ -69.15094	\$15,000	Medium Term	Public Works (Portions Private)	Deferred
	(2) Old Rockland Road: upsize existing CMP with 4' x 5' x 30' bottomless box culvert, raise road 2' x 200' x 21' on average and repave.	44.15542/ -69.11626	\$60,000	Short Term	Public Works	Project planned for 2018-2019
	(3) West St Ext: Replace existing 48"x40' aluminum culvert- replacement size not yet known	44.17515/ -69.15094	\$100,000+	Short Term	Public Works	New- Planning In Progress 2018-2021
	(4) Upgrade ditches, culverts & drainage including but not limited to School St (800 feet with 6 catch basins).		\$8,000	N/A	Public Works	Completed
	(5) Improve ditching, upsizing culverts as needed in the Warrenton Street area	44.12719/ -69.08500	\$7,000 – 14,000	Short Term	Public Works	In progress
	(6) Annis Lane: Overflow pipe/culvert replacement upgrade to 36" pipe	44.19996/ -69.11023	\$2,000- \$4,000	Short Term	Public Works	New (2018-2019)
	(7) Park Street (near cemetery): Overflow pipe/culvert replacement upgrade to 18" pipe	44.18656/ -69.13050	\$2,000- \$3,000	Short Term	Public Works	New- Planning in Progress (2018-2019)
	(8) Improve drainage and upsizing culvert projects as needed	Various Locations	\$3,000 – \$10,000	Long Term	Public Works	In Progress
Saint George, Town of	(1) Assess facility. Procure & Install Generator and ancillary equipment at municipal shelter	43.96771/ -69.21268	\$57,000	Long Term	Town Manager	New. Completed
	(2) Complete upgrade in Community rating System (CRS)	Town-wide Policy	\$10,000	Short Term	Town Manager & Select Board	New. Planning in progress

Community	Project (in Order of Priority)	Project Lat/Long	Cost estimate in 2018 dollars	Timeline	Responsible Agency	Status of Plan resubmitted 2019
Saint George, Town of	(3) Improve ditching, upsize culverts as needed	Various Locations	\$3,000 – \$10,000	Long Term	Road Commissioner	Pending Funding
South Thomaston, Town of	(1) Island Road intersection with Village Road. Reconstruct, elevate 380' of roadway. Reconstruct retaining wall and stabilize and protect eroding shoreline.	44.00572/-69.12413	\$168,000	Medium Term	Select Board / LEMD / Road Commissioner	New-Deferred pending funding
	(2) Island Road adjacent to Elwell Point. Reconstruct, elevate, realign 400' of roadway, stabilize and protect shoreline.	44.00572/-69.12413	\$190,000	Medium Term	Select Board / LEMD / Road Commissioner	New-Deferred pending funding
	(3) Improve drainage and upsize culverts as necessary	Various Locations	\$3,000 – \$10,000	Long Term	Road commissioner	Deferred pending funding
Thomaston, Town of	(1) West Meadow Rd: Up size existing 8' x 45' arch culvert with 7' x 10' x 45' bottomless box culvert. Add headwalls and riprap intake and outlet.	44.10457/-69.15305	\$181,102	Long Term	Public Works	Reopened & revised Project in 2015. Deferred, pending funding
	(2) Main Street to School Street; drainage project (crosses Rt. 1 and Mall area) proposed new 42" storm drain culvert and catch basins; related to MDOT #017890		\$220,000 (from 2009 est.)	N/A	Public Works (ICW MeDOT)	Completed
	(3) Install Generator and transfer switch Public Works Facility		\$15,000	N/A	Public Works	Completed. New project 2017.
	(4) Assess facility, procure and install generator and ancillary equipment at new municipal shelter facility	44.07872/-69.18290	\$55,000	Long Term	Town Manager/Select Board	New. Deferred pending funding
	(5) Improve drainage; culvert upsize projects as needed	Various Locations	\$3,000 – 10,000	Long Term	Public Works	Deferred pending funding

Community	Project (in Order of Priority)	Project Lat/Long	Cost estimate in 2018 dollars	Timeline	Responsible Agency	Status of Plan resubmitted 2019
Union, Town of	(1) Clary Hill Rd: Elevate 300' x 21' x 18" on average using gabion baskets repave road for use as low water crossing.	44.19958/ -69.30545	\$42,000	Medium Term	Public Works	Deferred pending funding
	(2) Rebuild Section of Carroll Rd to prevent washout from Medomak River.	44.25044/ -69.33691	\$375,000	Long Term	Public Works	<i>New- Added project in 2016. Deferred- pending funding</i>
	(3) Improve drainage and upsize culverts projects as needed	Various Locations	\$5,000 – \$15,000	Long Term	Public Works	Deferred pending funding
UT (Criehaven and Muscle Ridge Shoals townships) (Note: No municipal roads)	(1) Forestry: Selective cutting to reduce fire hazard	Various Locations	\$5,000- \$100,000	Long Term	Maine Land Use Planning Commission/ME Forest Service/ County Commission	Deferred pending funding
Vinalhaven, Town of	(1) Conduct vulnerability assessment of island to identify flood potential and make recommendations	Various Locations	\$75,000	Long Term	Selectmen	NEW
	(2) Improve communication delivery systems (at EOC) and between citizens. Includes internet service, digital communication, and training for EOC personnel/elected	Various Locations	\$10,000	Medium Term	EMA Director and Selectmen	NEW
	(3) Install generators for EOP identified community shelters and critical public infrastructure.	Various Locations	\$100,000	Long Term	Selectmen	NEW

Community	Project (in Order of Priority)	Project Lat/Long	Cost estimate in 2018 dollars	Timeline	Responsible Agency	Status of Plan resubmitted 2019
Vinalhaven, Town of	(4) Education/Training for floodplain manager to best serve and protect private and public property owners.	Town Policy	\$5,000	Short Term	CEO and Selectmen	NEW
	(5) Assess and recommend mitigate/adaptive measures for sewer infrastructure	Various Locations	\$20,000	Long Term	Sewer Commissioners and Selectmen	NEW
	(6) Assess and adapt all public buildings in the floodplain. Consider relocation if necessary.	Various Locations	\$150,000 – \$500,000	Long Term	Selectmen	NEW
	(7) Poor Farm Rd: Remove ledge and improve ditch line 500' upsize (1) 15" x 40' culvert and (1) 30" X 40' culvert, remove soil over wet spot 200' x21' x 2' and install geo-textile pillow and replace gravel.	44.07476/ -68.79846	\$20,000	Medium Term	Road commissioner	Deferred pending funding
	(8) Calderwood Neck Rd: Improve ditch line at Privilege Hill and upsize existing culvert.		\$21,000	N/A	Road commissioner	Completed
	(9) Round The Island Rd at Deadmans corner: Upsize existing 15" x 40' culvert to 30" x 40' culvert and riprap intake and outlet.	44.07546/ -68.80909	\$4,000	Medium Term	Road commissioner	Deferred pending funding
	(10) Zekes Point Rd: Elevate and shape road 6" x 16' x 5,000'	44.11509/ -68.84200	\$67,000	Long Term	Road commissioner	Updated project Deferred pending funding
	(11) School Street: Elevate 200' x20' at least 3' (to get out of floodplain) and repave.	44.04804/ -68.82882	\$25,000- \$40,000	Medium Term	Road commissioner	Updated Project Deferred pending funding

Community	Project (in Order of Priority)	Project Lat/Long	Cost estimate in 2018 dollars	Timeline	Responsible Agency	Status of Plan resubmitted 2019
Vinalhaven, Town of	(12) Improve drainage and culvert upsizing as needed <i>(Currently over 100 culverts are at least 30 years old)</i>	Various Locations	\$75,000- \$100,000	Long Term	Road Commissioner	Updated Projects-Ongoing
	(13) North Haven Road (south of Loud's Pit Rd) – 1,500 ft, increase road height by at least 3 feet to keep from flooding. Currently occurs 4-5 tide cycles per year.	44.06653/ -68.83669	\$100,000 - \$150,000	Long Term	MDOT State-Aid Rd and Road Commissioner	NEW
	(14) North Haven Road – Folly Pond culvert upsize. Possible assessment of risk from flooding if beaver damn breaks.	44.077184/ -68.844597	\$25,000	Medium Term	Road Commissioner	NEW
	(15) Pequot Road – Ocean View Rd intersection and south to Viking driveway. Raise road upsize culvert as needed. Pave road.	44.04906/ -68.81728	\$45,000 – 65,000	Long Term	Road Commissioner	NEW
	(16) Provide BMP workshops for public/private forest owners at least once every three years.	Various Locations	\$1,000	Short Term	Fire Chief	NEW
	(17) Selective Harvest/Slash Reduction on town properties to reduce fire danger.	Various Locations	\$40,000 – 75,000	Long Term	Road Commissioner and Selectmen	NEW

Community	Project (in Order of Priority)	Project Lat/Long	Cost estimate in 2018 dollars	Timeline	Responsible Agency	Status of Plan resubmitted 2019
Warren, Town of	(1) Sandy Shores Road Site 1: Replace 7-foot culvert with aluminum box culvert 13 ft. span by 8-foot rise approx. 31 feet long. (Work would need to be done mid-summer when water is lowest. This road is the only access to at least 36 homes and 75 campsites).	44.09059/ -69.24893	\$320,000	Short Term	Road Commissioner	Budget figure \$320K-pending funding. Planned for FY-19
	(2) Replace shared Generator Fire Station/Town Office/Warming Shelter complex	44.11718/ -69.25338	\$35,000	Medium Term	EMA Director/Town Manager	New. Pending Funding
	(3) Improve ditching and upsize culverts as needed	Various Locations	\$3,000 – \$30,000	Long Term	Road Commissioner	Pending Funding
Washington, Town of	(1) Vanner Road; replace 48” steel culvert with 48” fiberglass culvert; build headwalls to eliminate erosion		\$25,000	n.a.	Public Works and Selectmen	Completed 2015
	(2) Youngs Hill Road; replace (2) 60” steel culverts with (2) 60” fiberglass culverts; build headwalls to eliminate erosion		\$25,000	Medium Term	Public Works and Selectmen	Completed 2016
	(3) Fitch Rd at Davis Stream. Upsize 2 existing 5’ culverts with one 40’ concrete bottomless culvert. (Phase 1: Design/Permitting; Phase 2: fund and complete)	44.23496/ -69.43112	\$180,000	Long Term	Contract, Selectmen and Public Works	New. Phase 1 in process, Phase 2 deferred pending funding

Community	Project (in Order of Priority)	Project Lat/Long	Cost estimate in 2018 dollars	Timeline	Responsible Agency	Status of Plan resubmitted 2019
Washington, Town of	(4) McDowell and Maple Grove Cemeteries. Major tree pruning/removal to mitigate wind-caused damage to headstones; protect municipal burial grounds.	44.27119/ -69.37171 & 44.29646/ -69.36254	\$10,000	Short Term	Contract, Selectmen	New. Deferred pending funding
	(5) Old County Rd. Site 1: Up size existing 5 culverts of various sizes with one 4' x8' x 40' bottomless box culvert, elevate 2' x 21' x 200' and add precast head walls.	44.30624/ -69.39508	\$175,000	Long Term	Public Works and Selectmen	Deferred pending funding
	(6) Old County Rd. Site 2 @ Davis Stream: Up size existing 5 culverts of various sizes with one 4' x8' x 40' bottomless box culvert and add head walls.		\$65,000	Long Term	Public Works and Selectmen	Completed 2016
	(7) Skidmore Rd: Upsize existing twin culverts with 4'x 5' x 40' bottomless box culvert and add precast headwalls.	44.25976/ -69.33494	\$45,000	Medium Term	Public Works and Selectmen	Deferred pending funding
	(8) Improve drainage; culvert upsize projects as needed	Various Locations	\$3,000 – 10,000	Long Term	Public Works and Selectmen	Deferred pending funding