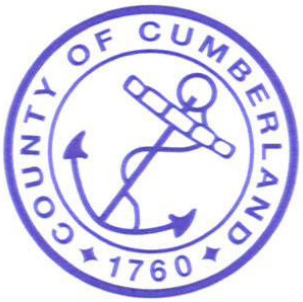

Cumberland County, Maine Hazard Mitigation Plan

December 23, 2004

Prepared by:

Cumberland County
Emergency Management Agency

and

Cumberland County

Soil and Water Conservation District

CUMBERLAND COUNTY HAZARD MITIGATION PLAN

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CUMBERLAND COUNTY HAZARD MITIGATION PLAN

I. INTRODUCTION

This plan was produced by the Cumberland County Soil and Water Conservation District, under contract to the Cumberland County Emergency Management Agency. It is a multi-jurisdictional plan covering the entire county. The objectives of producing a multi-jurisdictional plan are:

- Increased efficiency in the development of the plan.
- Identification of county-wide mitigation measures.
- Identification of opportunities for Inter-municipal cooperation and coordination.

The plan includes the following sections:

1) Prerequisites
2) Planning process
3) Risk Assessment
4) Mitigation Strategy
5) Plan Maintenance Procedures

Cumberland County was incorporated in 1760 and was named after William, Duke of Cumberland, son of George II. Cumberland County is made up of a mix of municipalities, ranging from Portland, Maine's largest city, to the rural towns in the northern end of the county. From civil-war era Fort Gorges, at the head of the Fore River in Casco Bay to the centuries old inns and mills in the upper county, Cumberland County is rich in history. South Portland's shipyards built hundreds of the famous Liberty Ships of the World War II era. In the current era, Portland is the second largest oil port on the East Coast and commercial cruise ships are an increasingly common sight in the harbor as Portland grows in popularity as a cruise ship port-of-call. From Pine Point at the southern end of the County to Small Point at the north, fishing and lobster boats continue to play a role in the county's economy and cultural heritage.

Inland features include Sebago Lake, Maine's second largest lake which serves as the drinking water supply for almost a fifth of the state's population and as the premiere freshwater recreational resource in the state. The lakes region of the county is a popular vacation destination, while still retaining viable, but threatened, farming and forest-based economies.

The county has a population of 265,612 residents living in 107,989 households. The county has an area of 1,127.87 square miles. The population density of the county is 235.5 persons per square mile.
There are 24 incorporated towns and 3 incorporated cities, including Portland, the County seat. The County Government includes the Sheriff's Department and County Jail, County Clerk's office, County Treasurer's Office, Registrar of Deeds, Probate Judge, Assistant District Attorney, and Emergency Management Agency.

Significant employers in the county include: UNUM, L.L. Bean, National Semiconductor, Fairchild Semiconductor, and the Brunswick Naval Air Station.

A map showing the municipal subdivisions of the county is shown on the following page.

MUNICIPAL BOUNDARIES

Data Sources:

Maine Office of GIS

Scale: 1" = 9.3 miles

MUNICIPAL POPULATIONS (from 2000 U.S. Census data)

Town/City	Area (sq. miles)	Year Round Population	Median Age	Density (persons/ sq. mile)	Total Homes	Year Rd. Homes	Household Density
Baldwin	36.33	1,290	38.7	36.5	577	493	2.62
Bridgton	67.65	4,883	39.8	85.2	3,063	1,924	2.54
Brunswick	54.22	21,172	35.5	452.6	8,720	8,150	2.60
Cape Elizabeth	58.41	9,068	43.1	615.5	3,724	3,488	2.60
Casco	36.43	3,469	37.8	110.9	1,958	1,327	2.61
Cumberland	46.37	7,159	39.4	274.6	2,945	2,548	2.81
Falmouth	37.41	10,310	40.7	348.1	4,169	3,948	2.61
Freeport	46.48	7,800	39.8	224.8	3,276	3,065	2.54
Frye Island	1.6	0	0	0	366	0	0
Gorham	51.27	14,141	34.3	279.2	5,051	4,875	2.90
Gray	45.98	6,820	37.4	157.7	3,202	2,637	2.59
Harpswell	83.92	5,239	45.3	216.7	3,701	2,340	2.24
Harrison	33.86	2,315	39.9	70.1	1,430	920	2.52
Long Island	10.39	202	44.3	141.2	353	93	2.17
Naples	37.15	3,274	39.5	102.9	2,381	1,297	2.52
New Gloucester	47.78	4,803	35.5	102	1,889	1,761	2.73
North Yarmouth	21.33	3,210	37.8	151.9	1,142	1,118	2.87
Portland	52.57	64,249	35.7	3,029.20	31,862	29,714	2.16
Pownal	22.95	1,491	41	65	567	560	2.66
Raymond	46.24	4,299	37.8	129.3	2,534	1,616	2.66
Scarborough	55.32	16,970	38.8	355.7	7,233	6,462	2.63
Sebago	46.1	1,433	42.4	43.7	1,240	584	2.45
South Portland	14.3	23,324	37.9	1,944.70	10,349	10,047	2.32
Standish	83.69	9,285	33.8	157.2	3,987	3,205	2.90
Westbrook	17.06	16,142	37.8	956.9	7,089	6,863	2.35
Windham	50.28	14,904	36.5	319.3	6,088	5,522	2.70
Yarmouth	22.78	8,360	41.6	626.7	3,704	3,432	2.44
TOTAL	1,127.87	265,612	37.6	235.5	122,600	107,989	2.50

COUNTY DEMOGRAPHIC PROFILE – Cumberland County, State of Maine

Measure	2000 – County	1990 - County	2000 -Maine	2000 – US
Population				
Total Population	265,612	243,135	1,274,923	281,421,906
% White	96.7%	98.05%	96.9%	75.1%
% Black	1.4%	.64%	0.5%	12.3%
% American Indian	0.7%	.26%	0.6%	0.9%
% Asian	1.7%	.88%	0.7%	3.6%
% Native Hawaiin or other Pacific Islander	0.0%	0.0%	0.0%	0.1%
% Other	0.7%	.16%	0.2%	0.1%
% Persons reporting two or more races			1.0%	2.4%
% Hispanic Origin	1.0%	.64%	0.7%	12.5%
Households				
Total Households	107,989	94,512	518,200	105,480,101
Avg. Household Size	2.38	2.49	2.39	2.6
Income				
Median Household Income ($)	44,048	32,286	37,240	41,994
Persons below poverty, % 1999	7.9%	8.0%	10.9%	12.4%
Sex and Age				
% Female	51.6%	52.0%	51.3%	50.9%
% Male	48.4%	48.0%	49.7%	49.1%
% Under 18 years	23.3%	23.4%	23.6%	25.69%
% 18 years to 64 years	63.4%	63.5%	62.0%	61.9%
% 65 years and over	13.3%	13.1%	14.4%	12.4%
Population density (per sq. mile)	235.5	215.6	41.3	79.6

II. PREREQUISITES

ADOPTION BY THE LOCAL GOVERNING BODY

Requirement §201.6(c)(5):	**[The local hazard mitigation plan shall include] documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council).**
Requirement §201.6(c)(5):	**For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.**

RESOLUTION

Whereas, the cities and towns of Cumberland County, in the State of Maine, recognize that natural hazards create a risk of harm to persons and damage to property; and

Whereas, the cities and towns of Cumberland County recognize that implementing certain measures may reduce the risk of harm to persons and damage to property resulting from these natural hazards;

Therefore, the Cumberland County Commissioners, and the Boards of Selectmen and the Councils of the 27 Incorporated Cities and Towns hereby adopt the 2004 Cumberland County Hazard Mitigation Plan.

AUTHORIZING SIGNATURES

_____ Commissioner, Cumberland County	_____ Date	_____ Selectman, Bridgton	_____ Date
_____ Commissioner, Cumberland County	_____ Date	_____ Selectman, Bridgton	_____ Date
_____ Commissioner, Cumberland County	_____ Date	_____ Councilor, Brunswick	_____ Date
_____ Selectman, Baldwin	_____ Date	_____ Councilor, Brunswick	_____ Date
_____ Selectman, Baldwin	_____ Date	_____ Councilor, Brunswick	_____ Date
_____ Selectman, Baldwin	_____ Date	_____ Councilor, Brunswick	_____ Date
_____ Selectman, Bridgton	_____ Date	_____ Councilor, Brunswick	_____ Date
_____ Selectman, Bridgton	_____ Date	_____ Councilor, Brunswick	_____ Date
_____ Selectman, Bridgton	_____ Date	_____ Councilor, Brunswick	_____ Date

Councilor, Brunswick	Date	Councilor, Cumberland	Date
Councilor, Brunswick	Date	Councilor, Cumberland	Date
Councilor, Cape Elizabeth	Date	Councilor, Falmouth	Date
Councilor, Cape Elizabeth	Date	Councilor, Falmouth	Date
Councilor, Cape Elizabeth	Date	Councilor, Falmouth	Date
Councilor, Cape Elizabeth	Date	Councilor, Falmouth	Date
Councilor, Cape Elizabeth	Date	Councilor, Falmouth	Date
Councilor, Cape Elizabeth	Date	Councilor, Falmouth	Date
Councilor, Cape Elizabeth	Date	Councilor, Falmouth	Date
Selectman, Casco	Date	Councilor, Freeport	Date
Selectman, Casco	Date	Councilor, Freeport	Date
Selectman, Casco	Date	Councilor, Freeport	Date
Councilor, Cumberland	Date	Councilor, Freeport	Date
Councilor, Cumberland	Date	Councilor, Freeport	Date
Councilor, Cumberland	Date	Councilor, Freeport	Date
Councilor, Cumberland	Date	Councilor, Freeport	Date
Councilor, Cumberland	Date	Selectman, Frye Island	Date

Selectman, Frye Island	Date	Selectman, Harrison	Date
Selectman, Frye Island	Date	Selectman, Harrison	Date
Councilor, Gorham	Date	Selectman, Harrison	Date
Councilor, Gorham	Date	Selectman, Harrison	Date
Councilor, Gorham	Date	Selectman, Harrison	Date
Councilor, Gorham	Date	Selectman, Long Island	Date
Councilor, Gorham	Date	Selectman, Long Island	Date
Councilor, Gorham	Date	Selectman, Long Island	Date
Councilor, Gorham	Date	Selectman, Naples	Date
Councilor, Gray	Date	Selectman, Naples	Date
Councilor, Gray	Date	Selectman, Naples	Date
Councilor, Gray	Date	Selectman, Naples	Date
Councilor, Gray	Date	Selectman, Naples	Date
Councilor, Gray	Date	Selectman, New Gloucester	Date
Selectman, Harpswell	Date	Selectman, New Gloucester	Date
Selectman, Harpswell	Date	Selectman, New Gloucester	Date
Selectman, Harpswell	Date	Selectman, New Gloucester	Date

Selectman, New Gloucester	Date	Selectman, Pownal	Date
Selectman, North Yarmouth	Date	Selectman, Raymond	Date
Selectman, North Yarmouth	Date	Selectman, Raymond	Date
Selectman, North Yarmouth	Date	Selectman, Raymond	Date
Selectman, North Yarmouth	Date	Selectman, Raymond	Date
Selectman, North Yarmouth	Date	Selectman, Raymond	Date
Councilor, Portland	Date	Councilor, Scarborough	Date
Councilor, Portland	Date	Councilor, Scarborough	Date
Councilor, Portland	Date	Councilor, Scarborough	Date
Councilor, Portland	Date	Councilor, Scarborough	Date
Councilor, Portland	Date	Councilor, Scarborough	Date
Councilor, Portland	Date	Councilor, Scarborough	Date
Councilor, Portland	Date	Councilor, Scarborough	Date
Councilor, Portland	Date	Selectman, Sebago	Date
Councilor, Portland	Date	Selectman, Sebago	Date
Selectman, Pownal	Date	Selectman, Sebago	Date
Selectman, Pownal	Date	Councilor, South Portland	Date

Councilor, South Portland	Date	Councilor, Westbrook	Date
Councilor, South Portland	Date	Councilor, Westbrook	Date
Councilor, South Portland	Date	Councilor, Westbrook	Date
Councilor, South Portland	Date	Councilor, Windham	Date
Councilor, South Portland	Date	Councilor, Windham	Date
Councilor, South Portland	Date	Councilor, Windham	Date
Councilor, Standish	Date	Councilor, Windham	Date
Councilor, Standish	Date	Councilor, Windham	Date
Councilor, Standish	Date	Councilor, Windham	Date
Councilor, Standish	Date	Councilor, Windham	Date
Councilor, Standish	Date	Councilor, Yarmouth	Date
Councilor, Standish	Date	Councilor, Yarmouth	Date
Councilor, Standish	Date	Councilor, Yarmouth	Date
Councilor, Westbrook	Date	Councilor, Yarmouth	Date
Councilor, Westbrook	Date	Councilor, Yarmouth	Date
Councilor, Westbrook	Date	Councilor, Yarmouth	Date
Councilor, Westbrook	Date	Councilor, Yarmouth	Date

MULTI-JURISDICTIONAL PLANNING PARTICIPATION

Requirement §201.6(a)(3):	**Multi-jurisdictional plans (e.g. watershed plans) may be accepted, as appropriate, as long as each jurisdiction has participated in the process.**

The Cumberland County Hazard Mitigation Plan is a multi-jurisdictional plan prepared by a Hazard Mitigation Planning Team coordinated by the Cumberland County Soil and Water Conservation District and the Cumberland County Emergency Management Agency. Representatives participated from state, county and municipal governments, regional planning commission, private, volunteer, and business sectors. The plan development process included representatives from all 27 municipalities, who provided input regarding prioritization of hazards, assessment of vulnerabilities and risks, and the identification and prioritization of mitigation goals and measures.

Countywide Hazard Mitigation Planning participants:

Steve Goodwin	Fairchild Semiconductor
Bill Soares	American Red Cross, Portland Chapter
Brad Rounds	American Red Cross, Portland Chapter
Kevin Joyce	Cumberland County Sheriff's Office
Jerry Cayer	City of Portland
Jo Linder, M.D.	City of Portland
Roger Boyington	Maine Medical Center
Jeff Sanborn	Maine Medical Center
Jeff Thomas	Mercy Hospital
Rebecca Miller	Northern New England Poison Control Center
Neal Allen	Greater Portland Council of Governments
David Willauer	Greater Portland Council of Governments
Lynn Gaudette	Goodwill Industries of Northern New England
Peter Dietz	Ingraham Volunteers
Victoria Doughty	People's Regional Opportunity Program
Tom Bryant	Central Maine Power Company
Joe Purington	Central Maine Power Company
Tim Hendrix	Portland Pipe Line
Richard Clark	Portland Water District
Tom Dobbins	Sprague Energy Corporation
Dick Powell	Verizon
Anne-Marie Brett	Cumberland County EMA
David Feeney	Cumberland County EMA
Betty McInnes	Cumberland County Soil and Water Conservation District
Jean Wheat	SAPPI
Tom Howard	SAPPI
Jon Giles	City of Portland, GIS Department
Christina Roy	Mitigation GIS intern
Bonnie Cowle Boulter	SPO, Flood Management Program
Jeff Edelstein	Hazard Mitigation Facilitator

Municipal Hazard Mitigation Planning Participants:

Name	Municipal Position	Municipality
James Kidder	Public Works Director	Bridgton
William Morrisseau	EM Director	Bridgton
Gary Howard	Fire Chief/EMA	Brunswick
John Foster	Public Works Director	Brunswick
Robert Malley	Public Works Director	Cape Elizabeth
Rory Putnam	EMA Director	Falmouth
Tony Hayes	Public Works Director	Falmouth
Johanna Hanselman	GA Administrator	Freeport
James Plummer	Public Works Director	Freeport
Albert Presgraves	Town Engineer	Freeport
Bob Burns	Public Works Director	Gorham
Steve LaVallee	Public Works Director	Gray
Noel Musson	Planner	Harpswell
Jay Chace	Deputy Town Administrator	Harpswell
William P. Labbe	EMA	Harpswell
Michael Thorne	Town Manager	Harrison
Sam Cousins	Road Foreman	Harrison
Phil Covelli	Town Manager	Naples
Roland Mayberry	Road Commissioner	Naples
Scott Hodgman	Assistant Foreman	New Gloucester
Rosemary Kulow	Town Manager	New Gloucester
Bill Waterman	Public Works Director	New Gloucester
Kathi Earley	Engineering Manager	Portland
Jon Giles	GIS Coordinator	Portland
Anthony Dater	Town Planner	Pownal
Elisa Trepanier	GIS Coordinator	Raymond
Nathan White	Public Works Director	Raymond
Mike Shaw	Public Works Director	Scarborough
Michael Thurlow	Fire Chief	Scarborough
Mitch Manseau	Town Manager	Sebago
Tex Hauser	Planning Director	South Portland
Edward Googins	Police Chief	South Portland
Tom Meyers	Transportation and Waterfront Director/EMA	South Portland
Steven Johnson	Public Works Director	South Portland
Kevin Guimond	Fire Chief	South Portland
Patrick Cloutier	Water Resources Protection Director	South Portland
Alton Benson	Planning Board Administrator	Standish
Roger Mosley	Public Works Director	Standish
Tim Pellerin	Deputy Fire Chief/EMA	Westbrook
Roger Timmons	Community Development	Windham
Jonathan Champagne	Code Enforcement	Windham
Doug Fortier	Deputy Public Works Director	Windham
Dan Jellis	Town Engineer	Yarmouth

III. PLANNING PROCESS

Requirement §201.6(c)(1):	[The plan shall document] the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

The lead agency in the preparation of the Cumberland County Hazard Mitigation Plan was the Cumberland County Emergency Management Agency (CCEMA). CCEMA contracted with the Cumberland County Soil and Water Conservation District (CCSWCD) to develop the plan. One of the primary reasons for this partnership between the CCEMA and the CCSWCD was that the CCSWCD has been facilitating the activities of the Casco Bay Interlocal Stormwater Working Group (ISWG) for the past 2 and one half years.

The ISWG is made up of eleven cities and towns in Cumberland County. The ISWG consists of public works directors, planners, municipal engineers and code enforcement officers, as well as representatives from the Maine Turnpike Authority and the Maine DEP and other organizations. The ISWG has been working on the development and implementation of regional approaches to stormwater management. A particular focus of the ISWG has been the development of an intermunicipal approach to meeting the requirements of the National Pollutant Discharge Elimination System Stormwater Phase II program, administered by the U.S. EPA and the Maine Department of Environmental Protection. Because flooding is the highest priority hazard in the county and because flooding is closely linked with stormwater management, there is a natural linkage between hazard mitigation and the work of the ISWG.

An initial meeting of the county-wide hazard mitigation planning team was held on February 3, 2004. Four workshops were held for municipal representatives on March 2, 2004, March 4, 2004 (two workshops), and April 6, 2004. Data collection worksheets were developed and distributed to all of the municipalities. Examples of the worksheets are shown in the Appendix.

The public was given the opportunity to comment on the plan during the drafting stage and prior to plan approval, by issuing press releases, posting the draft plan on the county and municipal websites, and through hearings in each municipality. Opportunities were provided for involvement in the planning process by neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests.

Press releases, letters and memos relating to participation by the municipalities and the public in the development of this plan are found in the Appendix.

A review was done of existing plans, studies, reports and technical information and incorporated as appropriate (see Appendix for list).

Acknowledgment is given to Dale D. Rowley, P.E. of Thorndike Engineering in Thorndike, Maine, who led the effort to develop hazard mitigation plans for the counties of Hancock, Knox and Waldo. Acknowledgment is also given to the staff of the Southern Maine Regional Planning Commission, who developed the hazard mitigation plan for York County, under the guidance of the York County Emergency Management Agency. The plan for Cumberland County draws upon selected aspects of these other Maine plans.

IV. RISK ASSESSMENT

IDENTIFYING HAZARDS

Requirement §201.6(c)(2)(i):	**[The risk assessment shall include a] description of the type…of all natural hazards that can affect the jurisdiction…**

Listed below is a summary of the Hazard Mitigation Planning Team's identification and ranking of the natural hazards for which the County is at risk. The Planning Team split the hazards into high, medium, and low priorities, based on the results of a prioritization methodology shown at the end of this section. The mitigation planning process focused on the three hazards in the high priority category. Medium and low priorities may be addressed in future planning activities.

High Priority:

- Flooding
- Severe storm events (summer and winter)
- Wildfire

Medium Priority:

- Coastal Erosion
- Drought
- Earthquake

Low Priority:

- Avalanche
- Blight/infestation
- Ground Subsidence
- Landslide

Hazard	How identified	Description
Flooding	Review of FIRM maps Review of SLOSH maps Review of past disaster declarations Review of repetitive loss properties Input from municipal staff	Cumberland County has suffered repeatedly from flood hazard events, both riverine and coastal. These events have resulted in significant damage to property, economic disruption, reduced access for emergency vehicles, injury and death of persons. These events are associated with spring runoff events and coastal storms.
Severe storm events	Review of past disaster declarations Input from municipal staff	Cumberland County is subject to periodic severe summer and winter storms. The ice storm of 1998 was one of the most disruptive and damaging hazard events of recent history in Maine. Summer storms have caused damage and injury from microbursts and tornado-like events

Hazard	How identified	Description
		in recent history.
Wildfire	Review of Maine Forest Service records	Outside of the urbanized areas of the county, much of the land area is forested. The county has a recent history of experiencing numerous small wildfires.
Drought	Review of NOAA records	Droughts have occurred in Cumberland County in the past. However, NOAA and state records indicate little significant economic impact from droughts within the County.
Coastal erosion	Input from municipal staff Review of Maine Geological Survey maps Review of "Living with the Coast of Maine"	Coastal communities have identified coastal erosion as an ongoing problem at specific locations. It is not, however, a widespread risk for communities.
Earthquake	Review of MEMA and FEMA data.	Maine has a low but steady rate of earthquake occurrence. No significant amount of motion has been shown for any fault since the last Ice Age, about 20,000 years ago, and geologic evidence demonstrates that many faults have been inactive since the formation of the Appalachians, over 300,000,000 years ago. Most Maine earthquakes are of small magnitude. Many are too small to feel. No Maine earthquake has caused significant damage.
Landslide	Review of Maine Geological Survey Coastal Bluffs Maps And Coastal Landslide Hazards Maps	Although landslides do occur in the county, they are extremely localized and do not pose a widespread risk.
Avalanche	Review of USGS maps	There are no mountains in the county with topographic and vegetative characteristics that result in avalanches.
Blight/infestation	MEMA data Input from stakeholders	Data indicates that there is limited history of damage, injury or death resulting from blight and infestation in the county.
Ground subsidence	Review of Maine Geological Survey records	There have been no reported incidences of sudden land subsidence occurring in Cumberland County.

Requirement §201.6(c)(2)(i):	[The risk assessment shall include a] description of the …location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on pevious occurrences of hazard events and on the probability of future hazard events.

PROFILING HAZARD EVENTS

Shown below is a historical chart of hazard events in Cumberland County. The data source for this chart was the Maine Emergency Management Agency:

Year	Month/Day	County damage estimate	Statewide damage estimate	Type of event	Declaration
1936	March 21	$25,000,000		Flooding	
1938	September 21		$135,000	Tropical storm	--
1944	September 14			Tropical Storm	
1946	August 28	$200,000		Flooding	
1947	October 23		$30,000,000	Forest Fire	
1951	May 3			Forest Fire	
1953	March 30			Flooding	
1954	August 31		$5,000000	Hurricane Carol	SBA
1954	September 11		$7,000,000	Hurricane Edna	Presidential
1960	September 12	$250,000		Tropical Storm	
1962	October 6			Hurricane Daisy	
1963	October 29			Hurricane Ginny	
1964	October			Forest Fire	
1972	February 12			Flooding	
1972	March 7		$413,682	Ice Storm	Presidential
1975	May 8			Flooding	SBA
1977	March 20			Flooding	SBA
1977	May 10			Coastal storm	SBA
1978	February 8		$20,693,181	Coastal Storm	
1978	January 10			Rain/snow/ice	
1979	September 6			Hurricane David	
1980	October 26		$715,350	Coastal Storm	SBA
1984	June			Cumberland	
1984				Hurricane Diana	
1986	January			Flooding	
1985				Hurricane Gloria	
1987	January			Coastal Storm	
1987	April		$100,000,000	Flooding	Presidential
1991	September 10			Hurricane Bob	Presidential
1991	October 30			Coastal Storm	Presidential
1992	March 27		$3,462,787	Flooding	Presidential
1993	March 13-14			Blizzard	Presidential
1993	April		$3,476,507	Flooding	Presidential
1996	April 16-17		$2,492,944	Flooding	Presidential
1996	October 20		$8,998,501	Coastal Storm	Presidential
1998	January 5-25		$47,748,466	Ice storm	Presidential
1998	October 8-11		$1,997,555	Coastal Storm	Presidential
1999	September 16-19			Hurricane Floyd	Presidential
2001	March 5 –31		$4,483,918	Heavy snow	Presidential
2003	January – March		$2,144,457	Severe winter conditions	Presidential

HAZARD PROFILES

Following are more detailed descriptions of the high and medium priority hazards in Cumberland County.

HAZARD - FLOODING

Flooding has been the most common hazard affecting Cumberland County in the past. Between 1987 and 2003, there were thirteen federally declared disasters in the county in which FEMA funds were utilized, ten of which were flood events. Every municipality in the county received disaster assistance at least once, with the single exception of Frye Island. The average flood resulted in disaster assistance funding to 14 municipalities. A total of approximately $15 million in FEMA public disaster assistance was provided to Cumberland County during this period as a result of flood damages.

The table below describes these major flooding events. Data source is FEMA:

No.	Year	FEMA ID	Total FEMA aid	Towns Affected	
				Number	Towns
1.	1987	DR-788	$45,757	5	Bridgton, Harrison, Naples, New Gloucester, Pownal
2.	1989	DR-830	$486,295	21	Baldwin, Bridgton, Cape Elizabeth, Casco, Cumberland, Falmouth, Freeport, Gray, Harrison, Naples, New Gloucester, North Yarmouth, Portland, Pownal, Raymond, Sebago, South Portland, Standish, Westbrook, Windham, Yarmouth
3.	1991	DR-915	$2,344,567	23	Baldwin, Bridgton, Brunswick, Cape Elizabeth, Casco, Cumberland, Falmouth, Freeport, Gorham, Gray, Naples, New Gloucester, North Yarmouth, Portland, Pownal, Raymond, Scarborough, Sebago, South Portland, Standish, Westbrook, Windham, Yarmouth
4.	1991	DR-921	$200,365	4	Cape Elizabeth, Cumberland, Portland, Scarborough
5.	1992	DR-940	$185,600	6	Baldwin, Bridgton, Harrison, Naples, Raymond, Sebago
6.	1996	DR-1114	$535,046	19	Baldwin, Bridgton, Brunswick, Casco, Falmouth, Freeport, Gorham, Gray, Harrison, New Gloucester, Portland, Pownal, Raymond, Scarborough, Sebago, South Portland, Westbrook, Windham, Yarmouth
7.	1996	DR-1143	$4,609,514	14	Cape Elizabeth, Casco, Falmouth, Gorham, Gray, Naples, Portland, Raymond, Scarborough, South Portland, Standish, Westbrook, Windham, Yarmouth
8.	1998	DR-1198	$5,738,285	26	Baldwin, Bridgton, Brunswick, Cape Elizabeth, Casco, Cumberland, Falmouth, Freeport, Gorham, Gray, Harpswell, Harrison, Long Island, Naples, New Gloucester, North Yarmouth, Portland, Pownal, Raymond, Scarborough, Sebago, South Portland, Standish, Westbrook, Windham, Yarmouth
9.	1998	DR-1263	$844,604	14	Cape Elizabeth, Cumberland, Falmouth, Freeport, Long Island, New Gloucester, North Yarmouth, Portland, Pownal, Scarborough, South Portland, Westbrook, Windham, Yarmouth
10.	1999	DR-1308	$86,214	7	Falmouth, Freeport, Gray, New Gloucester, Pownal, Raymond, Sebago
Totals, 1987 - 2003			$15,076,247.00	13.9	(Average)

Cumberland County has many areas that are susceptible to coastal and riverine flooding. Ten of its 27 towns are located directly on the Atlantic Ocean, and all others contain some amount of

lakes, ponds, rivers, streams, or wetlands. The county's 2000 population of 265,000 represents almost a 10% increase over the 1990 population. Much of this population is located in the Greater Portland area, which is moderately to highly urbanized with high percentages of impervious area. Adding to the impact of population growth is the concentration of this growth in certain areas, particularly the edge communities around Portland. During the 1990's, Portland, South Portland and Westbrook, the three largest most populous municipalities in the county grew by less than 1%. However, edge communities such as Falmouth, Scarborough, North Yarmouth and Raymond had population growth rates of 30% or more. Stormwater runoff from this growth is regulated to a degree by the municipalities and the state DEP. However, this regulation is typically on a site-by-site basis and does not take into account watershed effects or incremental effects from developments that are too small to trigger regulation.

Cumberland County receives a fairly high level of precipitation at all seasons of the year. Severe widespread flooding occurs regularly in the spring and fall. Localized flooding occurs during the summer as a result of short high-intensity rainfall from thunderstorms.

HAZARD - SEVERE SUMMER AND WINTER STORMS

The National Oceanic and Atmospheric Administration (NOAA) Coastal Services Center maintains maps and data for the entire country regarding hurricanes going back as far as 1851.

The Coastal Services Center reports that there have been 15 hurricanes, extratropical storms, tropical storms, and tropical depressions that have either passed through Cumberland County or within 100 miles of the county since 1951. Of these, four actually passed through the county, and the remaining 11 came within 100 miles. Of the 15 total storms, four reached the hurricane level: Edna in 1954, Donna in 1960, Gloria in 1985, and Bob in 1991. Both Edna and Gloria were classified as Category 1 Hurricanes, while Donna and Bob were Class 2. There have been no Class 3 or higher hurricanes reported for Cumberland County in the past 100 years. The only Class 3 or higher hurricane reported by the Coastal Services Center for Cumberland County was an 1869 event with a maximum wind speed of 115 miles/hour.

The table and map below show the past 50 years of hurricane and other tropical storm activity in Cumberland County. Data source for this table and map is the NOAA Coastal Services Center.

No.	Year	Date	Namea	Maximum Wind Speed (mph)	Type
1.	1952	9/2	Able	35	Tropical Depression
2.	1954	8/31	Carol	85	Extratropical Storm
3.	1954	9/11	Edna	90	Hurricane Category 1
4.	1959	10/2	Gracie	30	Extratropical Storm
5.	1960	7/30	Brenda	50	Tropical Storm
6.	1960	9/12	Donna	105	Hurricane Category 2
7.	1961	9/26	Esther	40	Tropical Storm
8.	1961	9/15	Unnamed	40	Tropical Storm
9.	1971	8/28	Doria	50	Tropical Storm
10.	1979	9/6	David	45	Extratropical Storm
11.	1985	9/27	Gloria	85	Hurricane Category 1
12.	1988	8/30	Chris	25	Tropical Depression
13.	1991	8/19	Bob	100	Hurricane Category 2
14	1996	7/14	Bertha	70	Tropical Storm
15.	1999	9/17	Floyd	60	Tropical Storm

The National Climate Data Center (a division of NOAA) collects and reports statistics on severe winter storms. The table below shows data from 1993 through 2003 for Cumberland County.

Type	No. of events	% of total	No. of deaths	Damage
Freezing rain	9	10.0%	0	$0
Heavy snow	42	46.7%	0	$700,000
Ice storm	3	3.3%	1*	$313,000,000
Light/moderate snow	22	24.4%	0	$0
Winter storm	10	11.1%	0	$0
Snow and ice	2	2.3%	0	$0
Winter weather/mix	2	2.2%	0	$0
TOTAL	91	100.00%	1*	$313,700,000

*Believed to have been caused by carbon monoxide poisoning.

During this 11-year period, Cumberland County experienced a total of 91 winter storms, an average of about eight winter storms (as defined by NOAA) per year. Of these 91 storms, the majority were characterized as snowstorms, with 42 characterized as heavy snowstorms and 22 characterized as light or moderate snowstorms. Although relatively frequent, these storms do not typically result in significant property damage. Severe ice storms, although relatively infrequent, have caused substantial property damage, as illustrated by the two ice storms of January 1998 which caused $304 million and $9 million in damages statewide.

The history of severe summer and winter storms indicates that Cumberland County will continue to experience storms on a regular basis. On a more frequent basis, the county will experience winter snow storms and summer thunderstorms, which will not likely produce significant damage. Less frequently, the county will experience more damaging ice storms, tropical storms or hurricanes. Although microbursts or even small tornado-like events may occur periodically, these events typically affect fairly small localized areas. According to the NOAA National Climate Data Center, from 1950 until September, 2004 Cumberland County experienced 2 F0 tornadoes and 4 F1 tornadoes, with 2 injuries and minor property damage. Because of the infrequent and minimally damaging effects from microbursts and tornado-like events, these are not addressed further in this plan.

HAZARD – WILDFIRE

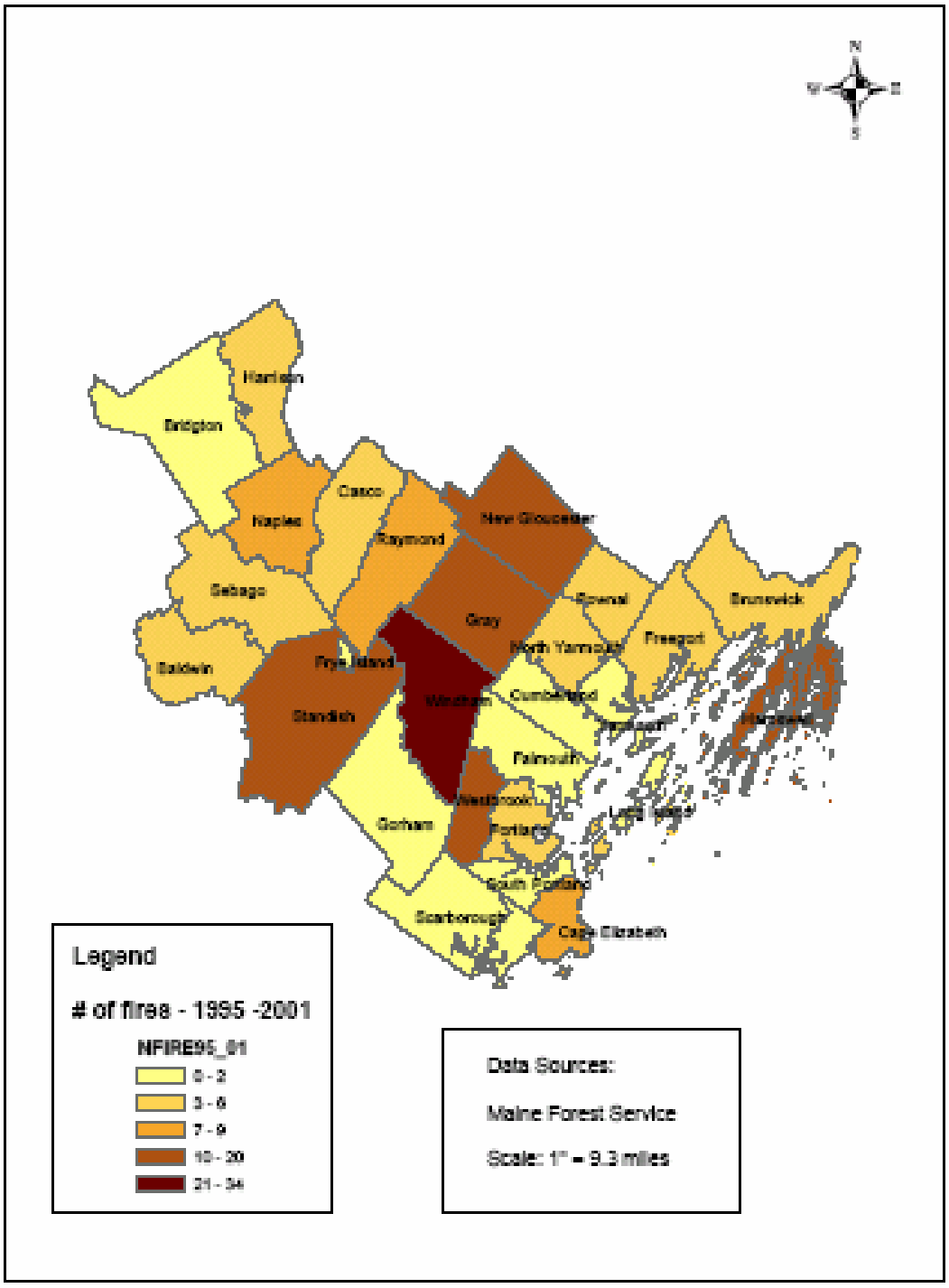
Despite containing a high percentage of heavily forested areas, Cumberland County has not experienced major wildfire events in recent years, with the last widespread wildfire occurring in 1947. This wildfire event caused multiple deaths and resulted in the burning of over 200,000 acres throughout the state of Maine, with the greatest impacts being in York County and on Mount Desert Island. Since the 1947 fire, it is typical for the county to experience several wildfires per year. Between 1995 and 2001, the County experienced 380 separate wildfires. These fires were typically relatively small and quickly contained. Only three communities experienced no wildfires during the period of 1995-2001, which were Portland, Westbrook and Frye Island.

The map on the following page displays summary data on number of wildfires by community for the period of 1995 – 2001. This map is based on data from the Maine Forest Service, which will

be updating its wildfire data collection and reporting system over the next two to three years. At that time, a more accurate description of wildfire activity and risk will be available.

CUMBERLAND COUNTY HAZARD MITIGATION

WILDFIRE EVENT HISTORY



HAZARD - EARTHQUAKES

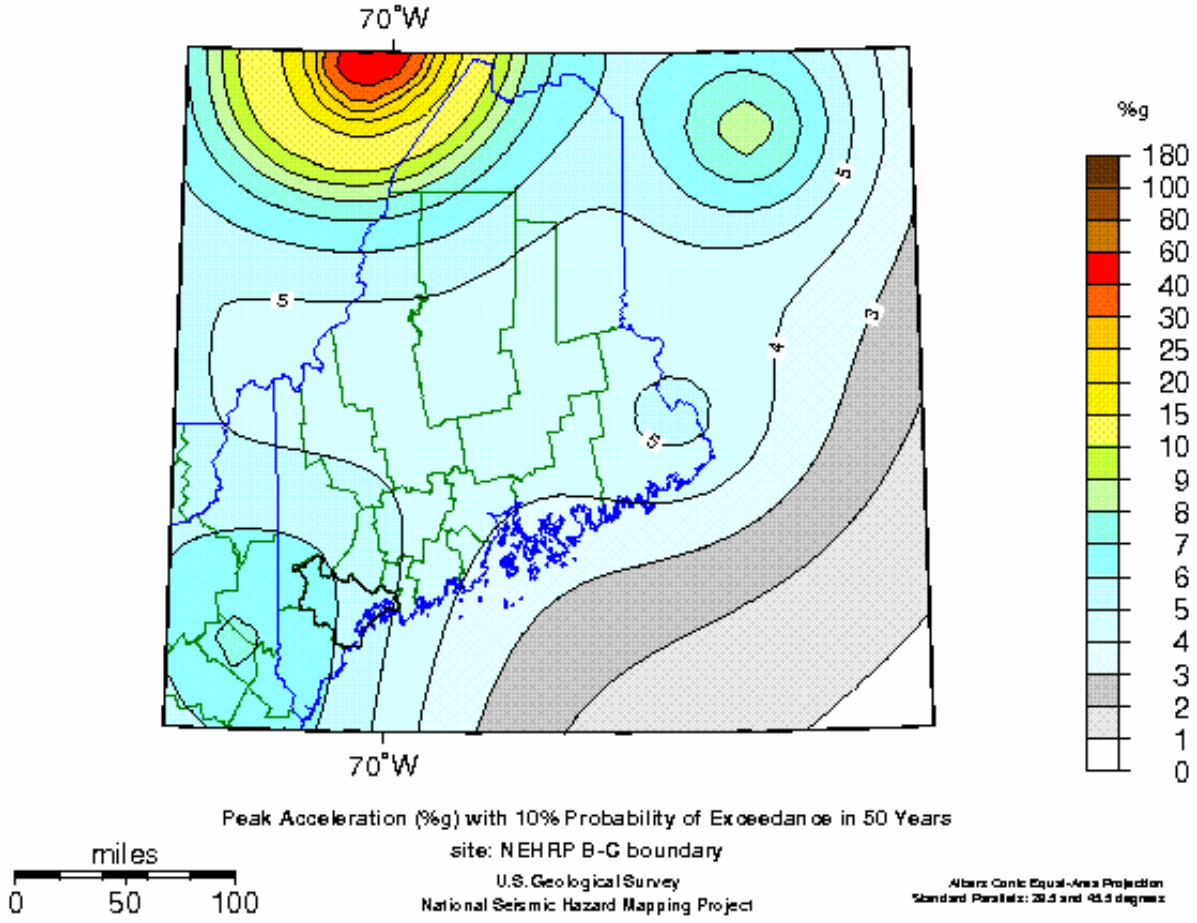
The USGS Earthquake Hazards Program reports a total of seven significant earthquakes in Maine over the past 100 years, all of which were felt in Cumberland County, although none were centered in the county, and none caused major damages in the immediate area. The years of these earthquakes were 1904, 1912, 1925, 1929, 1943, 1949, and 1957. The most significant earthquake over the past 100 years was in 1929. This event measured 7.2 on the Richter scale, and was centered off the coast of Newfoundland. In total, it affected 80,000 square miles in the United States, and coastal Maine was affected the most of any location in the U.S. However, no major damages to buildings or public infrastructure resulted, with damage in Maine restricted to broken household items and stopped clocks.

The last significant earthquake that affected Cumberland County was in 1957, when a tremor occurred 20 miles off the coast of Portland. This tremor resulted in damage to chimneys, windows, and dishes, but did not cause major damages. There have been no significant earthquakes affecting Cumberland County in the past 46 years.

The U.S. Geological Survey's Earthquake Hazards Program measures earthquake risk by estimating Peak Ground Acceleration (PGA). The USGS website describes PGA as a measure of "the maximum acceleration experienced by [a] particle during the course of the earthquake motion." PGA is expressed in %g, or percent acceleration due to gravity. Minor earthquake damage typically occurs only at 10%g or greater. Severe damage does not occur until 60%g. To determine the risk from earthquakes, USGS has analyzed the U.S. and estimated the highest level of PGA which has a 10% probability of being met or exceeded during a 50 year period at all locations. The USGS calls this standard "Peak Acceleration (%g) with 10% Probability of Exceedance in 50 Years."

The range of values in Cumberland County varies between 5%g and 7%g. Most of the state of Maine is in the range of 4%g to 5%g, although a small portion of the extreme northwestern region of the state reaches 15%g to 20%g as a result of an area of seismic activity approximately 50 miles into Canada with a PGA of 60%g.

The map on the following page shows the Peak Ground Acceleration with 10% probability of exceedance in 50 years. Earthquakes were rated a medium priority hazard for Cumberland County and are not addressed further in this plan.


70°W
70°W
%g
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5
4
3
6
miles
0
50
100
Peak Acceleration (%g) with 10% Probability of Exceedance in 50 Years
site: NEHRP B-C boundary
U.S. Geological Survey
National Seismic Hazard Mapping Project
Albers Conic Equal-Area Projection

HAZARD - DROUGHT

Drought events may cause damages in any or all of three areas:

- Agricultural damage.
- Increased wildfire danger.
- Impacts to water supply quantity and quality.

Maine Drought History

Month	Year	County (ies)	Damages	Declaration
	1911	Statewide (16)		
	1941	Statewide		
	1947-51	Statewide	Widespread fires	
	1952	Statewide	Crop Damage	
	1957	Statewide	Crop Damage	
	1960	Aroostook	Crop Damage	
	1963	Statewide		
	1964	Coastal		
	1965	Statewide		
	1974	Statewide		
Aug	1978	Statewide		
	1981	Statewide		
Sep	1993	Statewide		
May - Dec	1995	Statewide		Secretarial Disaster Declaration[1]
	1999		Blueberry Crop	Unknown
	2001-2003	Statewide	$32,000,000 crop damage and market losses[2]	

The U.S. Geological Survey has identified the following drought periods in Maine:

1938-43 1947-50 1955-57 1963-69 1984-883 2000-2003

Drought was rated a medium priority hazard for Cumberland County and is not addressed further in this plan.

[1] Data regarding 1995 drought from letter (25 Mar 96) to Governor King from Dan Glickman, Secretary, Department of Agriculture, Washington, DC.

[2] Growing Agriculture, Sustainable Agriculture Water Source and Use Policy and Action Plan, Maine Agricultural Water Management Advisory Committee, March 2003.

[3] U.S. Army Corps of engineers, New England Division., *The National Study of Water Management during Drought*, pg. 9.

HAZARD – COASTAL EROSION

The shoreline of Cumberland County belongs to two different geologic zones[1]. Scarborough and the southernmost portion of Cape Elizabeth are part of the southernmost compartment, called the *arcuate embayments compartment*, composed of high rocky headlands between which are extensive salt marshes and sand beaches. From Cape Elizabeth north and east (Casco Bay), the shoreline is part of the *indented shoreline compartment* (which extends to Penobscot Bay). In this compartment, glaciers have scraped deep valleys out of soft metamorphic rocks to form long narrow estuaries separated by peninsulas. The estuaries are composed of extensive mud flats.

During the last Ice Age, all of Maine was covered by ice (the ice extended as far south as Cape Cod and Long Island (NY). The ice weighed so much that it depressed the rocky crust of the earth beneath it. As the ice melted away approximately 12,000 years ago, the land rebounded to its former elevation and the sea retreated from the land quickly. As the former seafloor mud emerged it became unstable and slumped to fill old river valleys. Hilly areas lost their sediment cover, exposing bare rock, while lowland areas were buried by marine deposits and glacial till. Around 9,500 years ago, the sea reached its lowest elevation at around 200 feet below current sea level.

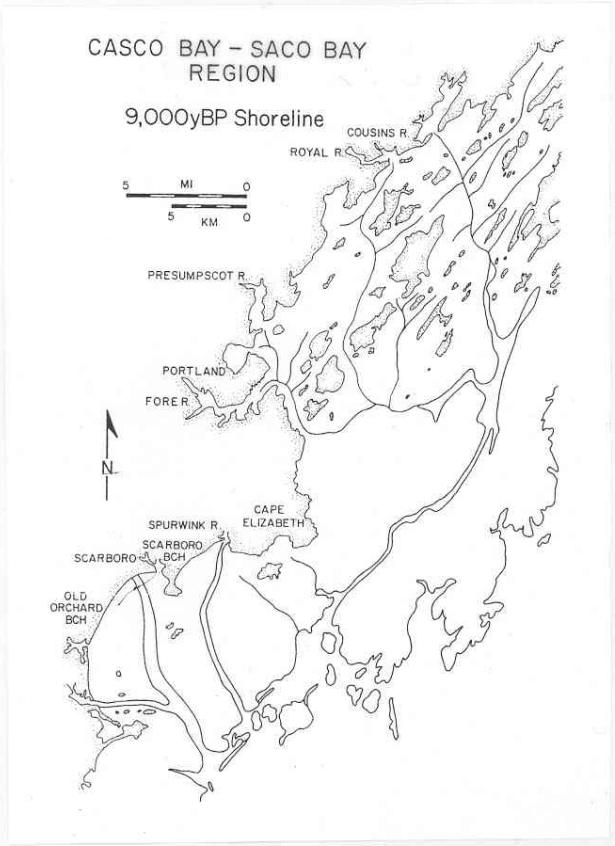
From that point on, worldwide melting of glaciers caused the sea level to begin to rise, which it has been doing until the present day, although not at a uniform rate. Northeast Maine is experiencing rapid subsidence (possibly related to earthquakes in that area), the central coast is relatively stable, and the southern coast is slowly subsiding, but at a lesser rate than the northeast coast.

The figures on the following page show the shorelines of Casco and Saco Bays 9,000 years ago, 6,000 years ago, 3,000 years ago and at the present. As can be seen, the coastline in nearly all areas has been receding.

As the sea level continues its rise (due both to geologic processes and possibly due to human-induced climate change) the recession of the coastline will continue. Structures near bluff edges will be threatened. Construction of seawalls may reduce the threat, but possibly only for a period of time. Furthermore, seawalls cut off the supply of new mud to marshes and flats, which can contribute to the retreat of marshes and reduced productivity in mud flats. It is also theorized that seawalls and similar measures can result in the loss of beaches, due to cutting off the supply of sand.

Coastal erosion was rated a medium priority hazard for Cumberland County and is not addressed further in this plan.

[1] From "Living with the Coast of Maine"



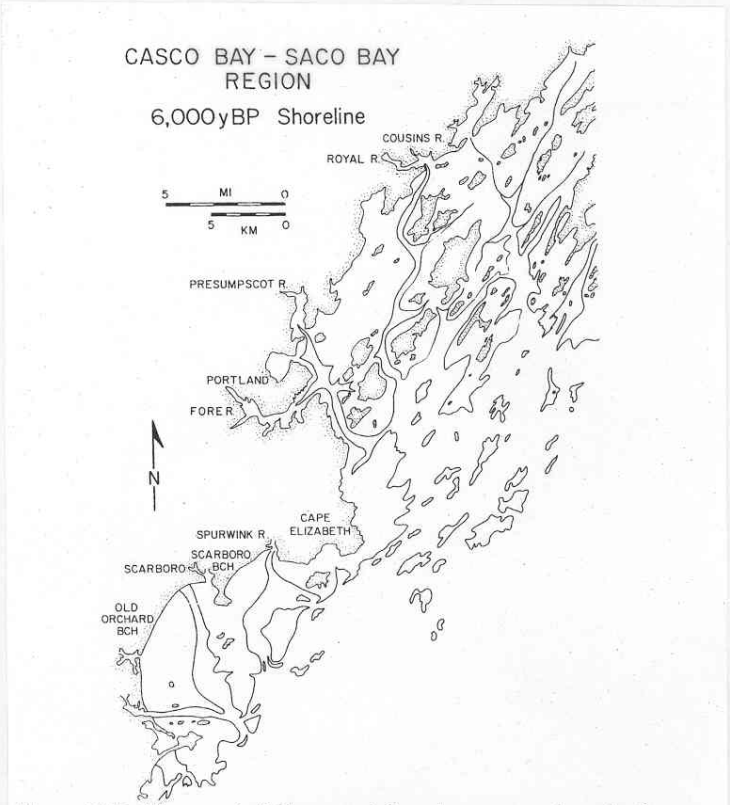


Figure 2.15. The coast of Casco and Saco bays approximately 6,000 years ago when sea level was about 60 feet lower than today. The stippled area represents the present-day shoreline.

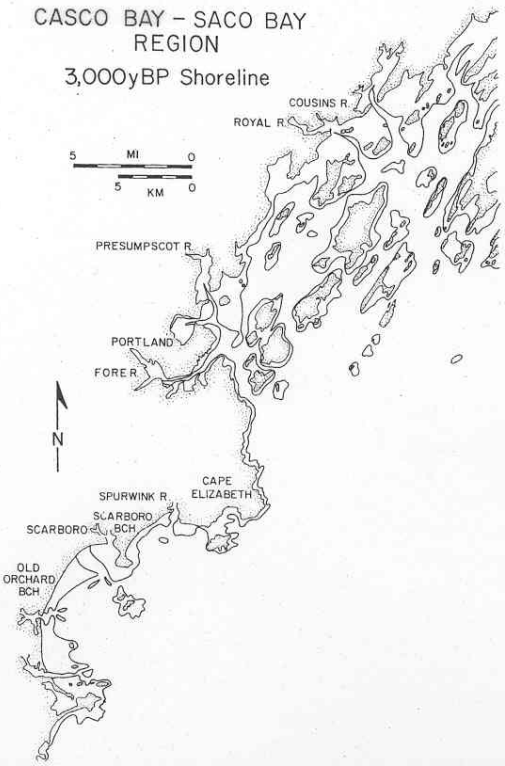


Figure 2.16. The coast of Casco and Saco bays approximately 3,000 years ago when sea level was about 10 feet lower than today. The stippled area represents the present-day shoreline.

Prioritization of Hazards

The preceding profiles describe the range of hazards for which Cumberland County is at risk. The history of hazard events in the county is the best indicator of future risks faced by the county. In order to prioritize future mitigation efforts, the range of hazard types was evaluated for frequency, impacts, and extent of affected population. The hazards were then ranked by order of priority, based on these criteria. The prioritization matrix is shown below:

Hazard Type	Frequency	Impact	% of county at risk	Total Score
High Priority				
Flooding	4	4	4	12
Severe Storm events	4	4	4	12
Wildfire	3	2	4	9
Medium Priority				
Coastal Erosion	4	2	2	8
Drought	1	2	4	7
Earthquake	1	2	4	7
Low Priority				
Blight/infestation	1	2	3	6
Landslide	2	2	1	5
Avalanche	1	2	1	4
Ground subsidence	1	2	1	4

Frequency of events:

1- 10 years =4
Greater than 10 years =3
Greater than 50 years =2
Greater than 100 years =1

Impact:

Significant (multiple deaths, mass casualties, or millions of dollars in damages) =4
Major (injuries, or 100,000's of dollars in damages) =3
Moderate (injuries or 1,000's of dollars in damages) =2
Minimal (no injuries or 100's of dollars in damages) =1

% of County at risk:

All parts of county are vulnerable to hazard and might be impacted by an event =4
All parts of county are vulnerable, but not all parts are likely to be impacted by an event =3
Vulnerability and impacts are limited to certain regions of the county =2
Vulnerability and impacts are localized =1

COUNTY BASE MAPS:

On the following pages are base maps of the 27 cities and towns in Cumberland County. The maps were developed by a GIS team consisting of Christina Roy, student intern from the University of Southern Maine GIS program, Jon Giles, GIS coordinator for the City of Portland and Steve Harmon, Maine DEP/GIS technical assistant to the Cumberland County EMA. Data was obtained from the Maine Office of GIS, Maine DEP, Maine Geological Survey, and Maine Department of Transportation.

These maps were provided to the staff of each city and town in Cumberland County as a tool to assist them in determining areas vulnerable to hazards and facilities that would be damaged or impacted by hazard events. A particular focus was placed on flooding. The maps contained in this plan are reduced size. The maps provided to the municipalities were large-format, typically 30" x 40". Each municipality has also received a computer disk with all GIS data so that municipalities with GIS capability can do their own data management and mapping in the future.

The primary flood analysis data used was the FEMA FIRM flood zone areas. The Army Corps of Engineers SLOSH data for Cumberland County was obtained and examined for storm surge inundation areas. These areas appeared to follow roughly with the FEMA FIRM data. The SLOSH data itself was not used because insufficient documentation of the data source and modeling methodology was available.

ASSESSING VULNERABILITY: IDENTIFYING ASSETS

Requirement §201.6(c)(2)(ii)(A):	**The risk assessment shall include a description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community. The plan should describe vulnerability in terms of: The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas.**

The hazard mitigation planning team identified critical facilities located within each municipality, using GIS data from the Maine Office of GIS. Critical facilities are defined by FEMA as "facilities that are critical to the health and welfare of the population and that are especially important following hazard events. Critical facilities include, but are not limited to, shelters, police and fires stations, and hospitals."

The critical facilities identified in Cumberland County are: municipal offices, fire stations, police stations, water treatment facilities, wastewater treatment plants, libraries, schools, shelters, hospitals, airports, dams, rescue units, armories, roads, electric lines, and telephone lines

The three highest priority hazards identified for Cumberland County are flooding, severe summer and winter storms, and wildfires. The following describes the vulnerability of critical facilities to each of these hazards:

Flooding: The typical damage resulting from flooding in Cumberland County is structural damage to roads and utility infrastructure. There may be other types of critical facilities that are susceptible to damage from flooding, but insufficient data was available to determine these facilities. Mitigation measures in the future might include a more comprehensive field analysis of vulnerability. However, due to the varied topography within the county and the availability of higher elevation sites within all municipalities, nearly all critical facility structures are located outside of the floodzones, with the possible exception of some wastewater treatment plants, due to the need to locate these at lower elevations.

Severe summer and winter storms: Localized events, such as microbursts or small tornados have the potential to cause significant damage to structures, should they happen to occur in direct proximity to a critical structure. The more wide-spread events, such as hurricanes, tropical storms, blizzards and ice storms, will typically impact the county through severe damage to overhead electric and utility line infrastructure and blockage of roads by debris. When accompanied by flooding, the impacts will be as described above.

Wildfire: The combination of a high degree of development within a county which is still primarily heavily-forested creates the potential for significant damage to critical facilities, homes and commercial property in Cumberland County resulting from wildfires.

The table on the following page lists the type and numbers of critical facilities in each municipality in Cumberland County.

Town/City	Municipal Office	Fire Station	Police Station	Water Treatmen	WWTP – Maior	WWTP – Minor	Library	Schools	Shelters	Hospital/ Clinic	Airport/ Seaport	Dams	Rescue	Armory
Baldwin	1	1	0	0	1	0	1	2	1	0	0	1	0	0
Bridgton	1	1	1	0	0	2	1	3	1	1	0	5	0	0
Brunswick	1	1	1	1	1	4	2	8	5	2	2	1	2	1
Cape Elizabeth	1	2	1	0	0	1	1	3	5	0	1	0	1	0
Casco	1	2	0	0	0	0	1	1	2	0	0	0	2	0
Cumberland	1	4	1	0	0	0	2	5	4	0	0	1	3	0
Falmouth	1	4	1	0	1	1	1	5	3	0	0	1	2	0
Freeport	1	1	1	0	1	0	0	6	2	0	0	0	1	0
Frye Island	1	1	0	0	0	0	0	0	1	0	0	0	0	0
Gorham	1	4	1	0	0	2	4	7	0	0	0	0	1	0
Gray	1	3	1	0	0	0	1	4	0	0	0	1	1	0
Harpswell	1	3	0	0	0	1	1	1	0	0	0	0	3	0
Harrison	1	1	0	0	0	0	1	1	1	0	2	1	0	0
Long Island	1	0	0	0	0	0	0	1	0	0	0	0	1	0
Naples	1	0	0	0	0	0	1	4	4	0	1	2	0	0
New Gloucester	1	2	0	0	0	0	2	3	1	0	0	4	1	0
North Yarmouth	1	1	0	0	0	0	0	0	1	0	0	0	1	0
Portland	1	1	7	0	1	5	8	34	0	3	1	0	0	1
Pownal	1	3	0	0	0	0	0	1	0	0	1	1	0	0
Raymond	1	3	0	0	0	0	1	1	0	0	0	1	3	0
Scarborough	1	6	1	1	1	1	1	8	1	0	0	0	2	0
Sebago	1	3	0	0	0	0	1	1	0	0	0	4	1	0
South Portland	1	7	1	0	1	9	2	15	0	0	0	0	2	1
Standish	1	1	0	0	1	0	2	6	0	0	0	1	1	0
Westbrook	1	3	1	0	1	0	2	8	2	1	0	3	1	1
Windham	1	4	1	0	3	0	1	4	0	0	0	1	1	0
Yarmouth	1	4	1	0	1	0	1	5	2	0	0	2	1	0
TOTAL	27	66	3	1	13	26	38	137	36	7	8	30	31	4

ASSESSING VULNERABILITY: ESTIMATING POTENTIAL LOSSES

Requirement §201.6(c)(2)(ii)(B):	**The plan should describe vulnerability in terms of an estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(i)(A) of this section and a description of the methodology used to prepare the estimate…**

The planning team estimated losses to roads and structures resulting from the three highest priority hazards, flooding, severe summer and winter storms, and wildfire. These estimates were based on data from the Maine Office of GIS, Maine Department of Transportation, and Maine Forest Service. The results of this analysis are found on the following pages. The methodologies are described at the beginning of each hazard section.

Severe Storms, Ice, and Wind

The principal potential damages resulting from severe storms, ice and wind are to utility infrastructure and roadways. The loss estimates are based on a cost of $500/mile to clear road debris or remove snow, a cost of $2,000/mile to repair or replace telephone lines, and a cost of $32,000/mile to repair or replace electric lines. The worst case scenario of total loss of all utility poles and lines was utilized. The cost figures are from the Waldo County, Maine hazard mitigation plan and were supplied by Central Maine Power and Northland Telephone Company.

Municipality	Critical Facility	Type	Length (miles)	Loss estimate
Baldwin	Electrical Power Lines	Electricity	58.88	$1,884,160
	Telephone Lines	Communications	58.88	$117,760
	Paved Road Surfaces	Transportation	43.13	$21,565
	Gravel Road Surfaces	Transportation	15.75	$7,875
Bridgton	Electrical Power Lines	Electricity	107.45	$3,438,400
	Telephone Lines	Communications	107.45	$214,900
	Paved Road Surfaces	Transportation	91.17	$45,585
	Gravel Road Surfaces	Transportation	16.28	$8,140
Brunswick	Electrical Power Lines	Electricity	168.57	$5,394,240
	Telephone Lines	Communications	168.57	$337,140
	Paved Road Surfaces	Transportation	163.24	$81,620
	Gravel Road Surfaces	Transportation	5.33	$2,665
Cape Elizabeth	Electrical Power Lines	Electricity	60.49	$1,935,680
	Telephone Lines	Communications	60.49	$120,980
	Paved Road Surfaces	Transportation	60.35	$30,175
	Gravel Road Surfaces	Transportation	.14	$ 70
Casco	Electrical Power Lines	Electricity	70.36	$2,251,520
	Telephone Lines	Communications	70.36	$140,720
	Paved Road Surfaces	Transportation	47.76	$23,880
	Gravel Road Surfaces	Transportation	22.6	$11,300
Cumberland	Electrical Power Lines	Electricity	99.69	$3,190,080
	Telephone Lines	Communications	99.69	$199,380
	Paved Road Surfaces	Transportation	84.19	$42,095
	Gravel Road Surfaces	Transportation	15.5	$7,750
Falmouth	Electrical Power Lines	Electricity	114.69	$3,670,080
	Telephone Lines	Communications	114.69	$229,380
	Paved Road Surfaces	Transportation	114.52	$57,260
	Gravel Road Surfaces	Transportation	.17	$ 85
Freeport	Electrical Power Lines	Electricity	108.28	$3,464,960
	Telephone Lines	Communications	108.28	$216,560
	Paved Road Surfaces	Transportation	99.76	$49,880
	Gravel Road Surfaces	Transportation	8.52	$4,260
Frye Island	Electrical Power Lines	Electricity	18.66	$597,120
	Telephone Lines	Communications	18.66	$37,320
	Paved Road Surfaces	Transportation	0	$ 0
	Gravel Road Surfaces	Transportation	18.66	$9,330
Gorham	Electrical Power Lines	Electricity	147.57	$4,722,240
	Telephone Lines	Communications	147.57	$295,140
	Paved Road Surfaces	Transportation	139.67	$69,835
	Gravel Road Surfaces	Transportation	7.9	$3,950

Municipality	Critical Facility	Type	Length (miles)	Loss estimate
Gray	Electrical Power Lines	Electricity	110.34	$3,530,880
	Telephone Lines	Communications	110.34	$220,680
	Paved Road Surfaces	Transportation	85.81	$42,905
	Gravel Road Surfaces	Transportation	24.53	$12,265
Harpswell	Electrical Power Lines	Electricity	58.32	$1,866,240
	Telephone Lines	Communications	58.32	$116,640
	Paved Road Surfaces	Transportation	55.63	$27,815
	Gravel Road Surfaces	Transportation	2.69	$1,345
Harrison	Electrical Power Lines	Electricity	65.46	$2,094,720
	Telephone Lines	Communications	65.46	$130,920
	Paved Road Surfaces	Transportation	47.88	$23,940
	Gravel Road Surfaces	Transportation	17.58	$8,790
Long Island	Electrical Power Lines	Electricity	8.64	$276,480
	Telephone Lines	Communications	8.64	$17,280
	Paved Road Surfaces	Transportation	5.54	$2,770
	Gravel Road Surfaces	Transportation	3.1	$1,550
Naples	Electrical Power Lines	Electricity	59.35	$1,899,200
	Telephone Lines	Communications	59.35	$118,700
	Paved Road Surfaces	Transportation	45.26	$22,630
	Gravel Road Surfaces	Transportation	14.09	$7,045
New Gloucester	Electrical Power Lines	Electricity	100.86	$3,227,520
	Telephone Lines	Communications	100.86	$201,720
	Paved Road Surfaces	Transportation	67.22	$33,610
	Gravel Road Surfaces	Transportation	33.64	$16,820
North Yarmouth	Electrical Power Lines	Electricity	40.55	$1,297,600
	Telephone Lines	Communications	40.55	$81,100
	Paved Road Surfaces	Transportation	34.15	$17,075
	Gravel Road Surfaces	Transportation	6.4	$3,200
Portland	Electrical Power Lines	Electricity	263.46	$8,430,720
	Telephone Lines	Communications	263.46	$526,920
	Paved Road Surfaces	Transportation	244.5	$122,250
	Gravel Road Surfaces	Transportation	18.96	$9,480
Pownal	Electrical Power Lines	Electricity	45.36	$1,451,520
	Telephone Lines	Communications	45.36	$90,720
	Paved Road Surfaces	Transportation	29.53	$14,765
	Gravel Road Surfaces	Transportation	15.83	$7,915
Raymond	Electrical Power Lines	Electricity	53.23	$1,703,360
	Telephone Lines	Communications	53.23	$106,460
	Paved Road Surfaces	Transportation	51.99	$25,995
	Gravel Road Surfaces	Transportation	1.24	$ 620
Scarborough	Electrical Power Lines	Electricity	155.53	$4,976,960
	Telephone Lines	Communications	155.53	$311,060
	Paved Road Surfaces	Transportation	153.29	$76,645
	Gravel Road Surfaces	Transportation	2.24	$1,120
Sebago	Electrical Power Lines	Electricity	8.64	$276,480
	Telephone Lines	Communications	8.64	$17,280
	Paved Road Surfaces	Transportation	39.65	$2,770
	Gravel Road Surfaces	Transportation	17.37	$1,550

Municipality	Critical Facility	Type	Length (miles)	Loss estimate
South Portland	Electrical Power Lines	Electricity	136.18	$4,357,760
	Telephone Lines	Communications	136.18	$272,360
	Paved Road Surfaces	Transportation	135.52	$67,760
	Gravel Road Surfaces	Transportation	.66	$ 330
Standish	Electrical Power Lines	Electricity	135.43	$4,333,760
	Telephone Lines	Communications	135.43	$270,860
	Paved Road Surfaces	Transportation	111.91	$55,955
	Gravel Road Surfaces	Transportation	23.52	$11,760
Westbrook	Electrical Power Lines	Electricity	84.1	$2,691,200
	Telephone Lines	Communications	84.1	$168,200
	Paved Road Surfaces	Transportation	83.43	$41,715
	Gravel Road Surfaces	Transportation	.67	$ 335
Windham	Electrical Power Lines	Electricity	144.51	$4,624,320
	Telephone Lines	Communications	144.51	$289,020
	Paved Road Surfaces	Transportation	114.39	$57,195
	Gravel Road Surfaces	Transportation	30.12	$15,060
Yarmouth	Electrical Power Lines	Electricity	73.33	$2,346,560
	Telephone Lines	Communications	73.33	$146,660
	Paved Road Surfaces	Transportation	72.35	$36,175
	Gravel Road Surfaces	Transportation	.98	$ 490

Flooding

In order to estimate potential losses from flooding, all roads lying within the 100-year floodplain were identified and costs to replace these roads were calculated. For municipalities for which data was available indicating whether the road was paved or gravel, cost estimates of $250,000/mile and $130,000/mile respectively were used as replacement costs. For municipalities for which no data was available for road surface, an estimate of $200,000/mile was used. A summary of potential losses is shown below. The full set of data is shown in the Appendix.

Municipality	Road	Length (feet)	Damage cost
Baldwin	TOTAL	4,656	$176,351
Bridgton	TOTAL	12,599	$477,233
Brunswick	TOTAL	3,196	$128,769
Cape Elizabeth	TOTAL	2,846	$107,812
Casco	TOTAL	8,675	$328,580
Cumberland	TOTAL	2,179	$82,557
Falmouth	TOTAL	3,637	$150,451
Freeport	TOTAL	1,518	$113,945
Frye Island	TOTAL	1,344	$50,903
Gorham	TOTAL	5,483	$223,771
Gray	TOTAL	8,168	$309,401
Harpswell	TOTAL	81,643	$3,092,545
Harrison	TOTAL	2,976	$112,719
Long Island	TOTAL	1,284	$48,627
Naples	TOTAL	11,103	$420,585
New Gloucester	TOTAL	4,472	$169,396
North Yarmouth	TOTAL	1,388	$52,582
Portland	TOTAL	9,715	$391,227
Pownal	TOTAL	1,524	$57,737
Raymond	TOTAL	4,684	$177,438
Scarborough	TOTAL	12,033	$481,108
Sebago	TOTAL	5,769	$218,505
South Portland	TOTAL	1,196	$49,833
Standish	TOTAL	18,740	$709,857
Westbrook	TOTAL	4,080	$154,551
Windham	TOTAL	16,728	$633,653
Yarmouth	TOTAL	2,869	$119,542

WILDFIRE

The damage losses that are expected due to wildfire in Cumberland County are damage and/or destruction of structures within the wildland-urban interface. The damage cost estimates are based on total municipal assessment figures, adjusted for community size (fire-fighting capacity), fire hazard land cover values (from Maine Forest Service) and number of fires in the past 7 years (from Maine Forest Service).

Municipality	# of fires in 7 years	# of fires - %	Community size	Community size - %	Land cover %	Total % rating	Damage Cost
Baldwin	4	5%	Rural	25%	10%	40%	$ 15,833,822
Bridgton	2	5%	Rural	25%	10%	40%	$ 102,711,045
Brunswick	4	5%	Suburban	15%	10%	30%	$ 251,303,082
Cape Elizabeth	9	5%	Suburban	15%	10%	30%	$ 160,328,241
Casco	4	5%	Rural	25%	10%	40%	$ 50,979,520
Cumberland	0	5%	Suburban	15%	10%	30%	$ 122,721,150
Falmouth	0	5%	Suburban	15%	10%	30%	$ 199,726,680
Freeport	4	5%	Suburban	15%	10%	30%	$ 145,264,350
Frye Island	0	5%	Rural	25%	10%	40%	$ 12,637,733
Gorham	1	5%	Suburban	15%	10%	30%	$ 128,955,930
Gray	12	15%	Suburban	15%	10%	40%	$ 112,100,319
Harpswell	12	15%	Rural	25%	10%	50%	$ 160,927,437
Harrison	4	5%	Rural	25%	10%	40%	$ 45,558,622
Long Island	1	5%	Rural	25%	10%	40%	$ 7,909,504
Naples	8	5%	Rural	25%	10%	40%	$ 79,865,687
New Gloucester	20	25%	Rural	25%	10%	60%	$ 93,025,175
No. Yarmouth	6	5%	Rural	25%	10%	40%	$ 57,389,756
Portland	4	5%	Urban	5%	10%	20%	$ 582,217,115
Pownal	4	5%	Rural	25%	10%	40%	$ 36,112,240
Raymond	8	5%	Rural	25%	10%	40%	$ 87,952,801
Scarborough	0	5%	Suburban	15%	10%	30%	$ 271,598,160
Sebago	4	5%	Rural	25%	10%	40%	$ 36,283,821
South Portland	0	5%	Urban	5%	10%	20%	$ 251,756,120
Standish	12	15%	Rural	25%	10%	50%	$ 171,041,501
Westbrook	15	15%	Suburban	15%	10%	30%	$ 171,853,560
Windham	34	35%	Suburban	15%	10%	60%	$ 368,223,979
Yarmouth	1	5%	Suburban	15%	10%	30%	$ 236,515,955
TOTAL							$ 3,960,793,305

ASSESSING VULNERABILITY: DEVELOPMENT TRENDS

Requirement §201.6(c)(2)(ii)(C):	**The plan should describe vulnerability in terms of providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land uses decisions.**

Cumberland County is Maine' s most populous county. Land use within the county ranges from densely populated urbanized areas to suburban residential areas to farm and forestland. The county contains Portland which is Maine's most populous city. All of the communities in the county have enacted comprehensive plans, in compliance with Maine statute. All communities are participants in the NFIP program and all communities have floodplain ordinances to regulate development within flood zones. All communities except four have enacted zoning ordinances.

Overall population growth in the county between 1990 and 2000 was almost 10%. However, some communities experienced growth rates of up to 35% or during this period, while other communities experienced practically no growth at all. It is worth noting that no communities in the county experienced negative growth. A clear trend in the county is that nearly all of the residential growth is occurring in the suburban and rural communities, while nearly no residential growth is occurring in the major cities. The county's four most populous communities, Portland, South Portland, Brunswick and Westbrook, had growth rates of 0.0%. 0.7%, 1.3% and 0.1% respectively during this period. Seventeen communities had growth rates over 12% and four communities had growth rates over 25%.

Town	Population 1990	Population 2000	Net Change, 1990-2000	Growth Rate, 1990-2000
Scarborough	12,518	16,970	4,452	35.6%
Falmouth	7,610	10,310	2,700	35.5%
North Yarmouth	2,429	3,210	781	32.2%
Raymond	3,311	4,299	988	29.8%
Cumberland	5,836	7,159	1,323	22.7%
New Gloucester	3,916	4,803	887	22.7%
Standish	7,678	9,285	1,607	20.9%
Gorham	11,856	14,141	2,285	19.3%
Harrison	1,951	2,315	364	18.7%
Pownal	1,262	1,491	229	18.1%
Gray	5,904	6,820	916	15.5%
Casco	3,018	3,469	451	14.9%
Naples	2,860	3,274	414	14.5%
Windham	13,020	14,904	1,884	14.5%
Sebago	1,259	1,433	174	13.8%
Bridgton	4,307	4,883	576	13.4%
Freeport	6,905	7,800	895	13.0%
Yarmouth	7,862	8,360	498	6.3%
Baldwin	1,219	1,290	71	5.8%
Harpswell	5,012	5,239	227	4.5%
Cape Elizabeth	8,854	9,068	214	2.4%
Brunswick	20,906	21,172	266	1.3%
South Portland	23,163	23,324	161	0.7%
Long Island	201	202	1	0.5%
Westbrook	16,121	16,142	21	0.1%
Frye Island	0	0	0	0.0%
Portland	64,157	64,249	92	0.0%
TOTAL	243,135	265,612	22,477	9.2%

MULTI-JURISDICTIONAL RISK ASSESSMENT

Requirement §201.6(c)(2)(iii):	**For multi-jurisdictional plans, the risk assessment section must assess each jurisdiction's risks where they vary from the risks facing the entire planning area.**

The following are hazards for which all areas of the county are subject to the same general risk:

- Severe summer and winter storms
- Riverine Flooding
- Wildfires (with some limited variance among the communities, particularly a lower degree of risk within the immediate Greater Portland area).
- Earthquake

The following hazards primarily affect the coastal communities of Scarborough, Cape Elizabeth, South Portland, Portland, Falmouth, Cumberland, Yarmouth, Freeport, Brunswick, and Harpswell:

- Coastal flooding
- Coastal erosion

Drought poses a varying risk to the communities within the county. The greatest variance in impact is determined by the nature of the water supply for the community. Those communities which are served by the Portland Water District, which utilizes Sebago lake as its primary water source, are at a fairly low degree of risk to drinking water quantity and quality resulting from drought. Other communities which utilize groundwater wells or surface river or lake supplies are at a higher degree of risk. Those communities which have a high percentage of the population on private wells are at the greatest degree of risk.

HAZARD MITIGATION GOALS

Requirement §201.6(c)(3)(i):	[The hazard mitigation strategy shall include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

Goal #1: Reduce damage, injury and loss of life resulting from natural hazards in general in Cumberland County.

Objective 1.1: Prevention – develop or improve public policies that influence the way land and buildings are developed and built so as to minimize the risks from hazard events.

Objective 1.2: Property protection – make modifications to existing buildings and structures to protect them from hazards, or remove them from the hazard area.

Objective 1.3: Public education and awareness – inform residents about hazards and the measures necessary to avoid potential damage and injury.

Objective 1.4: Natural resource protection – implement actions to protect or restore the functions of natural systems.

Objective 1.5: Emergency services – implement or improve policies, procedures and equipment to protect people and property during and after a hazard event.

Objective 1.6: Structural projects – protect people and property by installing and/or improving structures to control hazards.

Goal #2: Reduce damage, injury and loss of life resulting from flooding in Cumberland County.

Objective 2.1: Prevention – develop or improve public policies that influence the way land and buildings are developed and built so as to minimize the risks from flooding.

Objective 2.2: Property protection – make modifications to existing buildings and structures to protect them from flooding, or remove them from the floodzone.

Objective 2.3: Public education and awareness – inform residents about flooding and the measures necessary to avoid potential damage and injury.

Objective 2.4: Emergency services – implement or improve policies, procedures and equipment to protect people and property during and after a flooding event.

Objective 2.5: Structural projects – protect people and property by installing and/or improving structures to control flooding.

Goal #3: Reduce damage, injury and loss of life resulting from severe summer and winter storms in Cumberland County.

Objective 3.1: Prevention – develop or improve public policies that influence the way land and buildings are developed and built so as to minimize the risks from severe summer and winter storms.

Objective 3.2: Property protection – make modifications to existing buildings and structures to protect them from severe summer and winter storms.

Objective 3.3: Public education and awareness – inform residents about severe summer and winter storms and the measures necessary to avoid potential damage and injury.

Objective 3.4: Emergency services – implement or improve policies, procedures and equipment to protect people and property during and after a severe summer or winter storm.

Goal #4: Reduce damage, injury and loss of life resulting from wildfires in Cumberland County.

Objective 4.1: Prevention – develop or improve public policies that influence the way land and buildings are developed and built so as to minimize the risks from wildfires.

Objective 4.2: Property protection – make modifications to existing buildings and structures to protect them from wildfires.

Objective 4.3: Public education and awareness – inform residents about wildfires and the measures necessary to avoid potential damage and injury.

Objective 4.4: Emergency services – implement or improve policies, procedures and equipment to protect people and property during and after a wildfire.

IDENTIFICATION AND ANALYSIS OF MITIGATION MEASURES

Requirement §201.6(c)(3)(ii):	**[The mitigation strategy shall include 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.**

Listed below are the measures that were identified to achieve the goals outlined above. The full set of measures considered is shown in the Appendix. In addition to measures for the top three priority risks of flooding, severe storms and wildfires, measures were also identified by the communities for earthquakes and dam failure.

ALL HAZARDS

Objective #1.1. - PREVENTION:

Measure 1.1.1. Evaluate building codes for disaster resistance.

Measure 1.1.2. Establish "hazard districts" to provide a stable funding source for hazard mitigation projects and activities.

Measure 1.1.3. Perform studies for risk to specific critical facilities.

Objective #1.2. - PROPERTY PROTECTION

Measure 1.2.1. Improve structural characteristics of critical facilities.

Objective #1.3. - EDUCATION

Measure 1.3.1. Adult education programs and public workshops.

Measure 1.3.2. Demonstration projects of disaster-resistant construction methods.

Measure 1.3.3. Real estate disclosures of susceptibility to hazards.

Measure 1.3.4. School programs.

Objective #1.4. – NATURAL RESOURCE PROTECTION

Measure 1.4.1. Stream corridor restoration.

Measure 1.4.2. Watershed management.

Measure 1.4.3. Wetland restoration and preservation.

Measure 1.4.4. Erosion and sediment control.

Measure 1.4.5. Forest and vegetation management.

Objective #1.5. – EMERGENCY SERVICES

Measure 1.5.1. Communications systems to encourage residents without utilities or in hazardous locations (floodzones, high wind areas) to report to shelters.

Measure 1.5.2. Develop procedures and provide training to identify, locate and communicate to non-English speaking populations.

Measure 1.5.3. Develop procedures and provide training to identify, locate and communicate to special needs populations.

Measure 1.5.4. Develop/update requirements that critical facilities must have backup power generation.

Measure 1.5.5. Improve emergency response programs.

Measure 1.5.6. Access to shelters for disaster assistance.

Measure 1.5.7. Provide backup power capacity to all critical facilities and utilities.

Measure 1.5.8. Upgrade emergency response equipment.

Measure 1.5.9. Develop evacuation plans.

Objective #1.6. - STRUCTURAL PROJECTS

Measure 1.6.1. Construct safe rooms for critical functions.

FLOODING

Goal: Reduce property damage, injury, loss of life and interruptions to economic and social activity resulting from flooding events.

Objective #2.1. – PREVENTION

Measure 2.1.1. Capital Improvement Plan prioritization should consider locations that suffer repetitive losses due to natural hazards.

Measure 2.1.2. In comprehensive plan development and updating, recognize the dangers of floodplain development and plan compatible uses in such areas.

Measure 2.1.3. Develop stormwater management master plans for growth zones.

Measure 2.1.4. Encourage river/stream corridor protection..

Measure 2.1.5. Implement open space preservation program.

Measure 2.1.6. Invest in GIS hardware, software, and training to allow municipality to better manage flooding hazards.

Measure 2.1.7. Participate in NFIP's community rating system/improve current rating.

Measure 2.1.8. Implement building codes for construction in floodplain.
Measure 2.1.9. Stormwater management regulations for new development and redevelopment.

Measure 2.1.10. Implement more restrictive floodplain ordinance.

Measure 2.1.11. Require 50-year design storm for municipal or private conveyance systems.

Measure 2.1.12. Procedures to consider impacts on upstream and downstream flooding when replacing culverts, bridges, drainage systems, and size replacement accordingly.

Measure 2.1.13. Flood mitigation grants or loans to homeowners.

Measure 2.1.14. Review Emergency Action Plans for any dams with such plans on an annual basis to ensure that contact info is still accurate.

Objective #2.2. – PROPERTY PROTECTION

Measure 2.2.1. Strengthen operations and maintenance procedures for storm drain systems.

Objective #2.3. – EDUCATION

Measure 2.3.1. Provide information (particularly to property owners in flood zones) on the National Flood Insurance Program, floodproofing, basement protection techniques, and post-flood clean-up.

Measure 2.3.2. Raise awareness of the dangers of driving through flooded areas.

Measure 2.3.3. Educate the public to stay away from coastal wave-action areas and flooded riverbanks.

Objective #2.4. – EMERGENCY SERVICES

Measure 2.4.1. Implement a flood warning system throughout the county similar to reverse-911 system.

Measure 2.4.2. Develop a barricade plan to block flooded roadways in order to prevent crossing by drivers and acquire necessary barricade equipment and supplies.

Measure 2.4.3. Develop an emergency action plan to allow movement of emergency vehicles for events in which trains are stopped blocking streets and intersections.

Objective #2.5. - STRUCTURAL PROJECTS

Measure 2.5.1. Improve programs for DOT upgrading of flood-prone bridges, culverts and roadways.

Measure 2.5.2. Elevate roadways subject to repeated flooding.

Measure 2.5.3. Undertake corrective measures to public infrastructure suffering repeated damage from localized flooding.

Measure 2.5.4. Increase conveyance system capacity.

Measure 2.5.5. Ensure that sanitary sewer pump stations and facilities and drinking water systems are flood proofed.

SEVERE STORMS

Objective #3.1. - PREVENTION

Measure 3.1.1. Develop boat mooring requirements and pre-storm procedures.

Measure 3.1.2. Implement hurricane surge inundation ordinance.

Measure 3.1.3. Ordinances or other mechanisms to direct development away from vulnerable areas (coastal bluffs, storm surge zones)

Measure 3.1.4. Upgrade and/or administer regulations to increase areas where underground utilities are required.

Objective #3.2. - PROPERTY PROTECTION

Measure 3.2.1. Selection by municipal departments of tree types less susceptible to blowdown and breakage

Measure 3.2.2. Increased removal of limbs which can impact service lines.

Measure 3.2.3. Training program for public works employees to recognize tree maintenance needs and notify appropriate responsible party.

Objective #3.3. - EDUCATION

Measure 3.3.1. Educate the public about backup power options (generator, solar, wind, hydro) and non-electrical heating options and carbon monoxide poisoning from heating sources.

Measure 3.3.2. Educate the public about heart stress when working in winter conditions and hypothermia.

Measure 3.3.3. Educate the public about keeping walkways, egress routes and utility access cleared of snow.

Measure 3.3.4. Educate the public about preventing ice dams on roofs and removing snow loads from roofs.

Measure 3.3.5. Educate the public about preventive methods, including cutting large trees from around homes, driveways and utilities and freeze-proofing water pipes.

Measure 3.3.6. Educate the public about winter driving dangers.

Measure 3.3.7. Educate the public about Insurance availability for severe storm damages.

Objective #3.4. – EMERGENCY SERVICES

Measure 3.4.1. Develop alternate transportation means for emergency responders.

Measure 3.4.2. Train and equip a quick response a Road Debris Clearance Team from public works, fire department, and volunteers.

Measure 3.4.3. Develop a municipal road snow and ice removal operations plan including a prioritization of roads to be cleared.

WILDFIRE

Objective #4.1. - PREVENTION

Measure 4.1.1. Develop land use ordinances requiring buffers between structures and forest species susceptible to drought and/or highly flammable.

Measure 4.1.2. Encourage or require slash reduction through good forestry practices.

Measure 4.1.3. Complete a detailed GIS study of fuel models, topography, fire weather and structures.

Measure 4.1.4. Train all firefighters in wildland firefighting techniques and safety procedures.

Measure 4.1.5. Maintain firefighting access roads.

Objective #4.2. - PROPERTY PROTECTION

Measure 4.2.1. Implement wildfire property protection measures for all critical facilities (buffers, fireproof roofing and siding, etc.).

Objective #4.3. - EDUCATION

Measure 4.3.1. Educate the public on the dangers of wildfires.

Measure 4.3.2. Educate property owners on tactics to protect their structures from wildfires.

Objective #4.4. - EMERGENCY SERVICES

Measure 4.4.1. Develop warning and evacuation plans.

Requirement §201.6(c)(3)(iii):	**[The mitigation strategy shall include] an action plan describing how the actions identified in section (c)(3)(ii) will be prioritized, implemented, and administered by the local jurisdictions. 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.**

The prioritization criteria and scoring methodology are shown on the following page. The methodology is based on the methodology used for the Waldo County, Maine hazard mitigation plan, with some modifications made. Each mitigation measure was assessed for the eight criteria shown on the following page and assigned a score for each criterion. For each criterion a higher score indicates a higher level of priority. For example, a measure which benefits 76% - 100% of a jurisdiction receives 4 points under the criterion "percent of jurisdiction benefited" while a measure which benefits less than 5% of the jurisdiction receives 0 points. The sum of the points for each measure was totaled and the list of measures was then ranked by total number of points.

Mitigation Measure scoring system

	Points				
Criteria	4	3	2	1	0
1. Percentage of Jurisdiction Benefited	76 to 100% (or protects critical facilities)	51 to 75%	26 to 50%	6 to 25%	Less than 5%
2. Multi-jurisdictional	Directly benefits multiple jurisdictions	Indirectly benefits multiple jurisdictions	--	--	Only benefits individual municipalities
3. Implementation Cost	Minimal	Less than $50,000	Between $50,000 and $100,000	Between $100,000 and $1,000,000	Over $1,000,000
4. Benefit	Over $1,000,000	Between $100,000 and $1,000,000	Between $50,000 and $100,000	Less than $50,000	Minimal
5. Benefit to Cost ratio	More than 5.0	4.0 to 4.9	3.0 to 3.9	2.0 to 2.9	1.0 to 1.9
6. Probability of Community Acceptance	Likely to be endorsed by community	Benefits only those directly affected and doesn't adversely affect others	May be moderately opposed by special interest groups or small portion of the community	May be strongly opposed by special interest groups or significant portion of the community	May be strongly opposed by most of community
7. Feasibility of Implementation	Relatively easy to put in place within a year	Not anticipated to be difficult	Somewhat difficult due to complex requirements	Difficult due to significantly complex requirements	Very difficult due to extremely complex requirements
8. Consistency with other Plans and Programs	Measure is included in other plans or programs	--	--	--	Measure is not included in other plans or programs

Mitigation Measure Prioritization

ALL HAZARDS

	Criteria										
Measure	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	Score	Rank	Notes
1.1.1	4	3	3	4	4	2	1	1	22	14	
1.1.2	0	0	2	3	4	2	1	1	13	22	
1.1.3	4	0	2	3	4	4	3	4	24	10	
1.2.1	4	0	1	3	0	4	2	4	18	20	
1.3.1	4	4	3	3	4	4	4	1	27	2	
1.3.2	1	4	2	3	4	4	2	1	21	17	
1.3.3	3	4	3	3	4	3	2	1	23	11	
1.3.4	4	4	3	3	4	4	4	1	27	3	
1.4.1	1	4	1	3	0	3	2	4	18	21	
1.4.2	4	4	2	3	4	4	2	4	27	4	
1.4.3	2	4	1	3	0	3	2	4	19	18	
1.4.4	4	4	2	3	4	4	2	4	27	5	
1.4.5	4	4	2	3	4	3	2	1	23	12	
1.5.1	3	3	2	3	4	4	2	1	22	15	S/T*
1.5.2	0	3	3	3	4	4	1	4	22	16	S/T*
1.5.3	0	3	3	3	4	4	2	4	23	13	S/T*
1.5.4	4	3	3	3	4	4	3	1	25	6	
1.5.5	4	3	2	3	4	3	2	4	25	7	S/T*
1.5.6	4	3	3	3	4	4	3	1	25	8	
1.5.7	4	3	0	4	0	4	3	1	19	19	
1.5.8	4	3	2	3	4	3	2	4	25	9	
1.5.9	4	4	3	3	4	4	3	4	29	1	safety
1.6.1	1	0	1	3	0	4	1	1	11	23	

*S/T = safety and training

FLOODING

	Criteria										
Measure	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	Score	Rank	Notes
2.1.1	4	0	4	4	4	3	4	4	27	4	
2.1.2	1	0	4	3	4	4	4	4	24	13	
2.1.3	2	0	2	3	4	4	1	4	20	18	
2.1.4	2	4	3	3	4	4	3	4	27	5	
2.1.5	4	4	0	4	1	3	2	4	22	16	
2.1.6	4	4	1	3	2	4	1	4	23	14	
2.1.7	0	0	2	3	2	4	3	4	18	21	
2.1.8	1	0	3	3	4	4	2	1	18	22	
2.1.9	4	4	3	3	4	3	2	4	27	6	
2.1.10	1	0	4	3	4	3	4	4	23	15	
2.1.11	4	0	4	3	4	4	4	4	27	7	
2.1.12	4	4	2	4	4	4	1	4	27	8	
2.1.13	0	0	1	3	0	4	2	1	11	26	
2.1.14	2	4	4	3	4	4	4	4	29	3	safety
2.2.1	4	0	3	3	4	4	4	4	26	9	
2.3.1	0	0	3	3	4	4	4	1	19	19	
2.3.2	4	4	3	2	1	4	4	4	26	10	Safety
2.3.3	4	4	3	1	1	4	4	4	25	12	Safety

2.4.1	4	4	0	3	0	4	0	1	16	23	Safety
2.4.2	4	0	3	3	4	4	4	4	26	11	Safety
2.4.3	4	4	3	3	4	4	3	4	29	1	
2.5.1	4	4	4	3	4	4	2	4	29	2	
2.5.2	3	3	0	3	0	4	1	1	15	24	
2.5.3	4	4	0	4	0	4	2	1	19	20	
2.5.4	2	0	1	4	0	4	2	1	14	25	
2.5.5	4	4	1	3	0	4	2	4	22	17	safety

SEVERE SUMMER AND WINTER STORMS

Criteria

Measure	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	Score	Rank	Notes
3.1.1	0	0	4	3	4	4	4	1	20	13	
3.1.2	1	0	4	3	4	3	3	1	19	15	
3.1.3	1	0	4	3	4	3	3	1	19	16	
3.1.4	2	0	4	3	4	2	3	1	19	17	
3.2.1	4	0	4	3	4	4	4	1	24	11	
3.2.2	4	0	3	3	4	4	4	1	23	12	
3.2.3	4	0	4	3	4	4	4	4	27	10	Training
3.3.1	4	4	3	3	4	4	4	4	30	2	Safety
3.3.2	4	4	3	3	4	4	4	4	30	3	safety
3.3.3	4	4	3	3	4	4	4	4	30	4	safety
3.3.4	4	4	3	3	4	4	4	4	30	5	safety
3.3.5	4	4	3	3	4	4	4	4	30	6	safety
3.3.6	4	4	3	3	4	4	4	4	30	7	safety
3.3.7	4	4	3	3	4	4	4	4	30	8	safety
3.4.1	4	4	1	3	0	4	2	1	19	14	safety
3.4.2	4	4	3	3	4	4	4	1	27	9	safety
3.4.3	4	4	4	3	4	4	4	4	31	1	safety

WILDFIRE

Criteria

Measure	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	Score	Rank	Notes
4.1.1	1	0	4	3	4	4	4	1	21	7	
4.1.2	1	0	4	3	4	4	4	1	21	8	
4.1.3	2	4	1	3	0	4	1	1	16	9	
4.1.4	2	4	3	3	4	4	4	4	28	3	
4.1.5	2	4	2	3	4	4	3	4	26	4	
4.2.1	4	4	1	3	0	4	2	4	22	6	
4.3.1	4	4	3	3	4	4	4	4	30	1	
4.3.2	2	4	3	3	4	4	4	4	28	2	
4.4.1	2	4	2	3	4	4	2	1	22	5	safety

The following tables list the mitigation measures in order of priority for each hazard type:

ALL HAZARDS

Rank	Measure
1.	Measure 1.5.9 Develop evacuation plans.
2.	Measure 1.3.1. Adult education programs and public workshops.
3.	Measure 1.3.4. School programs.
4.	Measure 1.4.2. Watershed management.
5.	Measure 1.4.4. Erosion and sediment control.
6.	Measure 1.5.4. Develop/update requirements that critical facilities must have backup power generation.
7.	Measure 1.5.5. Improve emergency response programs.
8.	Measure 1.5.6. Access to shelters for disaster assistance.
9.	Measure 1.5.8. Upgrade emergency response equipment.
10.	Measure 1.1.3. Studies for risk to specific critical facilities.
11.	Measure 1.3.3. Real estate disclosures of susceptibility to hazards.
12.	Measure 1.4.5. Forest and vegetation management.
13.	Measure 1.5.3. Develop procedures and provide training to identify, locate and communicate to special needs populations.
14.	Measure 1.1.1. Evaluate building codes for disaster resistance.
15.	Measure 1.5.1. Communications systems to encourage residents without utilities or in hazardous locations (floodzones, high wind areas) to report to shelters.
16.	Measure 1.5.2. Develop procedures and provide training to identify, locate and communicate to non-English speaking populations.
17.	Measure 1.3.2. Demonstration projects of disaster-resistant construction methods.
18.	Measure 1.4.3. Wetland restoration and preservation.
19.	Measure 1.5.7. Provide backup power capacity to all critical facilities and utilities.
20.	Measure 1.2.1. Improve structural characteristics of critical facilities.
21.	Measure 1.4.1. Stream corridor restoration.
22.	Measure 1.1.2. Establish "hazard districts" to provide a stable funding source for hazard mitigation projects and activities.
23.	Measure 1.6.1. Construct safe rooms for critical functions.

FLOODING

RANK	MEASURE
1.	Measure 2.4.3. Develop an emergency action plan to allow movement of emergency vehicles for events in which trains are stopped blocking streets and intersections.
2.	Measure 2.5.1. Improve programs for DOT upgrading of flood-prone bridges, culverts and roadways.
3.	Measure 2.1.14. Review Emergency Action Plans for any dams with such plans on an annual basis to ensure that contact info is still accurate.
4.	Measure 2.1.1. Capital Improvement Plan prioritization should consider locations that suffer repetitive losses due to natural hazards.
5.	Measure 2.1.4. Encourage river/stream corridor protection..
6.	Measure 2.1.9. Stormwater management regulations for new development and redevelopment.
7.	Measure 2.1.11. Require 50-year design storm for municipal or private conveyance systems.
8.	Measure 2.1.12. Procedures to consider impacts on upstream and downstream flooding when replacing culverts, bridges, drainage systems, and size replacement accordingly.

RANK	MEASURE
9.	Measure 2.2.1. Strengthen operations and maintenance procedures for storm drain systems.
10.	Measure 2.3.2. Raise awareness of the dangers of driving through flooded areas.
11.	Measure 2.4.2. Develop a barricade plan to block flooded roadways in order to prevent crossing by drivers and acquire necessary barricade equipment and supplies.
12.	Measure 2.3.3. Educate the public to stay away from flooded riverbanks and coastal wave-action areas.
13.	Measure 2.1.2. In comprehensive plan development and updating, recognize the dangers of floodplain development and plan compatible uses in such areas.
14.	Measure 2.1.6. Invest in GIS hardware, software, and training to allow municipality to better manage flooding hazards.
15.	Measure 2.1.10. Implement more restrictive floodplain ordinance.
16.	Measure 2.1.5. Implement open space preservation program.
17.	Measure 2.5.5. Ensure that sanitary sewer pump stations and facilities and drinking water systems are flood proofed.
18.	Measure 2.1.3. Develop stormwater management master plans for growth zones.
19.	Measure 2.3.1. Provide information (particularly to property owners in flood zones) on the National Flood Insurance Program, floodproofing, basement protection techniques, and post-flood clean-up.
20.	Measure 2.5.3. Undertake corrective measures to public infrastructure suffering repeated damage from localized flooding.
21.	Measure 2.1.7. Participate in NFIP's community rating system/improve current rating.
22.	Measure 2.1.8. Implement building codes for construction in floodplain.
23.	Measure 2.4.1. Implement a flood warning system throughout the county similar to reverse-911 system.
24.	Measure 2.5.2. Elevate roadways.
25.	Measure 2.5.4. Increase conveyance system capacity.
26.	Measure 2.1.13. Flood mitigation grants or loans to homeowners.

SEVERE SUMMER AND WINTER STORMS

RANK	MEASURE
1.	Measure 3.4.3. Develop a municipal road snow and ice removal operations plan including a prioritization of roads to be cleared.
2.	Measure 3.3.1. Educate the public about backup power options (generator, solar, wind, hydro) and non-electrical heating options and carbon monoxide poisoning from heating sources.
3.	Measure 3.3.2. Educate the public about heart stress when working in winter conditions and hypothermia.
4.	Measure 3.3.3. Educate the public about keeping walkways, egress routes and utility access cleared of snow.
5.	Measure 3.3.4. Educate the public about preventing ice dams on roofs and removing snow loads from roofs.
6.	Measure 3.3.5. Educate the public about preventive methods, including cutting large trees from around homes, driveways and utilities and freeze-proofing water pipes.
7.	Measure 3.3.6. Educate the public about winter driving dangers.
8.	Measure 3.3.7. Educate the public about Insurance availability for severe storm damages.
9.	Measure 3.2.3. Training program for public works employees to recognize tree maintenance needs and notify appropriate responsible party.
10.	Measure 3.4.2. Train and equip a quick response a Road Debris Clearance Team from public works, fire department, and volunteers.
11.	Measure 3.2.1. Selection by municipal departments of tree types less susceptible to

RANK	MEASURE
	blowdown and breakage
12.	Measure 3.2.2. Increased removal of limbs which can impact service lines.
13.	Measure 3.1.1. Develop boat mooring requirements and pre-storm procedures.
14.	Measure 3.1.2. Implement hurricane surge inundation ordinance.
15.	Measure 3.1.3. Ordinances or other mechanisms to direct development away from vulnerable areas (coastal bluffs, storm surge zones)
16.	Measure 3.1.4. Upgrade and/or administer regulations to increase areas where underground utilities are required.
17.	Measure 3.4.1. Develop alternate transportation means for emergency responders.

WILDFIRE

RANK	MEASURE
1.	Measure 4.3.1. Educate the public on the dangers of wildfires.
2.	Measure 4.1.4. Train all firefighters in wildland firefighting techniques and safety procedures.
3.	Measure 4.3.2. Educate property owners on tactics to protect their structures from wildfires.
4.	Measure 4.1.5. Maintain firefighting access roads.
5.	Measure 4.2.1. Implement wildfire property protection measures for all critical facilities (buffers, fireproof roofing and siding, etc.).
6.	Measure 4.4.1. Develop warning and evacuation plans.
7.	Measure 4.1.1. Develop land use ordinances requiring buffers between structures and forest species susceptible to drought and/or highly flammable.
8.	Measure 4.1.2. Encourage or require slash reduction through good forestry practices.
9.	Measure 4.1.3. Complete a detailed GIS study of fuel models, topography, fire weather and structures.

Requirement §201.6(c)(3)(iv):	**For multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.**

The Cumberland County Hazard Mitigation Plan contains a variety of mitigation measures. Some of these are most appropriately and efficiently implemented or coordinated by the Cumberland County Emergency Management Agency, while others are more appropriate to be initiated and implemented at the municipal level, either by the local Emergency Management Agency or by the governing body or staff of the municipality. The following tables list the mitigation measures identified in this plan along with the appropriate party responsible for the implementation of that measure. Following these tables are shown specific mitigation projects identified by municipalities within the county to meet the Property Protection and Structural Projects objectives.

The measures in the tables below are listed in order of priority as determined in the previous section.

HAZARD – ALL HAZARDS		RESPONSIBLE PARTY		
MEASURE	Timeframe	CCEMA	Local EMA's	Local Officials
Measure 1.5.9. Develop evacuation plan.	3-5 years	x	x	
Measure 1.3.1. Adult education programs and public workshops.	1-3 years	x	x	x
Measure 1.3.4. School programs.	1-3 years	x	x	
Measure 1.4.2. Watershed management.	3-5 years	x		x
Measure 1.4.4. Erosion and sediment control.	Ongoing			x
Measure 1.5.4. Develop/update requirements that critical facilities must have backup power generation.	2-3 years		x	x
Measure 1.5.5. Improve emergency response programs.	Ongoing	x	x	x
Measure 1.5.6. Access to shelters for disaster assistance.	1-5 years	x	x	
Measure 1.5.8. Upgrade emergency response equipment.	Ongoing		x	
Measure 1.1.3. Studies for risk to specific critical facilities.	3-5 years		x	
Measure 1.3.3. Real estate disclosures of susceptibility to hazards.	3-5 years	x		
Measure 1.4.5. Forest and vegetation management.	Ongoing	x	x	x
Measure 1.5.3. Develop procedures and provide training to identify, locate and communicate to special needs populations.	1-3 years	x	x	
Measure 1.1.1. Evaluate building codes for disaster resistance.	3-5 years		x	x
Measure 1.5.1. Communications systems to encourage residents without utilities or in hazardous locations (floodzones, high wind areas) to report to shelters.	2-4 years	x	x	

HAZARD – ALL HAZARDS (CONTINUED)		RESPONSIBLE PARTY		
MEASURE	Timeframe	CCEMA	MEASURE	Local Officials
Measure 1.5.2. Develop procedures and provide training to identify, locate and communicate to non-English speaking populations.	1-3 years	x	x	
Measure 1.3.2. Demonstration projects of disaster-resistant construction methods.	3-5 years	x		
Measure 1.4.3. Wetland restoration and preservation.	Ongoing	x		x
Measure 1.5.7. Provide backup power capacity to all critical facilities and utilities.	3-5 years		x	x
Measure 1.2.1. Improve structural characteristics of critical facilities.	Ongoing		x	x
Measure 1.4.1. Stream corridor restoration.	Ongoing	x		x
Measure 1.1.2. Establish "hazard districts" to provide a stable funding source for hazard mitigation projects and activities.	5-10 years	x		x
Measure 1.6.1. Construct safe rooms for critical functions.	3-5 years		x	x

HAZARD – FLOODING		RESPONSIBLE PARTY		
MEASURE	Timeframe	CCEMA	Local EMA's	Local Officials
Measure 2.4.3. Develop an emergency action plan to allow movement of emergency vehicles for events in which trains are stopped blocking streets and intersections.	3-5 years	x	x	
Measure 2.5.1. Improve programs for DOT upgrading of flood-prone bridges, culverts and roadways.	3-5 years	x	x	x
Measure 2.1.14. Review Emergency Action Plans for any dams with such plans on an annual basis to ensure that contact info is still accurate.	1 year	x	x	
Measure 2.1.1. Capital Improvement Plan prioritization should consider locations that suffer repetitive losses due to natural hazards.	2-4 years			x
Measure 2.1.4. Encourage river/stream corridor protection..	Ongoing			x
Measure 2.1.9. Stormwater management regulations for new development and redevelopment.	Ongoing			x
Measure 2.1.11. Require 50-year design storm for municipal or private conveyance systems.	2-4 years			x
Measure 2.1.12. Procedures to consider impacts on upstream and downstream flooding when replacing culverts, bridges, drainage systems, and size replacement accordingly.	2-4 years	x		x
Measure 2.2.1. Strengthen operations and maintenance procedures for storm drain systems.	1-5 years			x

HAZARD – FLOODING		RESPONSIBLE PARTY		
MEASURE	Timeframe	CCEMA	Local EMA's	Local Officials
Measure 2.3.2. Raise awareness of the dangers of driving through flooded areas.	1-2 years	x		
Measure 2.4.2. Develop a barricade plan to block flooded roadways in order to prevent crossing by drivers and acquire necessary barricade equipment and supplies.	1-3 years			x
Measure 2.3.3. Educate the public to stay away from flooded riverbanks and coastal wave-action areas.	1-2 years	x	x	
Measure 2.1.2. In comprehensive plan development and updating, recognize the dangers of floodplain development and plan compatible uses in such areas.	1-5 years			x
Measure 2.1.6. Invest in GIS hardware, software, and training to allow municipality to better manage flooding hazards.	1-10 years	x		x
Measure 2.1.10. Implement more restrictive floodplain ordinance.	1-5 years			x
Measure 2.1.5. Implement open space preservation program.	1-5 years	x		x
Measure 2.5.5. Ensure that sanitary sewer pump stations and facilities and drinking water systems are flood proofed.	3-10 years			x
Measure 2.1.3. Develop stormwater management master plans for growth zones.	1-10 years			x
Measure 2.3.1. Provide information (particularly to property owners in flood zones) on the National Flood Insurance Program, floodproofing, basement protection techniques, and post-flood clean-up.	2-4 years	x	x	
Measure 2.5.3. Undertake corrective measures to public infrastructure suffering repeated damage from localized flooding.	1-10 years			x
Measure 2.1.7. Participate in NFIP's community rating system/improve current rating.	2-5 years			x
Measure 2.1.8. Implement building codes for construction in floodplain.	3-5 years			x
Measure 2.4.1. Implement a flood warning system throughout the county similar to reverse-911 system.	5-10 years	x		
Measure 2.5.2. Elevate roadways.	1-10 years			x
Measure 2.5.4. Increase conveyance system capacity.	1-5 years			x
Measure 2.1.13. Flood mitigation grants or loans to homeowners.	5-10 years	x	x	

HAZARD – SEVERE STORMS		RESPONSIBLE PARTY		
MEASURE	Timeframe	CCEMA	Local EMA's	Local Officials
Measure 3.1.1. Educate the public about backup power options (generator, solar, wind, hydro) and non-electrical heating options and carbon monoxide poisoning from heating sources.	1-3 years	x	x	
Measure 3.1.2. Educate the public about heart stress when working in winter conditions and hypothermia.	1-3 years	x	x	
Measure 3.1.3. Educate the public about keeping walkways, egress routes and utility access cleared of snow.	1-3 years	x	x	
Measure 3.1.4. Educate the public about preventing ice dams on roofs and removing snow loads from roofs.	1-3 years	x	x	
Measure 3.1.5. Educate the public about preventive methods, including cutting large trees from around homes, driveways and utilities and freeze-proofing water pipes.	1-3 years	x	x	
Measure 3.1.6. Educate the public about winter driving dangers.	1-3 years	x	x	
Measure 3.1.7. Educate the public about Insurance availability for severe storm damages.	1-3 years	x	x	
Measure 3.2.1. Develop alternate transportation means for emergency responders.	2-5 years		x	
Measure 3.2.2. Train and equip a quick response a Road Debris Clearance Team from public works, fire department, and volunteers.	1-3 years		x	
Measure 3.2.3. Develop a municipal road snow and ice removal operations plan including a prioritization of roads to be cleared.	1-3 years	x		
Measure 3.3.1. Develop boat mooring requirements and pre-storm procedures.	2-5 years	x	x	x
Measure 3.3.2. Implement hurricane surge inundation ordinance.	2-5 years	x	x	
Measure 3.3.3. Ordinances or other mechanisms to direct development away from vulnerable areas (coastal bluffs, storm surge zones)	2-5 years		x	x
Measure 3.3.4. Upgrade and/or administer regulations to increase areas where underground utilities are required.	2-5 years	x	x	
Measure 3.4.1. Selection by municipal departments of tree types less susceptible to blowdown and breakage	1-4 years	x	x	
Measure 3.4.2. Increased removal of limbs which can impact service lines.	1-5 years	x		
Measure 3.4.3. Training program for public works employees to recognize tree maintenance needs and notify appropriate responsible party.	1-3 years	x		x

HAZARD – WILDFIRES		RESPONSIBLE PARTY		
MEASURE	Timeframe	CCEMA	Local EMA's	Local Officials
Measure 4.1.1. Educate the public on the dangers of wildfires.	1-3 years	x	x	
Measure 4.1.2. Educate property owners on tactics to protect their structures from wildfires.	2-5 years	x	x	
Measure 4.3.4. Train all firefighters in wildland firefighting techniques and safety procedures.	2-5 years		x	
Measure 4.3.5. Maintain firefighting access roads.	Ongoing		x	x
Measure 4.2.1. Develop warning and evacuation plans.	2-5 years	x	x	
Measure 4.4.1. Implement wildfire property protection measures for all critical facilities (buffers, fireproof roofing and siding, etc.).	2-10 years		x	
Measure 4.3.1. Develop land use ordinances requiring buffers between structures and forest species susceptible to drought and/or highly flammable.	3-5 years			x
Measure 4.3.2. Encourage or require slash reduction through good forestry practices.	2-4 years		x	x
Measure 4.3.3. Complete a detailed GIS study of fuel models, topography, fire weather and structures.	5-10 years		x	x

Baldwin – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
Flooding							
Various	Various	--	Generalized flooding	Emergency vehicle access, safety hazard, infrastructure damage	Inadequate drainage system(s)	Improve drainage system(s)	$50,000 - $200,000

Bridgton – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
Flooding							
Various	Various	--	Generalized flooding	Emergency vehicle access, safety hazard, infrastructure damage	Inadequate drainage system(s)	Improve drainage system(s)	$50,000 - $200,000

Brunswick – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
Flooding							
Various	Various	--	Generalized flooding	Emergency vehicle access, safety hazard, infrastructure damage	Inadequate drainage system(s)	Improve drainage system(s)	$50,000 - $200,000

Cape Elizabeth – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
System Surcharge							
Scott Dyer Road & Elizabeth park	Stormwater Outfall		On-going issue during rain events	System Surcharges, Infrastructure Condition Issue	Undersized System	Upgrade Infrastructure	$50,000 - $200,000
Running Tide Road	Stormwater Outfall		On-going issue during rain events	System Surcharges, Infrastructure Condition Issue	Undersized System	Upgrade Infrastructure	$50,000 - $200,000
Flooding							
Route 77 @ Alewife Brook	Culvert		During Heavy Rain Events	Beavers dam up invert area	Heavy Rain Events & Beaver Dam	Re-locate Beavers, increase culvert size	$50,000 - $200,000
Old Ocean House @ Alewife Brook	Culvert		During Heavy Rain Events	Invert Area Becomes Flooded During Heavy Rain events	Undersized Pipe, condition of pipe	Increase Culvert Size and replace	$50,000 - $200,000
Sawyer Road @ Spurwink River	Arch Culvert		Astronomical High Tides and Heavy Rains	Pipe Runs at Capacity	Undersized Culvert	Increase Culvert Size	$50,000 - $200,000
Spurwink Avenue @ Spurwink River	Arch Culvert		Astronomical High Tides and Heavy Rains	Pipe Runs at Capacity	Undersized Culvert, condition of pipe	Increase Culvert Size	$50,000 - $200,000
Spurwink Avenue @ Trout Brook	Culvert		During Heavy Rain Events	Pipe Runs at Capacity	Undersized Culvert	Increase Culvert Size	$50,000 - $200,000
Shore Road @ Dyer Pond	Culvert		During Heavy Rain Events	Pipe Runs at Capacity	Undersized Culvert	Increase Culvert Size	$50,000 - $200,000
All hazards							
CE High School	Emergency Shelter		Disasters & Storm Events	Pot. Loss of Power	No Stand-by Gen.	Inst. Stand-by Generator	$50,000 - $200,000
Coastal Erosion							
Shore Road @ Pond Cove	Street Adjacent to tidal area		Coastal Storms, Astr. High tides, hurricanes	Road Has to be Shut Down, Shoulders are Eroded, Debris in Travel Way	No seawall, tidal exposure	Create Seawall, place rip-rap for barrier	

Kettle Cove Road	Street Adjacent to Seawall		Coastal Storms, Astr. High tides, hurricanes	Sea Wall is Developing Voids Beneath Road Base	Tidal & Wave Exposure	Re-Build Seawall	

Casco – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
Flooding							
Crooked River Corridor	All	--	Generalized flooding	Property damage, transportation delays, road damage	Inadequate drainage system(s)	Improve drainage system(s)	$50,000 - $200,000

Cumberland – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Estimated Cost
Flooding							
Range Road (5 Separate Sites)	Culvert	> 25 Year Storm	Street floods over 8-14 inches	Emergency Vehicle access	Undersized Culvert, inlet and outlet condition	Upsize culvert	$50,000 - $200,000
Rte#9 / Longwood's Road @ Sullivan Drive, Morgan Lane & Between Winn Rd and Cross Rd	Culvert	> 25 Year Storm	Road floods and washes out due to the intense running water	Limits emergency vehicle access	Undersized Culvert, inlet and outlet condition	Upsize culvert	$50,000 - $200,000
Tuttle Road (3 separate sites)	Culvert	> 25 Year Storm	Road floods and washes out due to the intense running water	Limits emergency vehicle access	Undersized Culvert	Upsize culvert/ Raise Road	$200,000 - $500,000
Harris Road (2 separate sites)	Culvert	> 25 Year Storm	Road floods and washes out due to the intense running water	Limits emergency vehicle access	Undersized Culvert	Upsize culvert/ Raise Road	$200,000 - $500,000
Greely Road @ Hillside Drive and Edes Road	Culvert	> 25 Year Storm	Road floods and washes out due to the intense running water, created in excess of $40,000 of repairs during past storms	Limits emergency vehicle access	Undersized Culvert	Upsize culvert/ Raise Road	$200,000 - $500,000
Middle Road @ Hazeltines	Culvert	> 25 Year Storm	Road floods and washes out	Limits emergency vehicle access	Inadequate capacity	Upsize culvert	$50,000 - $200,000
Town Landing Road	Culvert/Ditching	>25 Year Storm	Road washes out due to lack of storm drains and unimproved drainage ditch	Limits emergency vehicle access	Inadequate drainage	Install storm drainage system.	$200,000 - $500,000

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Estimated Cost
Birch Lane	Storm Drain Outlet	On going problem	Coastal erosion during high tide and storm surge	Threat to public infrastructure		Redesign and replace, increased stabilization	$10,000 - $50,000

Falmouth – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Estimated Cost
Flooding - stream flow							
Stream Crossing of East Branch Piscataqua River and Woodville Road	MDOT owned, large double culvert classified as Bridge	8/19/1991,10/22/96, several other storm events about once every 2-3 years	Flooding overtops roadway by up to 4 ft and the road has to be closed to traffic for up to 12 hours	All traffic and emergency access and maintenace vehicles	Inadequate capacity of culverts	Increase effective capacity of culverts by adding additional culverts or replacement with a true bridge structure or larger pipes	>$500,000
Flooding - storm drain							
Middle Road and Scittery Gusset Brook crossing	Triple culvert	8/19/1991,10/22/96, several other storm events about once every 2-3 years	Flooding overtops roadway by up to 1 foot and the road has to be closed to traffic for up to 6 hours	All traffic and emergency access and maintenace vehicles. Also safety hazard before barricades are able to be put up	Inadequate capacity of culverts	Increase effective capacity of culverts by adding additional culverts or larger pipes	>$500,000
Woodville Road at High School	culvert	8/19/1991,10/22/96, several other storm events about once every year		All traffic and emergency access and maintenace vehicles. Also safety hazard before barricades are able to be put up	Inadequate capacity of culverts	Increase effective capacity of culverts by adding additional culverts or larger pipes	$200,000 - $500,000
Woodville Road at # 138	double culvert	8/19/1991,10/22/96, several other storm events about once every year	Flooding overtops roadway by up to 1.5 feet and the road has to be closed to traffic for up to 6 hours		Inadequate capacity of culverts	Increase effective capacity of culverts by adding additional culverts or larger pipes	$200,000 - $500,000

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Estimated Cost
Woods Road at field	culvert	8/19/1991,10/22/96, several other storm events about once every year	Flooding overtops roadway by up to 1 foot and the road has to be closed to traffic for up to 6 hours	All traffic and emergency access and maintenace vehicles. Also safety hazard before barricades are able to be put up	Inadequate capacity of culverts	Increase effective capacity of culverts by adding additional culverts or larger pipes	$200,000 - $500,000
Shoreline erosion							
Ocean Embankment		Ongoing	Embankment failure occurring	Municipal sewer in danger of failure	Unstable embankment -Ocean wave impact	Embankment Stabilization	$20,000 - $50,000
Forest Fires							
Town wide	Localized Areas			Loss of timber, possible loss of homes,pollution		Mitigate by keeping trails open for emergency fire access	NA

Freeport – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Possible remedies	Estimated Cost
Flooding							
Flying Point Road	Culvert	Every 2-3 years	Road under water and impassable to traffic.	Emergency vehicle access, major connector road to Brunswick	undersized culvert, debris in stream channel, undersized pipes	Enlarge culvert and build road up	$200,000 - $500,000
Potential sites							
Potential for future erosion problems at Winslow Memorial park							
Potential for future construction projects which may impact different drainage areas and water run-off							
Potential for float damage at Harbor, Winslow Park & Cove Road if occurrence of extra high tides associated with exceptionally high winds							

Frye Island – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
Flooding							
Various	Minor	--	Generalized flooding	Emergency vehicle access, safety hazard,	Inadequate drainage system(s)	Improve drainage system(s)	$10,000 - $50,000

Gorham – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Estimated Cost
Flooding							
Tow Path Road 1/4 mile W of Route 202	Culvert(s)/Roadway	20-Oct-96	Town of Gorham received a total of 18" of rainfall from this event	$1,142 in damages to roadway structures	Scour/Erosion	Erosion Protection/Pipe re-sizing	$20,000 - $50,000
North Gorham Road 1/4 mile N of Hurricane Road at Red Brook	Culvert(s)/Roadway	20-Oct-96	Town of Gorham received a total of 18" of rainfall from this event	$3,450 in damages to roadway structures	Scour/Erosion	Erosion Protection/Pipe re-sizing	$20,000 - $50,000
Hurricane Road 3/4 mile E of North Gorham Road at Nason Brook	Culvert(s)/Roadway	20-Oct-96	Town of Gorham received a total of 18" of rainfall from this event	$6,198 in damages to roadway structures	Scour/Erosion	Erosion Protection/Pipe re-sizing	$20,000 - $50,000
Hogdon Road 1/4 mile E of Route 202 at South Branch Brook	Multi-plate pipe bridge	20-Oct-96	Town of Gorham received a total of 18" of rainfall from this event. Floodwaters destroyed much of the multi-plate at this location	$70,244 in damages to roadway structures	Floodwater		$200,000 - $500,000
Brackett Road at McLellan Road at Stroudwater River Bridge	Culvert(s)/Roadway	20-Oct-96	Town of Gorham received a total of 18" of rainfall from this event	$11,073 in damages to roadway structures	Scour/Erosion	Erosion Protection/Pipe re-sizing	$20,000 - $50,000
Washburn Road 250' W of Route 114 at Stroudwater River	Culvert(s)/Roadway	20-Oct-96	Town of Gorham received a total of 18" of rainfall from this event	$5,764 in damages to roadway structures	Scour/Erosion	Erosion Protection/Pipe re-sizing	$20,000 - $50,000
Longfellow Road 1/4 mile NE of Brackett Road at Indian Camp Brook	Culvert(s)/Roadway	20-Oct-96	Town of Gorham received a total of 18" of rainfall from this event	$1,940 in damages to roadway structures	Scour/Erosion	Erosion Protection/Pipe re-sizing	$20,000 - $50,000

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Estimated Cost
Mitchell Hill Road 1 mile S of Route 22 at Nonesuch River	Culvert(s)/Roadway	20-Oct-96	Town of Gorham received a total of 18" of rainfall from this event	$13,284 in damages to roadway structures	Scour/Erosion	Erosion Protection/Pipe re-sizing	$20,000 - $50,000
Dingley Spring Road 100 feet N of Line Road at Branch Brook	Culvert(s)/Roadway	20-Oct-96	Town of Gorham received a total of 18" of rainfall from this event	$7,039 in damages to roadway structures	Scour/Erosion	Erosion Protection/Pipe re-sizing	$20,000 - $50,000
Wood Rd 4/10 mile E of Finn Parker Road at Files Brook	Culvert(s)/Roadway	20-Oct-96	Town of Gorham received a total of 18" of rainfall from this event	$4,853 in damages to roadway structures	Scour/Erosion	Erosion Protection/Pipe re-sizing	$20,000 - $50,000
Day Road 0.3 mile W of Brackett Raod at branch to Indian Camp Brook	Culvert(s)/Roadway	20-Oct-96	Town of Gorham received a total of 18" of rainfall from this event	Damage to roadway structures	Scour/Erosion	Erosion Protection/Pipe re-sizing	$20,000 - $50,000
Weeks Road 1 M W of South Street at Gully Brook	Culvert(s)/Roadway	20-Oct-96	Town of Gorham received a total of 18" of rainfall from this event	$2,664 in damages to roadway structures	Scour/Erosion	Erosion Protection/Pipe re-sizing	$20,000 - $50,000
Plummer Road 1/2 mile E of Westcott Road at Westcott Brook	Culvert(s)/Roadway	20-Oct-96	Town of Gorham received a total of 18" of rainfall from this event	$5,873 in damages to roadway structures	Scour/Erosion	Erosion Protection/Pipe re-sizing	$20,000 - $50,000
Deering Road 4/10 mile W of Route 22 at Stroudwater River	Culvert(s)/Roadway	20-Oct-96	Town of Gorham received a total of 18" of rainfall from this event	$2,560 in damages to roadway structures	Scour/Erosion	Erosion Protection/Pipe re-sizing	$20,000 - $50,000
Huston Road 1/4 mile E of Route 114 at Johnson Brook	Culvert(s)/Roadway	20-Oct-96	Town of Gorham received a total of 18" of rainfall from this event	$4,935 in damages to roadway structures	Scour/Erosion	Erosion Protection/Pipe re-sizing	$20,000 - $50,000
New Portland Road 1 mile E of Brackett Road at branch to Indian Camp Brook	Culvert(s)/Roadway	20-Oct-96	Town of Gorham received a total of 18" of rainfall from this event	$6,644 in damages to roadway structures	Scour/Erosion	Erosion Protection/Pipe re-sizing	$20,000 - $50,000

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Estimated Cost
Flaggy Meadow Road 1.5 miles W of Cressey Road at Little River	Culvert(s)/Roadway	20-Oct-96	Town of Gorham received a total of 18" of rainfall from this event	Damages to roadway structures	Scour/Erosion	Erosion Protection/Pipe re-sizing	$20,000 - $50,000
Buck Street 1/4 mile E of Spiller Road	Culvert(s)/Roadway	20-Oct-96	Town of Gorham received a total of 18" of rainfall from this event	$1,607 in damages to roadway structures	Scour/Erosion	Erosion Protection/Pipe re-sizing	$20,000 - $50,000
Brackett Road 800 Feet N of McLellan Road	Culvert(s)/Roadway	20-Oct-96	Town of Gorham received a total of 18" of rainfall from this event	$6,756 in damages to roadway structures	Scour/Erosion	Erosion Protection/Pipe re-sizing	$20,000 - $50,000
Brackett Road at Indian Camp Bridge	Bridge	19-Aug-91	Flooding from Hurricane Bob	Damage to bridge structure	Floodwater	Additional scour protection and/or a hydrology & hydraulics study to redesign bridge	$200,000 - $500,000
Fort Hill Road at Tannery Brook	Bridge	19-Aug-91	Flooding from Hurricane Bob	Damage to bridge structure	Floodwater	Additional scour protection and/or a hydrology & hydraulics study to redesign bridge	$200,000 - $500,000
Files Road at Files Brook	Bridge	none	N/A	Potential exists for scour to bridge structure/foundation	Floodwater	Scour protection	$20,000 - $50,000
New Portland Road 3000 feet W of Brackett Road at branch to Indian Camp Brook	Culvert(s)/Roadway	19-Aug-91	Flooding from Hurricane Bob	Scour to roadway/Flooding	Floodwater	Erosion Protection/Pipe re-sizing	$20,000 - $50,000
Ice							
Municipal Center - Radio Tower	Radio Tower	1998 Ice Storm	Town of Gorham received a major coating of ice that created a hazard to the radio tower	Tower was heavily loaded with ice and the roof to the fire station on which the tower sits began leaking water	Ice load	Redesign or replacement of radio tower.	$20,000 - $50,000

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Estimated Cost
Other							
Dingley Springs Wellhead Protection Area	Wells	none	N/A	Potential exists for contamination of this well system as a result of a natural disaster	Surface water infiltration	Development of a containment system around this area	$20,000 - $50,000

Gray – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
Flooding							
Various	Various	--	Generalized flooding	Emergency vehicle access, safety hazard, infrastructure damage	Inadequate drainage system(s)	Improve drainage system(s)	$50,000 - $200,000

Harpswell – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Possible remedies	Estimated Cost
Flooding – culvert							
Route 123- North Harpswell	Culvert Flooding	Once every 2-3 years	One of Town's two main arterial roads floods to depth of 12"-18". Takes from 24-48 hours to subside.	Emergency and passenger vehicle access.	Undersized culvert	Upgrade storm drain system and culvert.	$200,000 - $500,000
Flooding - coastal							
Causeway on Route 123-South Harpswell, Potts Point	Road gets flooded with water and debris.	During a strong Nor'easter and Hurricanes	Storm Surge up to 12", road fills with debris. A snowplow is often used when flooding subsides to remove debris.	Emergency and passenger vehicle access.	Causeway is too low	Increase the size of the causeway.	$200,000 - $500,000

H**arrison – Mitigation Measures**

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
Flooding							
Various	Various	--	Generalized flooding	Emergency vehicle access, safety hazard, infrastructure damage	Inadequate drainage system(s)	Improve drainage system(s)	$50,000 - $200,000

Long Island – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
Flooding							
Various	Various	--	Generalized flooding	Emergency vehicle access, safety hazard, infrastructure damage	Inadequate drainage system(s)	Improve drainage system(s)	$50,000 - $200,000

Naples – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
Flooding							
Various	Various	--	Generalized flooding	Emergency vehicle access, safety hazard, infrastructure damage	Inadequate drainage system(s)	Improve drainage system(s)	$50,000 - $200,000

New Gloucester – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
Flooding							
Woodman Road near Wharff Road	Two (2) 4' culverts	Every major rainstorm 2" – 3"	12" – 18" of water over road	Have to close road to traffic	Downstream flow slowed by beaver dams	Remove dam, build up road, add culverts	
Woodman Road, Meadow Lane at Brook Crossing	Culverts	Every major rainstorm 2" – 3"	12" – 18" of water over road; some erosion and road damage	Sometimes close road to traffic and emergency vehicles	Streamflow restricted by beaver dams	Remove beaver dams, increase culvert capacity	
Ayer Road at Meadow Brook Crossing	Multiple culverts	Major rainstorm 3" +	12" of water over roadway road surface	Close road to traffic, dead end road	Downstream flow restricted by beaver dams and sediment	Remove beaver dams, clean stream channel, some new culverts larger size	

North Yarmouth – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
Flooding							
Various	Various	--	Generalized flooding	Emergency vehicle access, safety hazard, infrastructure damage	Inadequate drainage system(s)	Improve drainage system(s)	$50,000 - $200,000

Portland - Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Estimated Cost
System overcharge							
High St. @ Fore St	Major traffic Thoroughfare, neighborhood, part of bridge access system	Storm dependent	Rain event greater than one inch an hour cause all the covers on the storm drain system to be blown off	Emergency vehicle hospital route access, safety hazard,	Undersized pipes in storm drain system	Upgrade storm drain system, map stormwater system	$500,000 - $1,000,000
Park St. @ York St.	Residential neighborhood	Storm dependent	Rain event greater than one inch an hour cause all the covers on the storm drain system to be blown off	Residential neighborhood, major safety hazard	Undersized pipes in storm drain system	Upgrade storm drain system, map stormwater system	$500,000 - $1,000,000
Gertrude St.	Neighborhood	Every 1-2 years	Property and basement flooding	Residence damage	Inadequate system capacity	Modify system elevations, install backflow prevention, map stormwater system	$500,000 - $1,000,000
Capisic St. at Bancroft St.	Neighborhood	Every 1-2 years	Property and basement flooding	Residence damage	Inadequate system capacity	Modify system elevations, install backflow prevention	$500,000 - $1,000,000
#389 Presumpscot St.	Culvert	Every 2-3 years	Culvert washes out	Causes replacement of culvert and earthwork	Undersized culvert	Upgrade culvert system, map stormwater system	$500,000 - $1,000,000

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Estimated Cost
Preble St./ Elm @ Marginal Way	Streets & Buildings	08/21/2004	Storm water pipes from three separate systems tie into one pipe before connecting into the main discharge chamber	During heavy rain storms (1 1/2 - 2 inches per hour) all three systems backup causing flooding streets and buildings.	Storm water system in area under sized	Tie all three systems into the diversion tunnel separately	$500,000 - $1,000,000
Hanover, Preble, and Alder St.	Buildings, mostly business	Last event 8/21/04	Floor drains and fixture units back-up, causing sewage to flood building	Damage to business inventory and sanitary clean-up costs	Storm water system in area under sized	Upgrade storm drain system; install backflow prevention.	$500,000 - $1,000,000
Tidal Flooding							
Portland Pier	Street / Pier	Occurs with astronomical high tides	Pier access street covered with 1-2 feet of water	Roadway & pier transportation system impassable / Islands ferry services disrupted	Elevation of roadway and pier too low	Increase the elevation of the roadway and pier	$500,000 - $1,000,000
Congress St. at Stroudwater Crossing	Culvert / Bridge / Street	Occurs with astronomical high tides	Culvert reaches capacity and roadway is overtopped	Roadway transportation system impassable	Roadway elevation and culvert size	Modify roadway and / or culvert system,map stormwater system	$500,000 - $1,000,000
Eastern Marginal Way	Street	Occurs with astronomical high tides	Street covered with 1-2 feet of water, sewer back-ups	Roadways and commercial buildings	System and roadway elevation	Modify system and roadway elevations, install backflow prevention	$500,000 - $1,000,000

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Estimated Cost
Commercial St.	Street	Occurs with astronomical high tides	Street covered with 1-2 feet of water	Roadway transportation system impassable	Undersized pipes in storm drain system	Upgrade storm drain system.	$500,000 - $1,000,000
Stream flooding							
Alden and Violette Circle	Neighborhoods	Storm dependent	Sewer back-ups and roadway flooding	Roadways and residential buildings	Undersized brook channels and culverts	Upsize Lucas St. culvert, build detention ponds upstream, add backflow prevention valves	$500,000 - $1,000,000
Mona/Bernard/Washington/Maine Avenue area; adjacent to the Fall Brook Channel (between Ray Street and Maine Avenue)	Culverts and Neighborhood	Storm event dependent; location is within 100 year flood plain	Home, channel, and roadway flooding	Flood insurance required of residents and risk of flooding in an 100 years storm event. Basement and arterial roadway flooding	Undersized water way and culverts	Stormwater easement acquisition, construction of new culverts and widened waterways	$500,000 - $1,000,000
Other hazards							
Higgins Reclamation site	Reclamation Facility	2001	Fire in pile of mixed debris	Polluted water runoff from firefighting	Vandals	Site Security system, fire suppression gear	$50,000 - $200,000

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Estimated Cost
Varies	Neighborhoods and Islands	August 1998, and summer of 2002(?)	Tree blowdowns and sewer back-ups	Roadways and residential and commercial buildings		Implement Backflow Prevention system, trim trees, remove dead trees	$50,000 - $200,000
High Elevation areas	Neighborhood	Storm dependent	Tree blowdowns	Roadways, driveways, and power system	Excessive wind speed	Tree trimming, removal,tree inventory	$50,000 - $200,000
Downtown Streets, various locations	Streets & Buildings	Storm & situation dependent	Street collapse due to fallen debris, material blocking access	Streets and sidewalks rendered impassable	Excessive wind speed, flooding,	install barricades shut off access	$10,000 - $50,000
Various locations	Streets/sidewalks, neighborhoods	Winter of 1998	Excessive snow and ice accumulation	Streets and sidewalks rendered impassable	Excessive snow and ice accumulation	Special snow removal equipment- "snow melter unit"	$500,000 - $1,000,000

Pownal – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
Flooding							
Various	Various	--	Generalized flooding	Emergency vehicle access, safety hazard, infrastructure damage	Inadequate drainage system(s)	Improve drainage system(s)	$50,000 - $200,000

Raymond – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Estimated Cost
Road Drainage							
From Ledge Hill Road to Spring Valley Road	Residential Neighborhood	Every Year	Heavy rains washes out shoulder and erodes ditch line.	Safety hazard to public	Steep hill and open ditch designs	Closed drain and catch basin and curb.	$100,000 - $500,000
Mountain Road from Spiller Hill to McDermott Drive	Street, residential neighborhood	Every 2 - 3 years	culvert freezes and ground water runs over the road and freezes	Safety hazard to public	Undersized culvert and inadequate ditches	Upgrade culvert and ditch	$20,000 - $50,000
Elizabeth Ave from Route 302 to Pine Road	Neighborhood street	Every year	Water runs from Route 302 and parking lot and freezes	Safety hazard to public			
Plains Road at Route 85 and Crescent Beach	Neighborhood street	Every year	Water runs down Plains Road into Route 85	Gravel and sand in roadway - safety hazard	No ditch and inadequate catch basin and drainage	Install closed drain and new catch basins and curb	$50,000 - $200,000

Scarborough – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Estimated Cost
Flooding							
Higgins Beach between Cliff Street & Shell Street	Drainage Course	4-5 Times Yearly	Excessive flooding between houses in rainstorms greater than 1"	Damage to surrounding homes	Undefined drainage channel	Upgrade storm drain system	$50,000 - $200,000
Sawyer Street at Cape Elizabeth Line	Street flooding	4-5 Times Yearly at High Tides	Road under 10-12 inches of water	Access issues	Natural conditions	Raise road	$100,000 - $300,000
Pleasant Hill Subdivision a.k.a. "Brown Homes"	Street / Neighborhood	3-4 Times Yearly	Water in road / flooded basements	Damage to homes & damage to pavement	Undersize drainage system	Upgrade storm drain system	$100,000 - $300,000
Drainage ditch behind Parkway Drive	Drainage Course	4-5 Times Yearly	Ditchline overflows during heavy rain	Floods businesses	Failed drain system	Repair pipes / ditch	$50,000 - $200,000
Marsh Land off Clay Pits Road	Road Shoulder / Marsh	4-5 Times Yearly	During high-running tides / storms, the river banks wash	Silting of water. Damage to road	Natural channeling of water	Rip-Rap banks & other hard armor	$10,000 - $50,000
Route 1, near Pleasant Hill Road, bridge over Nonesuch River	Bridge	Every few years	During heavy rains, the Nonesuch River overtops Road	Hinders traffic and emergency access	Undersized drainage under road	Upsize culvert/bridge area	$1,000,000 - $2,000,000
Coastal Erosion							
Higgins Beach Along Bayview Drive	Beach Front	2-3 Times Yearly Mostly in Winter	Damage to fence & dunes during major storms	Loss of sand from beach. Damage to property	Natural storms	Additional plantings/ stormbreaks	$5,000 - $50,000

Sebago – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
Flooding							
Various	Various	--	Generalized flooding	Emergency vehicle access, safety hazard, infrastructure damage	Inadequate drainage system(s)	Improve drainage system(s)	$50,000 - $200,000

South Portland – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
Flooding - catch basin							
Broadway @ Daytona	New system	1-2 times a year	Street flooding	Traffic flow	Basins need to be relocated	Relocate basin. This is a new system	$50,000 - $200,000
Highland Ave.@ High School	Catch basin 12" storm system	8-10 times per year	Street flooding system backs up	Traffic flow	Undersized storm line	Upgrade storm drain system.	$100,000 - $500,000
Main Street @ Massachusetts Ave.	Catch basin storm system	4-5 time per year	Roadway flooding	Roadway impacts	Road condition problem	System o.k. road condition problem	$100,000 - $500,000
Main Street @ Wallace Ave.	Catch basin storm system	1-2 times per year	Roadway flooding	Traffic and adjacent properties	Road condition problem	System o.k. road condition problem	$100,000 - $500,000
Maine Mall Road @ Long Creek	Catch basin storm system	Once every 5 years	Debris collects on basin and causes flooding	Slows traffic	Debris clogs basins	Known to backup with leaves and debris	$5,000 - $20,000
Preble Street @ Alder and Day Streets	Catch basin neighborhood	3-4 times per year	Catch basin collects debris and causes road flooding	Slows traffic	Debris clogs basins	Curb inlet needed debris problem	$5,000 - $20,000
Broadway@ Boys Club	Catch basin storm system	Heavy rain events	Flooding of Greenbelt and road	none	Debris clogs basins	New sidewalks and upgraded system	$50,000 - $200,000
Flooding - storm drain system							
Highland Ave. @ Whispering Pines	Flooding of street	2-3 time per year	Roadway @ intersection floods approximately 18" deep	Interferes with traffic flow.	Undersized storm line	Upgrade storm drain system.	$100,000 - $500,000
Broadway @ underpass	Street	1-2 times per year	Street floods several feet deep	Emergency vehicle access. Main traffic route bisected	Inadequate system capacity	Upgrade storm drain system. Debris behind sidewalk.	$100,000 - $500,000
Rhode Island @ Dead End	Storm drain inlet	Once every 5 years	System Inlet clogs causing flooding	Floods adjacent properties	System inlet clogs	Maintain inlet	$5,000 - $20,000
Dike Farm Road @ Meadow Way	Residential neighborhood	Heavy rain events	Streets flooding because of surcharge	Traffic	Bad 36" cement storm system on Sokokis	This system is scheduled to be replaced.	$50,000 - $200,000
Flooding - stream flow							

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
Highland Ave. @ Trout Brook	Cement culverts are new	Not since upgrade	Roadway floods	Traffic	Over flowing of Brooks and Ponds	Maybe the cleaning of brooks. Brooks are over grown (DEP)	$10,000 - $50,000
Boothby @ Trout Brook	Culvert	3-5 time per year	Adjacent property flooding	Residential property and roadway impacts	Undersized culvert	Upsize culvert	$10,000 - $50,000
Fessenden @ Trout Brook	Culvert	2-3 times per year	Adjacent property flooding	Residential property and roadway impacts	Undersized culvert	Upsize culvert	$10,000 - $50,000
Nutter Road @ curve	Storm drain	1-2 times per year	Floods across road	Traffic impact	Undersized storm drain	Upsize system	$10,000 - $50,000
Highland Ave. @ Gamblers Arm Brook	Culvert and stream bed capacity	5 times per year	Residential flooding, roadway flooding	Impacts traffic flow and down stream flooding	Development	System upgrade and evaluation of stream bed.	$10,000 - $50,000
Flooding – roadway							
Westbrook Street @ 295	18" storm system	Every heavy rain event	Underpass floods, bridge drains to road.	Slows traffic	Road condition: grooves in road	Grooves in road that hold water and basins are high	$50,000 - $200,000
Angell Ave. @ Preble Street	Catch basin storm system	Heavy rain events	Roadway flooding	Slow Traffic	Debris clogs basins	Install curb inlets because basins are off side of road (debris)	$50,000 - $200,000
Flooding - ditches and culverts							
Running Hill Road @ Maine Mall Road	Street flooding	1-2 times per year	Floods intersection	Traffic impacts	Ditch flow capacity	Increase ditch capacity.	$5,000 - $40,000
Ocean Street @ Brenton Street	Culvert	Brook overflows banks	Roadway flooding	Impacts road way and adjacent properties	High water leaving ponds (Hinckley Park)	Maybe clean brook for better flow (DEP)	$10,000 - $50,000
Broadway @ Scarborough line	Open drain ditch system	Once every 5 years	Street Flooding	Traffic Impacts	Low Areas	All has been upgraded by R.J. Grondin & Sons	NA
Cummings Road @ Westbrook town line	Culvert system	During a 25 year event	Street washout	Traffic Impacts, emergency vehicle access	Undersized Culvert	This was upgraded when new construction took place.	NA

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
Willow @ Sand Pebble Condo's	Drain system	Once every ten years	Property flooding	Property flooding	System surcharge at high tide.	Tidal effect	$100,000 - $400,000

Standish – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost Estimate
Flooding							
Stream crossing brook with Middle Jam Road	Culvert and old stone culvert under eel weir canal	Twice per year typically	Water will overtop road by approx one foot. Water will back up into adjacent neighborhood.	Vehicle and emergency vehicle access, safety hazard,	Undersized culvert,	Upsize culvert, under canal. This may require jacking.	$50,000 - $200,000
Sticker River & Route 114 (MDOT owner)	Culvert	Oct-96	Flooding over top of roadway	All traffic reduced to one lane	Undersized culvert,	Upsize culvert, Create spillway / armor downstream side of road bed.	$50,000 - $200,000
Unnamed Stream crossing of Blake road approx 2250 from Blake Roads intersection w/ Rte 25	Twin 4' diameter corrugated metal pipe culverts	Oct-96	Water topped road and washed away half of road on downstream side.	Emergency vehicle access, safety hazard	Undersized culvert	Upsize culvert, Create spillway / armor downstream side of road bed.	$50,000 - $200,000
No-name stream crossing of State Route 35 at 100 year flood zone. Approx 12400' SW from intersection with Rte25.	MDOT owned Twin Culvert	Every 2-3 years	Road was under water resulting in substantial shoulder wash.	Emergency vehicle access, safety hazard, Routine maintenance costs	Undersized culvert,	Upsize culvert, Create spillway / armor downstream side of road bed.	$50,000 - $200,000
No-name stream crossing of State Route 35A or Cape Rd.. Approx 1500' SW from intersection with Rte25.	Town owned culvert	Oct-96	Flooding over top of roadway	Emergency vehicle access, safety hazard, Routine maintenance costs	Undersized culvert	Upsize culvert, Create spillway / armor downstream side of road bed.	$50,000 - $200,000

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost Estimate
No-name stream crossing of State Route 35 or Northeast road . Approx 2000' NE from intersection with Rte25.	MDOT culvert	Every 2-3 years	Flooding over top of roadway	Emergency vehicle access, safety hazard, Routine maintenance costs	Undersized culvert	Upsize culvert, Create spillway / armor downstream side of road bed.	$50,000 - $200,000
No-name stream crossing of Route 35 at 100 year flood zone. Approx 13,000' SW from intersection with Rte 25.	MDOT owned numerous small culverts	Every 2-3 years	Road was under water resluting in substantial shoulder wash.	Emergency vehicle access, safety hazard, Routine maintenance costs	Undersized culvert,	Upsize culvert, Create spillway / armor downstream side of road bed.	$50,000 - $200,000
Whites Bridge Road 500' east of Highland Road.	30" Culvert	Oct-96	Road was under 1 feet of water and approximately 1/3 of road base was washed away.	Vehicle and emergency vehicle access, safety hazard,	Undersized culvert,	Upsize culvert, Create spillway / armor downstream side of road bed.	$50,000 - $200,000

Westbrook – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
Flooding							
Various	Various	--	Generalized flooding	Emergency vehicle access, safety hazard, infrastructure damage	Inadequate drainage system(s)	Improve drainage system(s)	$50,000 - $200,000

Windham – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
Overroad flooding							
River Road just north of Windham Center Road	None	10/1996 11 inches of Rain Hurricane Bob	12" to 18"	Road Shut Down	Poor Drainage	Upgrade culvert on Windham Center Road	$50,000 - $200,000
River Road - Colley Wright Brook	Bridge	10/1996 11 inches of Rain Hurricane Bob	4 feet to 5 feet above road	Road Shut Down	Under size culvert plus Railroad bridge too small	Railroad Bridge and Culvert need upsizing	$200,000 - $1,000,000
Anderson Road & Inkhorn Brook	Box Culvert	10/1996 11 inches of Rain Hurricane Bob	2 feet over road	Road Shut Down Washout	Down stream clogged	Needs to be cleaned2 to 4 hundred feet downstream	$10,000 - $40,000
Falmouth Road and Pleasant River	Culverts	10/1996 11 inches of Rain Hurricane Bob	2 feet to 3 feet over road	Road Shut Down Washout	Too much water	Raise Road	$50,000 - $200,000
Route 302 and Colley Wright Brook	Bridge	10/1996 11 inches of Rain Hurricane Bob	12 inches	Road Shut Down	Under size	Upgrade and clean stream below	$100,000 - $400,000
Windham Center & Colley Wright Brook	Culverts	10/1996 11 inches of Rain Hurricane Bob - Floods often	12" to 18"	Road Shut Down Public Property	Undersized	Upgrade and clean stream below	$50,000 - $200,000
Windham Center & Black Brook	Culverts	10/1996 11 inches of Rain Hurricane Bob - Floods often	12" to 18"	Road Shut Down Public Property	Undersized	Upgrade and clean stream below	$50,000 - $200,000
Swett Road & Black Brook	Wood Bridge	10/1996 11 inches of Rain Hurricane Bob	12" to 18"	Road Shut Down Public Property	Undersized	Upgrade and clean stream below	$100,000 - $400,000
Falmouth Road & Baker Brook	Culverts	10/1996 11 inches of Rain Hurricane Bob	1 feet to 2 feet	Road Shut Down Public Property	Undersized	Upgrade and clean stream below	$50,000 - $200,000

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
Nash Road & Unknown Brook	Culverts	10/1996 11 inches of Rain Hurricane Bob	1 feet to 2 feet	Road Shut Down Public Property	Undersized	Upgrade and clean stream below	$50,000 - $200,000
Walter Partridge Road & Unknown Brook	Culverts	10/1996 11 inches of Rain Hurricane Bob	12 inches	Road Shut Down Public property	Undersized	Upgrade and clean stream below	$50,000 - $200,000
Anderson Road & Weeks Brook	Box Culvert	10/1996 11 inches of Rain Hurricane Bob	12" to 18"	Road Shut Down Public property	Undersized	Upgrade and clean stream below	$50,000 - $200,000
Nash Road & Route 302	Cross Culvert	10/1996 11 inches of Rain Hurricane Bob	12" to 18"	Road Shut Down Public property	Upgrade on Route 302	Upgrade and clean stream below	$50,000 - $200,000
River Road & Inkhorn Brook	Culverts	10/1996 11 inches of Rain Hurricane Bob	12" to 18"	Road Shut Down Public property	Undersized	Upgrade	$50,000 - $200,000
Anderson Road near Westbrook line	Culverts	unknown	12" to 18"	Road Shut Down Public property	Undersized	Upgrade and clean stream below	$50,000 - $200,000
Highland Cliff/Lincoln Weeks	Culverts	10/1996 11 inches of Rain Hurricane Bob	12" to 18"	Road Shut Down Public property	Undersized	Upgrade and clean stream below	$50,000 - $200,000
Route 202 a& Baker Brook	Culverts	10/1996 11 inches of Rain Hurricane Bob	12" to 18"	Road Shut Down Public property	Undersized	Upgrade and clean stream below	$50,000 - $200,000
Highland Cliff& Annie Leighton Brook	Culverts	10/1996 11 inches of Rain Hurricane Bob	12" to 18"	Road Shut Down Public property	Undersized	Upgrade Culvert	$50,000 - $200,000
Land of Knod & Annie Leighton Brook	Culverts	10/1996 11 inches of Rain Hurricane Bob	12" to 18"	Road Shut Down Public property	too much water	Clean Stream below	$50,000 - $200,000
Webb Road & Black Brook	Box Culvert	10/1996 11 inches of Rain Hurricane Bob	12" to 18"	Road Shut Down Public property	too much water flow	Raise Bridge	$50,000 - $200,000

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
River Road South of Pleasant River	Culverts	10/1996 11 inches of Rain Hurricane Bob	12" to 18"	Road Shut Down Public property	Flooding	Upgrade and clean stream below	$50,000 - $200,000
River Road & Otterbrook	Double Culvert	10/1996 11 inches of Rain Hurricane Bob	12" to 18"	Road Shut Down Public property	Flooding	raise road	$50,000 - $200,000
Falmouth Road & Macintosh Brook	Culverts	10/1996 11 inches of Rain Hurricane Bob	12" to 18"	Road Shut Down Public property	Washout	Upgrade and clean stream below	$50,000 - $200,000
Cottage Road & Lantern Lane	Box Culvert	10/1996 11 inches of Rain Hurricane Bob	12" to 18"	Road Shut Down Public property	Washout	Upgrade and clean stream below	$50,000 - $200,000

Yarmouth – Mitigation Measures

Location	Type	Dates of known events	Description of event	Impacts	Cause	Proposed remedies	Cost estimate
Flooding - stream flow							
Stream crossing of Pratts Brook and Ledge Road	Stone Culvert		During heavy storm events, water backs up upstream of culvert at its inlet jeopardizing its structural integrity and roadway.	Emergency vehicle access, safety hazard.	Undersized culvert, debris in stream channel	Upsize culvert, remove debris	$50,000 - $200,000

Requirement §201.6(c)(4)(i):	[The plan maintenance process shall include a] section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.

The Cumberland County Emergency Management Agency (CCEMA) and the local Emergency Management Agency Directors will play the lead roles in monitoring and evaluating the implementation of the hazard mitigation plan. CCEMA will collect information, as appropriate, on an annual basis from the EMA Directors to assess progress on the mitigation goals and objectives. CCEMA hosts regular meetings of the County EMA Directors at which issues relating to the implementation of the plan will be addressed, as they arise.

At the beginning of the fourth year of implementation of this plan, CCEMA will initiate a process to assess the implementation of the plan including a re-evaluation of the hazard analysis and the mitigation measures. This process will involve the local EMA Directors, who will serve as liaisons to other municipal staff and officials. Based on the information collected and an analysis of that information, proposed changes to the plan will be made for the following five year period and submitted to the Maine Emergency Management Agency and Federal Emergency Management Agency.

Requirement §201.6(c)(4)(ii):	**[The plan shall include a] process by which local governments incorporate the requirements on the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.**

The Cumberland County Emergency Management Agency (CCEMA) will provide guidance to the local EMA Directors who will play the lead role in incorporating measures in the hazard mitigation plan into other municipal plans and programs.

Maine municipalities are required to update their comprehensive plans on a periodic basis. At the time of the updating of the comprehensive plan, mitigation goals and objectives can be introduced into the planning process. In addition, a municipality may choose to develop a specific hazard mitigation section in its comprehensive plan, which could be adopted on its own, even if an update of the comprehensive plan is not being done.

It will be the responsibility of the local EMA Directors to provide input into their communities' capital improvement plan processes.

It must be recognized that there is a variety of governance structures in Cumberland County. Some municipalities can adopt ordinances and other regulatory mechanisms by council or selectboard vote, while other municipalities must put such proposals to a town meeting vote of the general populace. In both cases, the need to educate the public as well as elected officials is paramount. It should be noted that education measures ranked at or near the top of the list in all hazard categories.

CCEMA will continue to provide assistance to communities, as it has done in the past, in the development of FEMA grant applications for the Pre-Disaster Mitigation, Hazard Mitigation Grant Program and other grant programs.

Requirement §201.6(c)(4)(iii):	**[The plan maintenance process shall include a] discussion on how the community will continue public participation in the plan maintenance process.**

Each municipality will receive a copy of the completed plan to keep on file at the municipal office. A notice will be posted at each municipal office advising the public of the availability of the plan for review. Municipalities with websites may choose to post the plan on the website. The plan will be posted on the CCEMA website.

Members of the public will be welcome to submit comments, suggestions or feedback on the plan to CCEMA, as well as to volunteer to be involved with hazard mitigation efforts. CCEMA will continue its efforts to coordinate with volunteer community groups.

At the time of the 5-year review and updating of the plan, CCEMA will notify the public of the plan review and updating process and will invite public comment and participation in the process.

APPENDIX

Flooding

In order to estimate potential losses from flooding, all roads lying within the 100-year floodplain were identified and costs to replace these roads were calculated. For municipalities for which data was available indicating whether the road was paved or gravel, cost estimates of $250,000/mile and $130,000/mile were used as replacement costs. For municipalities for which no data was available for road surface, an estimate of $200,000/mile was used.

Municipality	Road	Length	Damage cost
Baldwin	Airport Intervale	261	$9,871
	Crawford Rd	26	$985
	Dearborn Rd	14	$515
	Depot Rd	42	$1,579
	Douglas Hill Rd	215	$8,144
	Greenwood Acres	3	$127
	Half Moon Pond Ln	44	$1,649
	Hiram Dam Rd	134	$5,082
	Pequawket Trl	725	$27,462
	Pigeon Brook Rd	47	$1,783
	Red House Intervale	699	$26,473
	Rileys Intervale	77	$2,917
	River Rd	110	$4,167
	Saw Mill Ln	69	$2,625
	Tavern Ln	2	$61
	Weeman Rd	25	$960
	Woods Mill Rd	107	$4,036
	Unidentified	2,057	$77,917
	TOTAL	4,656	$176,351
Bridgton	Bacon St	18	$687
	Bass Cir	111	$4,220
	Bells Point Rd	27	$1,008
	Big Sandy Rd North	261	$9,886
	Brickyard Hill Rd	344	$13,030
	Brown Mill Rd	50	$1,905
	Cedar Dr	206	$7,814
	Chipmunk Ln	12	$437
	Christmas Tree Ln	191	$7,235
	Church St	10	$380
	Cluff Ln	136	$5,160
	Colorwar	168	$6,350
	Cousins Pt	13	$500
	Crotched Pond Rd	409	$15,492
	Dalton Dr	10	$368
	Depot St	220	$8,333
	Dunrobin Ln	70	$2,659
	Elm St	29	$1,091
	Fitton Ln	141	$5,336

	Fosterville Rd	109	$4,129
	Frances Bell Dr	80	$3,031
	Game Wy	30	$1,131
	Gammon Rd	23	$860
	Grist Mill Rd	161	$6,098
	Harrison Rd	369	$13,977
	Hemlock Point Ln	56	$2,117
	Highland Rd	306	$11,591
	Holt Ln	84	$3,181
	Home Run Rd	278	$10,531
	Howard Trl	64	$2,435
	Kansas Rd	44	$1,668
	Kendal Ham Dr	143	$5,411
	Kennard St	11	$407
	Kilborn Dr	429	$16,241
	Kingswood Rd	192	$7,284
	Kinney Ln	39	$1,471
	Knapp Rd	4	$137
	Kringle Wy	92	$3,487
	Lakeside Pines Rd	213	$8,068
	Luck Grv	30	$1,151
	Mackeys Landing Rd	221	$8,373
	Main St	248	$9,394
	Merrill Cv	83	$3,125
	Milbrook Rd	92	$3,494
	Molly Morgan Wy	154	$5,824
	Morday Ln	14	$544
	North High St	178	$6,742
	Nulty St	126	$4,773
	Park St	126	$4,787
	Pine Path Ln	24	$925
	Pioneer Ln	293	$11,087
	Plummers Landing Rd	31	$1,179
	Portland Rd	30	$1,143
	Power House Rd	107	$4,053
	Salmon Point Rd	241	$9,132
	Sandy Cove Rd	0	$0
	Sandy Creek Rd	234	$8,864
	Santa Claus Dr	1	$55
	Saunders Mill Rd	67	$2,520
	Shady Acres	7	$246
	Skillins Cir	128	$4,848
	Sleigh Bell Ln	296	$11,212
	Smith Av	47	$1,791
	South Bridgton Rd	110	$4,167
	South High St	110	$4,168

	Steam Mill Rd	386	$14,621
	Sucker Brook Rd	267	$10,122
	Tarry A While Rd	2	$71
	The Jungle	369	$13,969
	Town Farm Rd	41	$1,544
	Trout Hook Ln	24	$920
	Two Ponds Rd	164	$6,212
	Waterview Trl	126	$4,761
	Waumbeckket Wy	89	$3,380
	Wildhaven Rd	169	$6,402
	Wildwood Rd	79	$3,004
	Willett Rd	157	$5,942
	Winona Rd	174	$6,591
	Unidentified	2,401	$90,947
	TOTAL	12,599	$477,233
Brunswick	Bunganuc Rd	44	$1,833
	Collins Brook R	35	$862
	Gurnet Rd	92	$3,833
	Hacker Rd	68	$2,833
	Harpswell Rd	125	$5,208
	I-95 Nb	288	$12,000
	Maquoit Rd	226	$9,417
	Meadowbrook Rd	94	$3,917
	Mill Rd	51	$2,125
	New Gurnet Rd	69	$2,875
	Old Bath Rd	226	$9,417
	Old Pennellvlle	214	$5,269
	Pleasant Hill	90	$3,750
	Princes Pt Rd	2	$83
	Princes Pt Rd	44	$1,833
	Ramp A0196	768	$32,000
	Raymond Rd	44	$1,833
	River Rd	205	$8,542
	Rossmore Rd	72	$3,000
	Rte 196	32	$1,333
	Sawyer Rd	9	$222
	Simpsons Pt Rd	58	$2,417
	Sparwell La	27	$1,125
	Us-1 Wb	204	$8,500
	Water St	109	$4,542
	TOTAL	3,196	$128,769
Cape Elizabeth	Alewife Cove Rd	9	$353
	Algonquin Rd	10	$370
	Bowery Beach Rd	72	$2,724
	Cunner Ln	89	$3,378
	Garden Cir	51	$1,932
	Garden Ln	9	$326

	Ocean House Rd	145	$5,492
	Old Mill Rd	94	$3,545
	Old Ocean House Rd	120	$4,545
	Rams Head Rd	91	$3,446
	Reef Rd	103	$3,910
	Sawyer Rd	186	$7,064
	Scott Dyer Rd	48	$1,813
	Sea Barn Rd	2	$76
	Shipwreck Cove Rd	3	$127
	Shore Rd	71	$2,693
	Spurwink Av	274	$10,379
	Starboard Dr	253	$9,570
	State Av	8	$308
	Surf Rd	6	$230
	Surfside Av	45	$1,705
	Two Lights Rd	47	$1,780
	Unidentified	1,110	$42,045
	TOTAL	2,846	$107,812
Casco	Arcadia Rd	300	$11,364
	Bear Island Rd	310	$11,742
	Boothby Ln	31	$1,180
	Captain Dingley Rd	26	$985
	Cliffside Rd	74	$2,792
	Clinton Rd	227	$8,612
	Cone Av	79	$3,001
	Cooks Mills Rd	78	$2,942
	Cub Pt Rd	84	$3,182
	Fish Hatchery Rd	280	$10,599
	Hancock Rd	204	$7,742
	Heath Rd	317	$12,008
	Hillside Av	227	$8,598
	Island Rd	272	$10,303
	Kane Holmes Ln	16	$600
	Kathryn Blvd	24	$898
	Lake Shr Dr	3	$102
	Laurel Rd	89	$3,360
	Libby Rd	94	$3,561
	Lord Rd	97	$3,674
	Lower Coffee Pond Rd	260	$9,848
	Mayberry Hill Rd	201	$7,621
	Meadow Rd	104	$3,939
	Mondville Ln	104	$3,928
	Morningside Ln	11	$428
	Mtn View Rd	253	$9,588
	Oak St	42	$1,588
	Oconnor Rd	462	$17,500
	Parsons Pt Rd	15	$556

	Peepers Path	74	$2,796
	Poland Spring Rd	166	$6,288
	Raymond Cape Rd	56	$2,127
	Ring Island	406	$15,379
	Roosevelt Trl	156	$5,909
	Sharpes Rd	91	$3,449
	Sheep Island	1,327	$50,265
	State Park Rd	83	$3,161
	Tall Wood Rd	159	$6,033
	Thomas Pond Shr Rd	148	$5,606
	Watkin Shrs Rd	288	$10,909
	Webbs Mills Rd	59	$2,222
	Welch Dr	304	$11,501
	Winifred Ln	173	$6,553
	Woodland Trl	8	$315
	Unidentified	893	$33,826
	TOTAL	8,675	$328,580
Cumberland	Bennetts Cove Rd	44	$1,669
	Blanchard Rd	124	$4,697
	Brookwood Ln	59	$2,227
	Corey Rd	322	$12,199
	Forest Lake Rd	309	$11,686
	Gray Rd	80	$3,018
	Greely Rd	93	$3,532
	I-495	25	$964
	Indian Point Rd	333	$12,614
	Jenks Rd	26	$999
	Longwoods Rd	71	$2,697
	Main St	174	$6,574
	Mill Rd	34	$1,272
	Pleasant Valley Rd	99	$3,745
	Skillin Rd	32	$1,219
	Stone Wharf Rd	13	$508
	Tuttle Rd	129	$4,887
	Waldo Point Rd	5	$191
	Walker Rd	100	$3,804
	Wild Apple Ln	10	$369
	Winn Rd	80	$3,041
	Unidentified	17	$644
	TOTAL	2,179	$82,557
Falmouth	Allen Ave	81	$3,375
	Ameriscoggin Rd	1	$42
	Andrews Ave	366	$15,250
	Bayshore Dr	50	$2,083
	Blackstrap Rd	232	$9,667
	Brook Rd	55	$2,292
	Eastern Ave	44	$1,833

	Falmouth Rd	146	$6,083
	Field Rd	27	$1,125
	Foreside Rd	314	$13,083
	Gray Rd	270	$11,250
	Heritage La	104	$4,333
	Hurricane Rd	51	$2,125
	I-295 Nb	151	$6,292
	I-495 Nb	679	$28,292
	I-95 Nb	405	$16,875
	Leighton Rd	81	$3,375
	Mast Rd	38	$1,583
	Middle Rd	125	$5,208
	Mill Rd	9	$375
	Northbrook Rd	38	$1,583
	Robin La	37	$1,542
	Rte 1	33	$1,375
	Schulster Rd	64	$1,576
	Shoreline Dr	21	$875
	Town Landing Rd	74	$3,083
	Woods Rd	62	$2,583
	Woodville Rd	79	$3,292
	TOTAL	3,637	$150,451
Freeport	County Rd	77	$3,208
	Desert Rd	29	$1,208
	Durham Rd	56	$2,333
	Flying Point Rd	335	$13,958
	Hunter Rd	92	$3,833
	I-95 Nb	543	$22,625
	Lower Flying	54	$1,330
	Lower Mast	247	$10,292
	Maggart	62	$1,527
	Main St	45	$1,875
	Old County Rd	104	$4,333
	Pleasant Hill	62	$2,583
	South Freeport	170	$7,083
	Staples Pt Rd	117	$2,881
	Upper Mast	167	$6,958
	Ward Town Rd	124	$5,167
	Webster	183	$7,625
	Unidentified	363	$15,125
	TOTAL	1,518	$113,945
Frye Island	Beach 1 Rd	6	$228
	Beach 10 Rd	0	$9
	Beach 11 Rd	32	$1,219
	Beach 12 Rd	44	$1,670
	Beach 2 Rd	26	$982
	Beach 3 Rd	38	$1,429

	Beach 4 Rd	44	$1,653
	Beach 5 Rd	25	$931
	Beach 6 Rd	30	$1,127
	Beach 7 Rd	5	$175
	Beach 8 Rd	2	$85
	Birch Rd	179	$6,787
	Island Rd	144	$5,457
	Leisure Ln	199	$7,538
	Long Beach Cswy	153	$5,812
	Lookout Ln	5	$204
	Marina Rd	159	$6,023
	Playground Ln	31	$1,174
	Quail Cir	101	$3,835
	Recreation Beach Rd	27	$1,038
	Sunset Rd	40	$1,523
	Unidentified	53	$2,005
	TOTAL	1,344	$50,903
Gorham	Barstow Rd	78	$3,250
	Brackett Rd	163	$6,792
	Bragdon Rd	108	$4,500
	Brookwood Dr	56	$2,333
	Buck St	105	$4,375
	County Rd	217	$9,042
	Day Rd	126	$5,250
	Deering Rd	148	$6,167
	Dingley Spring	126	$3,102
	Dunlap Rd	58	$2,417
	Files Rd	60	$2,500
	Finn Parker Rd	89	$3,708
	Flaggy Meadow	122	$5,083
	Fort Hill Rd	299	$12,458
	Gambo Rd	103	$4,292
	Goodal Rd	49	$2,042
	Gorham San Ldfl	107	$2,634
	Gray Rd	29	$1,208
	Gray Rd	8	$333
	Hodgdon Rd	69	$2,875
	Hurricane Rd	133	$5,542
	Huston Rd	143	$5,958
	Ledge Hill Rd	104	$4,333
	Longfellow Rd	36	$1,500
	Main St	11	$458
	Mallison St	29	$1,208
	Middle Jam Rd	710	$29,583
	Mighty St	126	$5,250
	Mitchell Rd	189	$7,875
	Mosher Rd	98	$4,083

	Nna	42	$1,034
	North Gorham Rd	243	$10,125
	Ossipee Trail	268	$11,167
	Plummer Rd	106	$4,417
	School St	36	$1,500
	Shaws Mill Rd	2	$83
	So Branch Terr	54	$2,250
	Solomon Dr	223	$9,292
	South St	284	$11,833
	Straw Rd	23	$958
	Tow Path Rd	151	$6,292
	Washburn Dr	71	$2,958
	Waterhouse Rd	108	$4,500
	Wescott Rd	63	$2,625
	Wilson Rd	67	$2,792
	Wood Rd	43	$1,792
	TOTAL	5,483	$223,771
Gray	Aquilla Rd	107	$4,055
	Birch Island Rd	50	$1,894
	Cambell Shore Rd	33	$1,258
	Center Rd	201	$7,627
	Cobbs Dr	346	$13,110
	Collins Point Rd	221	$8,355
	Cottage Rd	85	$3,222
	Depot Rd	87	$3,281
	Doughty Farm Rd	42	$1,604
	Dry Pond Rd	2	$85
	Egypt Rd	60	$2,285
	Fawn Rd	104	$3,943
	Forest Lake Rd	7	$251
	Grape Island Trl	157	$5,929
	Hunnewell Dr	14	$514
	Hunts Hill Rd	117	$4,426
	I-495	1,262	$47,803
	Kincaid Ln	179	$6,764
	Landers Dr	41	$1,536
	Latham Dr	15	$557
	Lawrence Rd	172	$6,514
	Legrow Rd	214	$8,106
	Lewiston Rd	80	$3,045
	Long Hill Rd	157	$5,963
	Lyons Point Rd	224	$8,485
	Mayall Rd	122	$4,621
	Megquire Rd	285	$10,795
	Merrill Rd	168	$6,373
	Mill Brook Rd	166	$6,291
	Murray Dr	76	$2,879

	North Raymond Rd	162	$6,125
	Northern Oaks Dr	22	$816
	Outback Ln	8	$313
	Pickerel Pond Rd	3	$103
	Pineland Pumping Sta	136	$5,147
	Pleasant View Dr	94	$3,561
	Portland Rd	249	$9,432
	Prebles Wy	9	$358
	Ramsdell Rd	60	$2,288
	Richard's Wy	80	$3,020
	Shady Ridge Rd	71	$2,676
	Shaker Rd	28	$1,047
	Spring Ridge Dr	7	$255
	Swett Dr	181	$6,856
	Totten Rd	555	$21,023
	West Gray Rd	148	$5,606
	Westwood Rd	854	$32,348
	Weymouth Rd	25	$945
	Witham Rd	57	$2,172
	Wood Dr	131	$4,961
	Worchester Dr	110	$4,175
	Zachery Dr	196	$7,405
	Unidentified	190	$7,197
	TOTAL	8,168	$309,401
Harpswell	Abner Point Rd	42	$1,585
	Ash Point Rd	10	$381
	Aucocisco Ln	79	$3,000
	Back Shore Ln	64	$2,414
	Barnes Is	942	$35,682
	Barton Ln	28	$1,069
	Basin Point Rd	718	$27,197
	Bass Rocks Wy	57	$2,142
	Bethel Point Rd	223	$8,447
	Bibber Wy	5	$171
	Big Hen Is	1,525	$57,765
	Birch Is	8,708	$329,848
	Bombazine Is	959	$36,326
	Bragdon Is	895	$33,902
	Breezy Point Ln	34	$1,286
	Brittany Ln	94	$3,555
	Bunchberry Ln	62	$2,352
	Bush Is	537	$20,341
	Catlin Shore Rd	44	$1,656
	Cattail Trl	76	$2,875
	Claytons Point Rd	36	$1,364
	Cleveland Is	268	$10,152
	Cove Side Dr	46	$1,757

	Cundys Harbor Rd	75	$2,841
	Dingley Island Rd	117	$4,432
	Dirigo Ln	41	$1,553
	Dog Leg Rd	30	$1,127
	Dogs Head Is	318	$12,045
	Dolphin Ln	60	$2,256
	Dyers Cove Rd	27	$1,035
	Eagle Is	1,346	$50,985
	East Cundys Point Rd	54	$2,062
	Eider Rd	149	$5,644
	Field Rd	95	$3,598
	Flag Is	1,714	$64,924
	Garrison Cove Rd	406	$15,379
	George Is	829	$31,402
	Goodwin Ln	13	$484
	Goose Ledge Rd	53	$2,002
	Graveyard Point Rd	30	$1,121
	Great Mark Is	662	$25,076
	Grey Osprey Ln	113	$4,272
	Grist Mill Ln	98	$3,724
	Gun Point Rd	292	$11,061
	Guss Gully Rd	188	$7,125
	Hamloaf Is	337	$12,765
	Harpswell Islands Rd	404	$15,303
	Harpswell Neck Rd	14	$521
	Harrington Pt	62	$2,343
	Haskell Is	4,532	$171,667
	Hastings Ln	33	$1,247
	Hayward Point Is	437	$16,553
	Hen Cove Rd	111	$4,205
	High Head Rd	197	$7,462
	Hildreth Rd	3	$97
	Hills Wy	54	$2,031
	Hirams Dr	72	$2,744
	Hopkins Is	689	$26,098
	Hopkins Island Rd	98	$3,712
	Intervale Rd	27	$1,033
	Irene Av	26	$976
	Lane Rd	69	$2,624
	Laurel Cove Rd	62	$2,362
	Laurier St	6	$222
	Lawrence Ln	2	$81
	Ledgeview Ln	43	$1,629
	Levett Is	662	$25,076
	Levett Island Ln	8	$320
	Linwood Ln	62	$2,346
	Little Crow Point Rd	201	$7,614

	Little Is	908	$34,394
	Little Island Rd	124	$4,696
	Little Ponds Rd	115	$4,356
	Little Yarmouth Is	2,745	$103,977
	Lombos Hole Rd	267	$10,114
	Long Is	7,266	$275,227
	Long Point Is	823	$31,174
	Long Point Rd	781	$29,583
	Long Reach Ln	132	$5,000
	Lookout Point Rd	39	$1,462
	Lowells Cove Rd	312	$11,818
	Lower Goose Is	5,869	$222,311
	Lower Rd	212	$8,039
	Lubee Dr	7	$282
	Malcolm Dr	8	$306
	Marshview Wy	71	$2,689
	Matthews Wy	62	$2,357
	Morse Shore Rd	74	$2,803
	Mountain Rd	399	$15,114
	Oak Is	919	$34,811
	Oak Ledge Rd	233	$8,826
	Oakhurst Island Rd	178	$6,742
	Ocean St	8	$285
	Ocean View Terr	35	$1,336
	Oceanside Ct	36	$1,354
	Pasture Rd	121	$4,581
	Periwinkle Ln	46	$1,729
	Pinkham Is	786	$29,773
	Pole Is	2,035	$77,083
	Potts Pt Rd	50	$1,886
	Quahog Ln	198	$7,515
	Ragged Is	3,306	$125,227
	Rands Rd	41	$1,539
	Raspberry Is	373	$14,121
	Rum Cove Rd	5	$195
	Sailors Wy	69	$2,614
	Sanctuary Rd	32	$1,229
	Scrag Is	1,189	$45,038
	Seal Harbor Wy	22	$834
	Seal Ledge Ln	48	$1,824
	Sebascodegan Shores Rd	58	$2,197
	Sheep Is	1,588	$60,152
	Sheep Is	19	$703
	Sheep Is	39	$1,494
	Sheep Is	70	$2,657
	Sheep Is	240	$9,093
	Sheep Is	186	$7,060

	Sheep Is	906	$34,335
	Shelter Is	709	$26,856
	Shubael Ln	6	$209
	Skassen Ln	138	$5,233
	Snow Country Ln	8	$297
	Snow Is	2,029	$76,856
	Spaulding Ln	156	$5,915
	Steamboat Wharf Lndg	83	$3,146
	Stovers Cove Rd	11	$410
	Summerside Ln	57	$2,171
	Taylor Rd	80	$3,031
	Thistle Cv	66	$2,483
	Tibetan Track	31	$1,179
	Tide Mill Cove Rd	27	$1,020
	Tondreau Point Rd	21	$784
	Tower Hill Rd	61	$2,300
	Upper Goose Is	2,851	$107,992
	Wallace Shore Ext	25	$952
	Wallace Shore Rd	28	$1,042
	Wallace Wy	34	$1,280
	Washighton Av	67	$2,547
	Wentworth Ln	20	$758
	West Cundys Point Rd	127	$4,811
	Whidden Rd	14	$546
	White Is	4,308	$163,182
	Wills Strait Rd	73	$2,765
	Wilson Ln	19	$714
	Windsor Ln	51	$1,940
	Windward Wy	33	$1,262
	Wissman Point Rd	3	$120
	Yarmouth Is	5,912	$223,939
	Unidentified	1,173	$44,432
	TOTAL	81,643	$3,092,545
Harrison	Bens Wy	11	$417
	Bolsters Mills Rd	20	$752
	Bridgton Rd	375	$14,205
	Cape Monday Rd	136	$5,152
	Chute St	7	$273
	Corn Shop Rd	66	$2,517
	Crooked River Pines	195	$7,371
	Half Mile Rd	29	$1,098
	Harrison Heights Rd	83	$3,144
	Lincoln St	65	$2,471
	Loon Ln	38	$1,427
	Main St	178	$6,742
	Misty Cove Dr	51	$1,939
	Norway Rd	1	$42

	Pine Point Rd	141	$5,332
	Pitts Rd	54	$2,064
	Plains Rd	13	$477
	Ryefield Bridge Rd	129	$4,886
	Sampson Rd	24	$927
	Scribners Mills Rd	186	$7,045
	Thomes-Intervale Rd	340	$12,883
	Tolman Rd	81	$3,073
	Walker Mills Rd	192	$7,273
	Waterford Rd	77	$2,915
	Unidentified	483	$18,295
	TOTAL	2,976	$112,719
Long Island	Beach Av	34	$1,288
	BS&G Rd	61	$2,306
	Cove Rd	10	$360
	Eastern Av	67	$2,538
	Fern Av	154	$5,833
	Island Av	241	$9,129
	Messalonskee Rd	57	$2,176
	Ponce Lndg	51	$1,929
	Wharf St	427	$16,175
	Unidentified	182	$6,894
	TOTAL	1,284	$48,627
Naples	Acorn Rd	733	$27,765
	Bayou Rd	222	$8,409
	Bove Rd	602	$22,803
	Campground Rd	98	$3,712
	Canabea Ps	9	$323
	Casco Rd	286	$10,829
	Chaplins Mill Rd	132	$4,990
	Chris St	13	$510
	Cobby Rd	99	$3,743
	Colonial Mast Rd	110	$4,157
	Cottage Rd	75	$2,823
	Crooked Wy	505	$19,129
	Crow Ln	131	$4,955
	Dillingham Rd	3	$98
	Dragon Back Rd	270	$10,237
	East Shore Beach Rd	288	$10,922
	Edes Falls Rd	17	$633
	Fair Haven Ln	100	$3,779
	Fox Hollow Rd	43	$1,617
	Goodridge Dr	179	$6,776
	Grackle Ln	97	$3,656
	Harrison Rd	18	$668
	Hillside Av	34	$1,296
	Hummingbird Ln	187	$7,089

	Indian Head Rd	220	$8,333
	Jackson Cv Rd	198	$7,490
	Jugtown Rd	109	$4,117
	Justamere Rd	219	$8,310
	Kansas Rd	77	$2,911
	Kents Lndg	58	$2,214
	Keoka Ln	235	$8,914
	Krainin Ln	52	$1,972
	Lake House Rd	300	$11,364
	Lambs Mill Rd	60	$2,283
	Laurik Ln	58	$2,199
	Little Rock Rd	40	$1,508
	Lodge Rd	16	$603
	Long Lake Cottage Rd	17	$633
	Long Point	779	$29,508
	Maine Rd	12	$443
	Majestic Pines	62	$2,341
	Malibu Rd	78	$2,955
	Mallard Ln	74	$2,820
	Maplewood Dr	453	$17,159
	Margaret St	363	$13,750
	Meadowbrook Ln	78	$2,955
	Moose Landing Trl	17	$639
	Morton St	4	$142
	Mtn View Rd	14	$529
	Naples Marina Ln	277	$10,492
	Naro Rd	111	$4,204
	Oxen Yoke Rd	4	$144
	Pea Ln	6	$237
	Peggy St	8	$305
	Pine Rock Rd	158	$5,969
	Pitt Rd	250	$9,461
	Quinby Dr	14	$538
	River Rd	409	$15,492
	Riviera Rd	74	$2,815
	Roosevelt Trl	740	$28,030
	Rushs Wy	160	$6,051
	Seaplane Cv	92	$3,489
	Sebago Rd	266	$10,076
	Sherwood Forest Rd	23	$884
	Siesta Dr	32	$1,229
	Snell Rd	43	$1,633
	Songo School Rd	11	$398
	State Park Rd	207	$7,841
	Sunset Rd	30	$1,121
	Sunshine Ln	66	$2,488
	Takajo Rd	8	$314

	Wiggin Rd	274	$10,363
	TOTAL	11,103	$420,585
New Gloucester	Ayer Rd	77	$2,931
	Bald Hill Rd	190	$7,197
	Bennett Rd	29	$1,113
	Brackett Rd	82	$3,115
	Cobbs Bridge Rd	202	$7,659
	Dave Snow Rd	18	$670
	Dougherty Rd	72	$2,741
	Durham Rd	140	$5,303
	I-495	441	$16,705
	Intervale Rd	487	$18,447
	Jack Hall Rd	27	$1,024
	Lewiston Rd	130	$4,924
	Marston Rd	181	$6,873
	Morse Rd	310	$11,742
	North Pownal Rd	91	$3,440
	Outlet Rd	39	$1,482
	Penney Rd	186	$7,031
	Ralph Ln	43	$1,638
	Ricker Rd	83	$3,136
	Sawyer Rd	331	$12,538
	Shaker Rd	88	$3,338
	Town Farm Rd	83	$3,152
	Trotter's Park Rd	202	$7,636
	Wing Av	110	$4,159
	Woodman Rd	514	$19,470
	Unidentified	315	$11,932
	TOTAL	4,472	$169,396
North Yarmouth	Farm Edge Rd	93	$3,523
	Leeward Passage	26	$991
	Marion Wy	125	$4,734
	Memorial Hwy	190	$7,187
	Mill Rd	280	$10,615
	Milliken Rd	48	$1,831
	Mountfort Rd	59	$2,224
	New Gloucester Rd	66	$2,481
	North Rd	49	$1,870
	Pine Ridge Rd	56	$2,128
	River Edge Rd	8	$296
	Royal Rd	89	$3,381
	West Pownal Rd	214	$8,096
	Unidentified	85	$3,224
	TOTAL	1,388	$52,582
Portland	Allen Ave	150	$6,250
	Baxter Blvd	99	$4,125
	Bernard Rd	230	$9,583

	Bismark St	14	$583
	Brighton Ave	13	$542
	Capisic St	13	$542
	Cleveland St	19	$792
	Commercial St	30	$1,250
	Congress St	241	$10,042
	Dennett St	20	$833
	Drake Street	8	$197
	Edgewood Ave	19	$792
	Fall Brook St	19	$792
	Fore Riv Br Int	54	$2,250
	Forest Ave	111	$4,625
	Garrison St	1	$25
	Gertrude Ave	144	$6,000
	Helene Street	37	$1,542
	I-295n	2,077	$86,542
	I-495 Nb	45	$1,875
	I-95 Nb	106	$4,417
	Ivaloo St	87	$3,625
	Loring Ave	143	$5,958
	Lucas St	41	$1,708
	Maine Ave	138	$5,750
	Marlborough Rd	112	$4,667
	Mcallister Farm	52	$2,167
	Milliken St	215	$8,958
	Mona Rd	364	$15,167
	Murray St	25	$1,042
	Notingham Ave	4	$167
	Ocean Ave	64	$2,667
	Ohio St	54	$2,250
	Olympia St	46	$1,917
	Oregon St	25	$1,042
	Portland Pier	54	$2,250
	Ramp C	12	$500
	Ray St	110	$4,583
	Riverside Ind P	40	$1,667
	Riverside St.	110	$4,583
	Rosedale St	63	$2,625
	Rowe Ave	39	$1,625
	Rte 77 Nb	194	$8,083
	Samuel Rd	198	$8,250
	Sara Lane	202	$8,417
	State Pier	174	$4,284
	Sunset Lane	19	$792
	Unn 3400	39	$960
	Unn 3832	64	$1,576
	Vaill St	13	$542

	Veranda St	526	$21,917
	Violette Ave	35	$1,458
	Warwick St	55	$2,292
	Washington Ave	515	$21,458
	Webb St	37	$1,542
	Westbrook St.	22	$917
	Yellowbird Rd	80	$3,333
	Unidentified	2,294	$86,894
	TOTAL	9,715	$391,227
Pownal	Allen Rd	130	$4,924
	Chadsey Rd	228	$8,636
	Elmwood Rd	152	$5,758
	Hallowell Rd	139	$5,265
	Hodsdon Rd	74	$2,812
	Lawrence Rd	50	$1,902
	Leighton Rd	23	$881
	Poland Range Rd	186	$7,045
	Poland Range Rd	142	$5,397
	Royal Rd	89	$3,381
	Sweetser Rd	38	$1,457
	Tuttle Rd	131	$4,962
	Upper Minot Rd	64	$2,408
	Verrill Rd	77	$2,907
	TOTAL	1,524	$57,737
Raymond	Birch Dr	35	$1,314
	Boulder Rd	76	$2,881
	Brown Rd	54	$2,034
	Cape Rd	15	$574
	Casselton Rd	30	$1,135
	Chipmunk Xing	19	$702
	Deep Cove Rd	149	$5,644
	Evans Wy	8	$321
	Ferry Landing Rd	102	$3,846
	Grandview Ln	48	$1,806
	Hayden Brook Rd	37	$1,392
	Hewson Rd	39	$1,487
	Knapp Rd	76	$2,892
	Legacy Rd	182	$6,894
	Loon Lodge Rd	191	$7,232
	Manor Harbor Rd	42	$1,605
	Meadow Rd	7	$267
	Mill St	34	$1,304
	Murch Landing Rd	36	$1,354
	Papoose Island Rd	165	$6,233
	Peppercorn Wy	58	$2,196
	Plains Rd	46	$1,745
	Plummer Dr	513	$19,432

	Point of Cape Rd	168	$6,380
	Pond Rd	55	$2,081
	Raymond Hill Rd	44	$1,685
	Roosevelt Trl	316	$11,970
	Rusty Rd	27	$1,023
	Sheehan's Island Rd	130	$4,924
	South Shore Rd	79	$2,987
	Spiller Hill Rd	31	$1,177
	St Elbohs Cv	14	$533
	Tapley Cove Rd	139	$5,258
	Thomas Pond Terr	104	$3,939
	Two Acre Island Rd	86	$3,257
	Webbs Mills Rd	60	$2,273
	Wharf Rd	238	$9,012
	Wild Acres Rd	760	$28,788
	Willis Rd	59	$2,218
	Windwood Shores Rd	14	$528
	Unidentified	399	$15,114
	TOTAL	4,684	$177,438
Scarborough	Ashton St	8	$333
	Ave 3	4	$167
	Ave 4	101	$4,208
	Ave 5	110	$4,583
	Ave 6	49	$2,042
	Ave 7	59	$2,458
	Bayview Ave	518	$21,583
	Beechridge Rd	64	$2,667
	Black Point Rd	1,374	$57,250
	Broad Rd	224	$9,333
	Champion St	67	$2,792
	Clay Pitts Rd	595	$24,792
	Depot St	208	$8,667
	Dunstan Ldg Rd	77	$3,208
	E Grand Ave Ext	269	$11,208
	Eastern Rd	322	$7,928
	Fern Cir	7	$292
	Ferry Rd	286	$11,917
	Fogg Rd	413	$17,208
	Gorham Rd	262	$10,917
	I-95 Nb	682	$28,417
	Jordan Beach Rd	357	$8,790
	Joss Hill Rd	39	$1,625
	King St	287	$11,958
	Libby Rd	26	$1,083
	Maple Cir	20	$833
	Melbourne Dr	12	$500
	Milliken Rd	303	$12,625

	Morning St	86	$3,583
	New Rd	32	$1,333
	Ninth St	1	$42
	Nna	228	$5,614
	Nonesuch Cove R	27	$1,125
	Ocean Ave	39	$1,625
	Old Blue Point	75	$3,125
	Old Neck Rd	334	$13,917
	Partidge La	163	$6,792
	Payne Rd	897	$37,375
	Pine Point Rd	19	$792
	Ross Rd	44	$1,833
	Route 1	1,187	$49,458
	Saccarappa La	238	$5,860
	Sargent Rd	44	$1,083
	Sawyer St	298	$12,417
	Sca-Conn Nb	283	$11,792
	Scottow Hill Rd	96	$4,000
	Seavey Lndg Rd	143	$5,958
	South Gate Rd	32	$1,333
	Spring St#2	29	$1,208
	Spurwink Rd	53	$2,208
	Town Garage Dr	38	$1,583
	Vesper St	123	$5,125
	Willowdale Rd	97	$4,042
	Winnock Neck Rd	684	$28,500
	TOTAL	12,033	$481,108
Sebago	Barker Pond Rd	456	$17,273
	Bridgton Rd	114	$4,334
	Chambers Ln	83	$3,138
	Clair Rd	23	$872
	Cottage Rd	42	$1,583
	Dam Site Rd	133	$5,038
	Dyke Mountain Rd	50	$1,886
	Folly Rd	71	$2,701
	Hancock Pond Rd	172	$6,515
	Hogfat Hill Rd	53	$2,006
	Intervale St	2	$89
	Julian St	4	$169
	King St	4	$169
	Marina Rd	48	$1,818
	Naomi St	1	$47
	Northwest River Rd	179	$6,780
	Ossipee St	2	$80
	Peabody Pond Rd	1,332	$50,455
	Pickering St	3	$121
	Quest Av	6	$243

	Sebago Rd	331	$12,538
	South Beach St	14	$517
	Swamp Rd	1	$34
	Timber Ln	64	$2,407
	Trail Rd	25	$966
	Whites Rd	171	$6,477
	Winn Mountain Rd	73	$2,750
	Unidentified	2,310	$87,500
	TOTAL	5,769	$218,505
South Portland	Boothby Ave	48	$2,000
	Broadway	63	$2,625
	C St	1	$42
	Cottage Rd	14	$583
	Cut U0001	9	$375
	F St	13	$542
	Fessenden Ave	67	$2,792
	Foden Rd	10	$417
	Fore Riv Br App	32	$1,333
	Front St	30	$1,250
	Gorham Rd	12	$500
	Highland Ave	268	$11,167
	I-295	27	$1,125
	I-95 Nb	59	$2,458
	Kelley St	10	$417
	Maine Mall Rd	11	$458
	Marsh Rd	21	$875
	Me Tpk App (On)	20	$833
	Mt Vernon St 2	42	$1,750
	Pearle St	1	$42
	Providence Ave	60	$2,500
	Ramp B0425	34	$1,417
	Richland St	45	$1,875
	Rte 77 Nb	166	$6,917
	Sawyer St	22	$917
	Spurwink Ave	65	$2,708
	Tanner St	7	$292
	Unn #6	39	$1,625
	TOTAL	1,196	$49,833
Standish	Acres of Wildlife	509	$19,280
	Ayer Dr	42	$1,579
	Basin Island Dr	116	$4,400
	Big Island	378	$14,308
	Billings Rd	5	$175
	Binford Rd	21	$808
	Blake Rd	87	$3,278
	Bog Aly	214	$8,115
	Bonny Eagle Pond Rd	197	$7,462

	Bonny Eagle Rd	538	$20,379
	Boundary Rd	320	$12,121
	Burke Rd	16	$610
	Burke Road Ext	17	$655
	Cabbage Yard Rd	44	$1,680
	Cape Rd	277	$10,498
	Chadbourne Rd	85	$3,220
	Chapman Wy	75	$2,851
	Chestnut St	16	$587
	Chicopee Rd	145	$5,492
	Clarks Point Rd	40	$1,518
	Connor Rd	125	$4,720
	Cram Rd	248	$9,377
	Crow Pt	72	$2,734
	Dennis Woods Rd	148	$5,588
	Dolloff Rd	54	$2,046
	Dow Rd	164	$6,209
	Dry Island	95	$3,581
	Eleanor Av	157	$5,966
	Emery Rd	86	$3,264
	Forrest St	23	$872
	Gains Rd	29	$1,089
	Gilman Rd	113	$4,280
	Gilman Road Ext	103	$3,914
	Great Bay Rd	73	$2,752
	Harmons Beach Rd	256	$9,697
	Hawkes Dr	73	$2,757
	Hideaway Ln	19	$713
	Holden Rd	67	$2,528
	Island Dr	116	$4,394
	Jeremy Dr	12	$468
	Job Rd	86	$3,241
	Jones Point Rd	620	$23,479
	Kendra Ln	60	$2,277
	Kimball Dr	98	$3,712
	Little Lake St	124	$4,699
	Littlefield Rd	96	$3,636
	Luke Rd	36	$1,373
	Main St	49	$1,869
	Manchester Rd	38	$1,434
	Meadow Ln	384	$14,545
	Middle Jam Rd	10	$380
	Middle Rd	88	$3,341
	Moody Rd	430	$16,299
	Mosley Rd	129	$4,898
	Oak Hill Rd	71	$2,697
	Old Standish Rd	104	$3,947

	Ossipee Trl East	184	$6,967
	Ossipee Trl West	271	$10,265
	Peninsula Dr	189	$7,147
	Pequawket Trl	245	$9,280
	Pineland Beach Rd	137	$5,195
	Randall Rd	60	$2,255
	Richville Rd	909	$34,432
	Rines Rd	8	$297
	River Rd	55	$2,093
	Rivershore Dr	48	$1,835
	Robs Wy	14	$519
	Saco Rd	201	$7,614
	Sandbar Rd	455	$17,224
	Sebago Acres	23	$854
	Shaws Mill Rd	125	$4,736
	Shore Rd	187	$7,083
	Snug Harbor Rd	488	$18,485
	St. John St	26	$975
	Sucker Brook Rd	53	$2,013
	Thomas Road Ext	254	$9,619
	Trickey Rd	3	$121
	Vacation Hideaway	43	$1,640
	Wards Cove Rd	231	$8,750
	Warren Rd	179	$6,779
	Watchic Manor Ext	18	$687
	Watchic Rd19	182	$6,894
	Watchic Rd21	84	$3,195
	Westerlea Wy	3	$106
	Whites Bridge Rd	14	$529
	Whitney Pines Dr	66	$2,517
	Winding Wy	207	$7,831
	Unidentified	6,181	$234,129
	TOTAL	18,740	$709,857
Westbrook	Andover Rd	63	$2,386
	Austin St	31	$1,177
	Bridge St	38	$1,445
	Bridgton Rd	101	$3,826
	Brook St	20	$764
	Brown St	17	$643
	Cottage Pl	44	$1,651
	Cumberland St	176	$6,667
	Duck Pond Rd	74	$2,813
	East Bridge St	570	$21,584
	Eisenhower Dr	44	$1,667
	Emery St	8	$310
	Garfield St	11	$432
	Hillside Rd	78	$2,957

	King St	1	$42
	Lincoln St	4	$138
	Mentor St	37	$1,416
	Methodist Rd	108	$4,091
	Pershing Wy	508	$19,258
	Saco St	31	$1,159
	Spring St	17	$657
	Thomas Dr	252	$9,549
	Water St	91	$3,443
	Unidentified	1,755	$66,477
	TOTAL	4,080	$154,551
Windham	Albion Rd	462	$17,500
	Amber Ln	14	$523
	Anderson Rd	324	$12,273
	Anglers Rd	122	$4,619
	Arcadia Dr	50	$1,883
	Aroostook Dr	94	$3,558
	Basin Rd	167	$6,326
	Batchelder Rd	114	$4,300
	Beach Rd	2	$64
	Belanger Av	152	$5,758
	Bobs Wy	167	$6,320
	Brand Rd	127	$4,811
	Brentwood Rd	163	$6,174
	Brick Hill Rd	74	$2,806
	Brookhaven Dr	118	$4,470
	Brown Cove Rd	314	$11,904
	Cameron Ln	44	$1,682
	Chute Rd	71	$2,693
	Clairmont Rd	274	$10,379
	Colleybrook Rd	124	$4,699
	Collins Pond Rd	55	$2,083
	Cooper Rdg	64	$2,425
	Cosmic Wy	13	$493
	Cottage Rd	80	$3,030
	Cove Rd	3	$129
	Craig Rd	16	$612
	Crest Haven Rd	18	$693
	Cyprus Hill Dr	2	$68
	Davidson Dr	5	$198
	Ditch Brook Crsg	87	$3,295
	Dundee Rd	98	$3,724
	Dyke Ln	55	$2,070
	Emerson Dr	109	$4,129
	Evans Ridge Rd	84	$3,176
	Everett Dr	5	$189
	Falmouth Rd	249	$9,432

	Farm View Dr	60	$2,255
	Fern Av	401	$15,189
	Four Seasons Ln	137	$5,177
	Gambo Rd	128	$4,834
	Getaway Rd	36	$1,381
	Gin Mill Ln	19	$728
	Glendale Rd	283	$10,720
	Goodwin Ln	30	$1,136
	Grandview Point Rd	51	$1,930
	Gray Rd	225	$8,523
	Great Falls Rd	25	$928
	Griffin Rd	86	$3,275
	Gromble Wy	77	$2,917
	Harriett Av	71	$2,689
	Haskell Rd	85	$3,222
	Highland Cliff Rd	98	$3,697
	Hummingbird Ln	31	$1,172
	Hutchins Rd	31	$1,164
	Ice House Rd	2	$78
	Indian Cove Rd	23	$863
	Inkhorn Brook Rd	65	$2,451
	Intervale Rd	77	$2,924
	Island Dr	34	$1,271
	Jacques Ln	145	$5,499
	Jeffrey Woods Rd	357	$13,511
	Jesses Acres Rd	24	$891
	Johnson Rd	223	$8,447
	Keeps Wy	80	$3,017
	Ladyslipper Dr	10	$393
	Lakeside Dr	363	$13,750
	Land of Nod Rd	74	$2,807
	Laskey Rd	291	$11,023
	Little Duck Pond Rd	83	$3,159
	Loon Ln	130	$4,924
	Lower Beach Rd	144	$5,455
	Main St	114	$4,318
	Mallison Falls Rd	44	$1,682
	Marshall Valley Rd	13	$505
	Maynard Rd	82	$3,117
	Mill Pond Dr	114	$4,334
	Montgomery Rd	95	$3,593
	Mt Hunger Shore Rd	65	$2,444
	Mule St	120	$4,539
	Narrows Lndg	10	$390
	Nash Rd	105	$3,977
	Nelson Ln	18	$698
	Oak Ln	126	$4,772

	Orchard Rd	39	$1,473
	Outlet Cove Rd	190	$7,202
	Passby Point Rd	120	$4,562
	Pettingill Rd	24	$905
	Phil Hunt Rd	40	$1,501
	Pipeline Rd	174	$6,591
	Pope Rd	295	$11,174
	Presumpscot Rd	134	$5,087
	Pride Ln	69	$2,618
	Prosperity Ln	42	$1,575
	Rangeley Rd	85	$3,227
	Richards Rd	27	$1,038
	River Rd	583	$22,083
	Roosevelt Trl	545	$20,644
	Rousseau Rd	159	$6,023
	Sabbady Point Rd	114	$4,318
	Sandbar Rd	650	$24,621
	Sheldrake Point Rd	111	$4,205
	Simeon Dr	263	$9,962
	Sokokis Point Rd	24	$908
	Sposedo Rd	287	$10,871
	Sturgis Rd	83	$3,136
	Sunnyside Dr	90	$3,407
	Swett Rd	79	$3,009
	Sylvan Av	118	$4,453
	Tandberg Trl	135	$5,114
	Vacation Ln	84	$3,169
	Varney Mill Rd	51	$1,920
	Vista Dr	74	$2,803
	Walter Partridge Rd	68	$2,567
	Webb Rd	126	$4,773
	Whites Bridge Rd	159	$6,008
	William Knight Rd	86	$3,269
	Willow Dr	79	$2,985
	Windham Center Rd	423	$16,023
	Unidentified	2,275	$86,174
	TOTAL	16,728	$633,653
Yarmouth	Bridge St	50	$2,083
	Cousin Island	185	$7,708
	East Elm St	78	$3,250
	Granite St	280	$11,667
	Gristmill Lane	69	$2,875
	I-95 Nb	952	$39,667
	Lafayette St	42	$1,750
	Ledge Rd	165	$6,875
	Main St	30	$1,250
	Old County Rd	75	$3,125

	Plymouth Way	127	$5,292
	Riverbend Dr.2	12	$500
	Sligo Rd	62	$2,583
	Us 1	56	$2,333
	Yarmouth Pollu	30	$1,250
	Unidentified	656	$27,333
	TOTAL	2,869	$119,542

September 8, 2003

Mr. «First_Name» «Last_Name»
«Title»
Town of «Town»
«Address1»
«Town», «State» «Zip»

Dear Mr. «Last_Name»:

After November, 2003 municipal governments must have an approved Hazard Mitigation plan to be eligible for Federal Emergency Management Agency (FEMA) funding through the Pre-Disaster Mitigation Grant Program and after November, 2004 plans are required for eligibility in the Hazard Mitigation Grant Program. To date, municipalities in Cumberland County have received over $2.5 million through these programs. The attached fact sheet gives more information about the Hazard Mitigation planning process.

The Cumberland County Emergency Management Agency (CCEMA) and Cumberland County Soil and Water Conservation District (CCSWCD) are pleased to announce that they will be providing **technical assistance to towns and cities in Cumberland County to prepare Hazard Mitigation plans in order to fulfill Federal Emergency Management Agency requirements.** We will provide the following services:

- Guiding municipal staff and participating members of the public through the planning process in a methodical step-by-step manner
- Providing necessary mapping and data resources
- Assistance in organizing and conducting public workshops, trainings, and other functions.

We plan to complete a significant portion of the planning effort in the fall of 2003. **In order to get started, please call Betty McInnes at the CCSWCD (856-2777) by September 19 to schedule an initial planning meeting.** The planning meeting is an opportunity for you to obtain more information about the program and its requirements, ask any questions you may have, learn more about the assistance we can provide you to successfully complete this planning effort, and establish the next steps to get underway.

Sincerely,

Jeffrey L. Edelstein, P.E.
Hazard Mitigation Planning Program Facilitator

cc: George Flaherty, CCEMA
Betty McInnes, CCSWCD
Steve Burgess, MEMA
Bruce Fitzgerald, MEMA

enc.

CUMBERLAND COUNTY HAZARD MITIGATION PLANNING

The Cumberland County Emergency Management Agency (CCEMA) and the Cumberland County Soil and Water Conservation District (CCSWCD) are offering technical assistance to municipalities to develop municipal Hazard Mitigation Plans. After November, 2003, approved plans will be required for eligibility in the Federal Emergency Management Agency (FEMA) Pre-Disaster Mitigation Grant Program. After November, 2004, approved plans will be required for eligibility in the FEMA Hazard Mitigation Grant Program (HMGP).

What Is a Hazard Mitigation Plan?

A set of actions designed to reduce or eliminate risk to people and property from natural hazards and their effects.

Why Do It?

The U.S. Congress has passed a law requiring all municipalities to adopt a hazard mitigation plan in order to be eligible for funding through FEMA's Hazard Mitigation Grant Program. To date, municipalities in Cumberland County have benefited from over $2.5 million distributed by FEMA through the Hazard Mitigation Grant Program. Municipalities with approved plans will also be eligible for funding through FEMA's Pre-Disaster Mitigation Grant program.

In addition, Hazard Mitigation Planning can help ensure that communities' overall planning efforts are consistent with protecting the health and safety of residents, businesses and public facilities.

How Is Mitigation Planning Done?

First, potential risks to the community and areas of vulnerability are identified. Then, municipal staff and officials, business-people, local residents and others develop and prioritize ways to protect against those risks. For example, a community might determine that flooding is a severe hazard and prioritize the upgrading of critical bridges or other infrastructure to withstand flood impacts. Or, ice storm damage might be prioritized with actions designed to ensure that fire, police and emergency response services can remain operational.

CCEMA and CCSWCD will provide you with assistance, including maps, technical data on hazards and mitigation measures, and guidance on how to proceed through the required steps of the planning process. The planning process relies on existing maps and data; no additional mapping or data collection is required. Municipal obligations include allocating sufficient staff time to work with CCEMA and CCSWCD and providing opportunities for public input.

Where appropriate, the Hazard Mitigation Planning process will be done using a regional approach. For instance, the eleven communities in the Greater Portland participating in the Interlocal Stormwater Working Group may continue to work together on Hazard Mitigation Planning. Other groups may be formed in other areas of the County to enable neighboring communities to work together on cross-border issues, such as flooding, coordination of services, and similar issues.

How do we get started?

Contact Betty McInnes at the Cumberland County Soil and Water Conservation District (856-2777) by September 19 to schedule an initial planning meeting. The planning meeting is an opportunity for you to obtain more information about the program and its requirements, ask any questions you may have, learn more about the assistance we can provide you to successfully complete this planning effort, and establish the next steps to get underway.

Cumberland County Hazard Mitigation Planning
Municipal Manager Contact List

Organization/Municipality	First Name	Last Name	E-mail	Title	Address1	Town	State	Zip
Bridgton Town Office	Ronnie	Belanger	mgrtown@megalink.net	Town Manager	One Chase Common	Bridgton	ME	04009
Brunswick Town Office	Donald	Garrish	dgerish@brunswick.me.org	Town Manager	28 Federal Street	Brunswick	ME	04011
Cape Elizabeth Town Office	Michael	McGovern	cetm@maine.rr.com	Town Manager	PO Box 6260	Cape Elizabeth	ME	04107
Casco Town Office	David	Morton	casco@pivot.net	Town Manager	940 Meadow Road	Casco	ME	04015
Cumberland Town Office	Robert	Benson	rbenson@cumberlandmaine.com	Town Manager	290 Tuttle Road	Cumberland	ME	04021
Falmouth Town Office	Doug	Harris	dharris@town.falmouth.me.us	Town Manager	271 Falmouth Road	Falmouth	ME	04105
Freeport Town Office	Dale	Olmstead	dolmstead@freeportmaine.com	Town Manager	30 Main St.	Freeport	ME	04032
Frye Island Town Office	Conrad	Thebarge	clerk@fryeisland.com	Town Clerk	1 Sunset Road	Raymond	ME	04071
Frye Island Town Office	Joseph	Potts	manager@fryeisland.com	Town Manager	1 Sunset Road	Raymond	ME	04071
Gorham Town Office	David	Cole	dcole@gorham.me.us	Town Manager	270 Main Street	Gorham	ME	04038
Gray Town Office	Mitchell	Berkowitz	grayme@maine.rr.com	Town Manager	6 Shaker Road	Gray	ME	04039
Harpswell Town Office	Paul	Bird	harpswell@gwi.net	Administrative Assistant	PO Box 39	Harpswell	ME	04079-0039
Harrison Town Office	Michael	Thorne	townmgr@magalink.net	Town Manager	PO Box 300	Harrison	ME	04040
Long Island Town Office	Brenda	Callan		Town Clerk	PO Box 263	Long Island	ME	04050-0263
Naples Town Office	Phil	Covelli	naples@pivot.net	Town Manager	PO Box 1757	Naples	ME	04055
New Gloucester Town Office	William	Cooper	TNEWGLO1@maine.rr.com	Town Manager	PO Box 82	New Gloucester	ME	04260-0082
North Yarmouth Town Office	Scott	Seaver	sseaver@maine.rr.com	Town Manager	10 Village Square Road	North Yarmouth	ME	04097
Portland City Hall	Joseph	Gray	jeg@ci.portland.me.us	City Manager	389 Congress Street	Portland	ME	04101
Pownal Town Hall	Sue	Mack	pownalof@maine.rr.com	First Selectperson	PO Box 95	Pownal	ME	04069-0095
Raymond Town Hall	Don	Willard	don.willard@raymondmaine.org	Town Manager	401 Webbs Mill Road	Raymond	ME	04071
Scarborough Town Office	Ronald	Owens	rowens@ci.scarborough.me.us	Town Manager	PO 360	Scarborough	ME	04070
Sebago Town Office	Rosemary	Kulow	rkulow@pivot.net	Town Manager	406 Bridgton Road	Sebago	ME	04029
South Portland City Hall	Jeffrey	Jordan	jjordan@southportland.org	City Manager	PO 9422	South Portland	ME	04116-9422
Standish Town Hall	Gordon	Billington	manager@standish.org	Town Manager	175 Northeast Road	Standish	ME	04084
Westbrook City Hall	Jerre	Bryant	jbryant@westbrook.me.us	Administrative Assistant	2 York Street	Westbrook	ME	04092
Windham Town Office	Tony	Plante	atplante@town.windham.me.us	Town Manager	8 School Road	Windham	ME	04062
Yarmouth Town Office	Nat	Tupper	ntupper@yarmouth.me.us	Town Manager	PO Box 907	Yarmouth	ME	04096-2403

December 15, 2003

<<First Name>> <<Middle>><<Last Name>>
<<Title>> <<Program>>
<<Organization>>
<<Address 1>>
<<Town>>, ME <<Zip>>

Dear <<App>> <<Last Name>>:

I'm writing to request your organizations' participation in the development of a natural-hazard mitigation plan for Cumberland County. The Cumberland County Soil and water Conservation District (CCSWCD) is leading this plan development in partnership with the Cumberland County Emergency Management Agency (CCEMA). This initiative is being done to meet a Federal Emergency Management Agency (FEMA) directive that all municipalities, counties and states have hazard mitigation plans in place by November, 2004 in order to be eligible for certain FEMA funds.

Our vision is to produce a dynamic plan that provides a blueprint for the protection of the physical, organizational, and social infrastructure of the county. The plan will describe a series of measures that will increase the ability of our communities to withstand and respond to hazard events, such as floods,, hurricanes, and ice storms. The plan will include specific action steps, timelines and responsible parties for implementation of the mitigation measures. Where appropriate, the plan will be linked to other regional planning efforts and inter-municipal activities.

There will be two parts to the mitigation plan: county-wide mitigation strategies and municipal mitigation strategies. We have conducted briefings with most of the municipalities in the county, including all of the population centers, and to date have obtained 100% commitment to participate. Both the county-wide and municipal planning processes will begin in January, 2004 with a target date for completion of the county-wide plan by August 31, 2004.

The development of this plan is best done with the involvement of people like yourself who represent the agencies and organizations that own and/or run the critical infrastructure of the county. In addition to the knowledge and expertise you can contribute to this effort, your involvement will help ensure that the plan is consistent with and builds upon the goals and interests of your organization.

I have been contracted by the CCSWCD and CCEMA to lead this planning effort, utilizing my background as a professional facilitator and registered professional engineer. We will be holding an initial meeting in early January (date to be determined) to lay out the framework for developing the county-wide plan and to discuss the roles of CCSWCD, CCEMA, and others such as yourself. I will be calling you in the near future to discuss this initiative and your involvement. In the meantime, if you have any questions, please feel free to contact me at 247-8024 or ea@psouth.net.

Sincerely,

Jeffrey L. Edelstein, P.E.

cc: George Flaherty

App.	First Name	Middle	Last Name	Title	Program	Organization	Address 1	Town	Zip
Mr.	Bill		Soares			American Red Cross, Portland Chapter	524 Forest Avenue	Portland	04101
Mr.	Mike		Fortin			Bridgton Hospital	10 Hospital Drive	Bridgton	04009
Ms.	Genise		Knowlton			Bridgton Hospital	10 Hospital Drive	Bridgton	04009
Mr.	Mark	D.	Grover		Citizen Corps	c/o Public Safety Department	125 Shaker Road	Gray	04039
Mr.	Tom		Bryant			Central Maine Power Company	162 Canco Road	Portland	04103
Mr.	Joe		Purington			Central Maine Power Company	162 Canco Road	Portland	04103
Mr.	Gerald	R.	Cayer	Director	Department of Health and Human Services	City of Portland	389 Congress Street	Portland	04101
Ms.	Jo	E.	Linder, M.D.	Medical Officer Disease Control Program	Public Health Division	City of Portland	103 India Street	Portland	04101
Mr.	Nathan		Nickerson	Director	Public Health Division	City of Portland	389 Congress Street	Portland	04101
Mr.	Kevin	J.	Joyce	Chief Deputy		Cumberland County Sheriff's Office	36 County Way	Portland	04102
Mr.	Bruce		Skean		Federal Protective Service	Department of Homeland Security	176 Gannett Drive	South Portland	04106
Mr.	Michael		Edwards			Edmund S. Muskie School of Public Service	295 Water Street	Augusta	04330
Ms.	Diane		Friese			Edmund S. Muskie School of Public Service	295 Water Street	Augusta	04330
Mr.	Steve		Goodwin			Fairchild Semiconductor	333 Western Avenue	South Portland	04106
Ms.	Lynne		Pontius Gaudette	Health and Safety Coordinator		Goodwill Industries of Northern New England	353 Cumberland Avenue	Portland	04101
Mr.	W.	Godfrey	Wood	Chief Executive Officer		Greater Portland Chambers of Commerce	60 Pearl Street	Portland	04101
Mr.	Neal		Allen	Executive Director		Greater Portland Council of Governments			
Mr.	Peter		Deets (sp?)	Director of Facilities (?)		Ingraham Volunteers	237 Oxford Street	Portland	04104
Mr.	Scott		Hutcherson	Director of Crisis Services		Ingraham Volunteers	237 Oxford Street	Portland	04104
Ms.	Jane		Morrison	Executive Director		Ingraham Volunteers	P.O. Box 1868	Portland	04104-1868
Mr.	Sandy		Parker			Maine Hospital Association	33 Fuller Road	Augusta	04330
	Roger		Boyington			Maine Medical Center	22 Bramhall Street	Portland	04102-3175
	Mike		Ryan			Maine Medical Center	22 Bramhall Street	Portland	04102-3175
Mr.	Jeff		Sanborn	Safety Manager		Maine Medical Center	22 Bramhall Street	Portland	04102-3175
Mr.	Jeff		Thomas, CPE, SMA	Plant and Engineering Manager		Mercy Hospital	144 State Street	Portland	04101-3795
Mr.	Michael	S.	Pinkham			Midcoast Hospital	123 Medical Center Drive	Brunswick	04011
Lieutenant	Matt		McCan			MSO USCG	27 Pearl Street	Portland	04101-4726
Mr.	Joe		Burth			National Semiconductor	5 Foden Road	South Portland	04106
Ms.	Rebecca	L.	Miller			Northern New England Poison Control Center	22 Bramhall Street	Portland	04102
Mr.	Bob		Lord			Parkview Hospital	329 Main Street	Brunswick	04011
Ms.	Victoria		Doughty	Community Service Director		People's Regional Opportunity Program	510 Cumberland Avenue	Portland	04104
Mr.	Tom		Hardison	Director of Operations		Portland Pipe Line	30 Hill Street	South Portland	04061
Capt.	Brian	J.	Fournier	President		Portland Tugboat & Shipdocking Co., Inc.	P.O. Box 15049	Portland	04112-5049
Mr.	Phil		Boissoneault			Portland Water District	255 Douglas Street	Portland	04104-3553
Mr.	Don		Carroll			Southern Maine Emergency Services	10 Vocational Drive	South Portland	04106
Mr.	Thomas	W.	Dobbins			Sprague Energy Corporation	59 Main Street	South Portland	04106
Mr.	Phil		Van Brunt	Emergency Disaster Director	Divisional Headquarters	The Salvation Army	P.O. Box 3647	Portland	04101-3647
Captain	Patrick	B.	Trapp			USCG Group Portland	259 High Street	South Portland	04106
Commander	Mark		O'Malley	Captain of the Port, Commanding Officer		USCG Marine Safety Office	27 Pearl Street	Portland	04101-4726
Mr.	Richard		Powell	Staff Director, General Administration		Verizon	5 Davis Farm Road	Portland	04103

From: "Jeff Edelstein" <ea@psouth.net>
To: "HM-Foster" <foster@brunswick.me.org>, "Timmons, r…"
Date: Mon, Feb 9, 2004 1:37 PM
Subject: Cumberland County Hazard Mitigation Planning

Please let me know what dates are available for your municipal hazard mitigation planning team to participate in an initial workshop to be held during either the week of February 16 - 20, February 23 - 27 or the week of March 1 - 5. In your reply, please let me know which members of the team you expect will attend, as well as who the team coordinator will be. The workshop is expected to be 3 hours and the agenda is shown below. Please list all available dates (and indicate morning or afternoon availability), since these workshops will be done in groups, by subregions of the county, and we'd like to pick the dates that work best for all.

Our GIS team has been preparing maps for each municipality showing hazard and infrastructure information. Copies of these maps (in both paper and digital format) will be provided to you for use at the workshop as well as additional copies. Once we have received your schedules, we will get back to you with the dates and locations for the workshops.

Please complete the attached surveys and return them to me by February 20 or prior to the initial workshop (once announced). Completing these in electronic format is preferred, but paper copies are acceptable.

We expect to work with the municipalities during the months of March, April and May in the initial drafting of the municipal plans. During May the municipal plans will be integrated with the work of the county-wide mitigation task force (made up of representatives from public health, utilities, businesses and other groups) and in June a draft county plan will be prepared.

If you have any questions, please feel free to contact me.

--Jeff

Jeff Edelstein, P.E.
Program Facilitator - Cumberland County Hazard Mitigation Planning
Cumberland County Soil and Water Conservation District/Cumberland County Emergency Management Agency

Jeffrey L. Edelstein, P.E.
Mediation ~ *Facilitation* ~*Strategic Planning*
P.O. Box 389
East Waterboro, ME 04030
Phone: (207) 247-8024
Fax: (207) 247-5689

Cumberland County Hazard Mitigation Planning
Initial Municipal Planning Workshop

Agenda (Items not completed at initial meeting will be taken up at a follow-up meeting)

1. Overview and updates of FEMA requirements.

2. Identification of priority hazard events

3. Breakout by municipal teams:

    a. Review of maps to assess and verify data and identify missing data.

    b. Identify locations vulnerable to hazard events, such as areas subject to flooding, unstable coastal bluffs, etc.

    c. Determine impacts from hazard events

    d. Determine possible mitigation measures for town-wide hazards and vulnerable locations

4. Common vulnerabilities amongst municipalities and possible mitigation measures

5. Update on work being done by county-wide hazard mitigation taskforce

6. Determine next steps

CC: “Baker, Sue” <Sue.Baker@maine.gov>, “Boulter, Bonn…

CUMBERLAND COUNTY HAZARD MITIGATION PLANNING - GIS Survey

Please complete this survey and return to Jeff Edelstein at ea@psouth.net

---

Name:_____ Position: _____City or Town Name_____

E-mail address:_____ Date of survey:_____

1) Which departments in your government use Geographic Information Systems (GIS)? Which software/hardware do they use?

	Department Name	**Current GIS Hardware/Platform**	**Current GIS Software**
Your department			
Other departments			

Please add any more on a separate sheet if needed.

2) If your municipality does not presently use GIS, are you considering or looking into using GIS?

3) When did your municipality begin implementing GIS?

4) Is your GIS on your municipal computer network?

5) Please list the lead person for GIS and any regular users of GIS, number of FTE's (full-time equivalent staff) and amount of training of users:

6) What data do you use with GIS?

		Description, age of data
Geodetic (GPS) data		
Aerial Photographs		
Digital Orthophotographs		
Satellite Imagery		
Elevation data (contours)		
Cadastral / Land Records		
Political / Administrative Boundaries		
Roads (center line)		
Hydrology (rivers, lakes,		

etc.)		
Utilities		
Zoning/land use		
Parcels (are they linked to assessor's data? Live link?)		
Buildings		
Land Cover		
Tree Inventories		
Soils		
Wetlands		
Wildlife / Habitats		
Unique / Natural Areas		
Other (please specify) _____		

7) Do you document your GIS data in a standardized format; do you create metadata?

8) Does your municipality have a GIS web page? If so, please enter the URL:

9) What are your government's leading impediments to greater use of GIS (if any)?

_____

_____

_____

10) Are there other people you suggest we contact regarding GIS use for planning purposes in:

		If so, who?	Phone #	e-m ail
	Your Department who use GIS?			
	Other Departments in your Government?			

Thank you for completing this survey!

From: "Jeff Edelstein" <ea@psouth.net>
To: "HM-Morton" <casco@pivot.net>, "Mcinnes, Betty" <b…
Date: Tue, Feb 24, 2004 3:48 PM
Subject: Hazard mitigation meeting – March 4

The meeting on hazard mitigation planning will be held on Thursday, March 4, from 9 a.m. to 11 a.m. at the Naples Town Hall. This appears to be the most central location for the towns participating in this meeting, which are: Bridgton, Harrison, Casco, Raymond, Naples, Standish, Sebago, and Baldwin.

Please try to complete the attached GIS survey and mitigation survey and return to me by March 1, if possible. Do not be concerned if you don't have any GIS capability. It is not necessary for this project, but it is helpful for us to know who does or doesn't have GIS capability.

The goal of this meeting is to get information from you about mitigation priorities in your communities, so that we may incorporate those in the county-wide multi-jurisdictional mitigation plan. We will put together the actual plan, and then it will need to be adopted by each community. After November, 2004, you must have a FEMA approved, locally-adopted plan in order to be eligible for FEMA Hazard Mitigation Grant Program funds, or Pre-Disaster Mitigation funds.

Please let me know how many people you will have attending the meeting.

Jeff Edelstein, P.E.
Program Facilitator - Cumberland County Hazard Mitigation Planning
Cumberland County Soil and Water Conservation District/Cumberland County Emergency Management Agency

From: "Jeff Edelstein" <ea@psouth.net>
To: "Nixon, Carla" <cnixon@cumberlandmaine.com>, "Geor…
Date: Tue, Feb 24, 2004 3:14 PM
Subject: Hazard Mitigation meeting – Yarmouth Town Hall, March 4

The location for the March 4 Hazard Mitigation Planning workshop will be the Yarmouth Town Hall. The workshop will start at 1:00 p.m. and go until we are done, but no later than 4:00 p.m.

If you need directions, please let me know. Please try to complete the mitigation survey and GIS survey by March 1, if possible, and return to me via e-mail, or fax at 856-2796. This workshop will be for the towns of Cumberland, Falmouth, Freeport, Yarmouth, Gorham, Windham, Gray, New Gloucester, North Yarmouth, and Pownal.

Jeff Edelstein, P.E.
Program Facilitator - Cumberland County Hazard Mitigation Planning
Cumberland County Soil and Water Conservation District/Cumberland County Emergency Management Agency

From: "Jeff Edelstein" <ea@psouth.net>
To: "Seaver" <seaver@maine.rr.com>, "Lavalee, Steve" <…
Date: Tue, Mar 16, 2004 1:57 PM
Subject: Hazard Mitigation Planning

Mitigation planning participants:

Attached are the following:

1) Worksheet A: Impacted areas and necessary mitigation measures (focus should be on structural measures, although other approaches should be noted, if appropriate)
2) Worksheet B: Mitigation measures (all categories of measures). This is now in Excel format. Note that the last column of the table (the evaluation criteria) has been expanded to allow you to simply put an L, M, or H in the appropriate columns. This will allow us to automatically sort and prioritize the data.
3) Instructions for Worksheet B.
4) Map review instructions.

I want to remind you to include all problem locations, even if they are under DOT jurisdiction.

The following is our timetable:

March 24 - complete review of maps and return marked-up maps to:

Christina Roy
Portland Public Works Department
55 Portland Street
Portland, ME 04101

April 9 - complete Worksheet A and return to me via e-mail (preferred) or hard copy to:

Jeff Edelstein
P.O. Box 389
East Waterboro, ME 04030

April 30 - complete Worksheet B and return to me via e-mail (preferred) or hard copy to:

Jeff Edelstein
P.O. Box 389
East Waterboro, ME 04030

May 12 - meet to review work to date, Yarmouth Town Office, 1:00 p.m - 4:00 p.m.

Any questions, please feel free to e-mail me or call me at 247-8024.

Jeff Edelstein, P.E.
Program Facilitator - Cumberland County Hazard Mitigation Planning
Cumberland County Soil and Water Conservation District/Cumberland County Emergency Management Agency

Jeffrey L. Edelstein, P.E.
Mediation ~ Facilitation ~Strategic Planning
P.O. Box 389
East Waterboro, ME 04030
Phone: (207) 247-8024
Fax: (207) 247-5689

Cumberland County Hazard Mitigation Planning

Map Review Instructions

Review the map provided for your municipality and provide the following information:

1. List of additional or higher quality GIS data sets that your municipality has.
2. List of additional data sets that you think would help to determine hazard vulnerabilities and mitigation measures.

Using markers to draw on the map, show the following information:

1. Corrections to flood zones, based on personal or historical knowledge.
    a. Areas already developed that are prone to flooding.
    b. Undeveloped areas prone to flooding.
2. Structures that are causes of flooding (undersized culverts, bridges).
3. Growth zones.
4. Areas that appear susceptible to being cut off from road transportation due to flooding.
5. Critical facilities within the floodplain.
6. Known areas of coastal erosion and/or bluff instability.
7. Missing or incorrect locations of critical facilities, such as schools, shelters, fire stations, and any other facilities of concern.
8. Any other corrections or additions that are pertinent to hazard mitigation planning.

CUMBERLAND COUNTY HAZARD MITIGATION PLANNING
MUNICIPAL HAZARD EVENT SURVEY

Municipality:_____

Survey completed by (name and title):_____

Survey completion date:_____

List the locations in the municipality that are susceptible to hazard events:

Type of hazard (flooding, coastal erosion, etc.	Location	Type (Culvert, Bridge, Street, Neighborhood)	Dates of known events	Description of event	Impacts	Data source	Water body (If applicable)	Cause	Possible remedies
Examples:									
Flooding-stream flow	Stream crossing of Duckpuddle Brook and Route 100	Culvert	3-Jan-92	Road was under 2 feet of water and was impassable to all traffic. Water backed up into adjacent neighborhood and flooded the basements of approximately 30 homes	Emergency vehicle access, safety hazard, $32,000 damage to residential structures and belongings.	Public works director	Duckpuddle Brook	Undersized culvert, debris in stream channel	Upsize culvert, remove debris
Flooding - storm drain	Oak Street and Maple Street	Residential neighborhood	Every 2-3 years	Both streets flood to a depth of 6" to 12" after major rainstorms. Flooding takes up to 24 hours to subside.	Emergency vehicle access.	Public works director, news stories.	Drains to Pleasant Stream	Undersized pipes in storm drain system	Upgrade storm drain system.

Cumberland County Hazard Mitigation Planning

Mitigation Measures Worksheet - Instructions

1. Current status and performance rating:

Describe the municipality's current activities for this measure and rank the performance as either:

Low – Performance is not satisfactory
Medium – Performance is satisfactory, but there is significant room for improvement
High – Performance is excellent

2. Degree of need/benefit:

Using a scale of low, medium, or high, rate the degree to which this measure is needed or to which the community would benefit.

3. Responsible party:

Identify the position or department in the municipality that is (or would be) responsible for this function or the outside agency that is (or would be) responsible.

4. Obstacles to implementation/improvement:

Select from the following list the criteria that present the greatest obstacles to implementing or improving the measure. For each obstacle selected, rate the degree of difficulty to overcome that obstacle.

Criteria	Rate the obstacle as low, medium or high depending on the degree to which the measure:
Social	1. Is generally acceptable to the community. 2. Will not cause one segment of the community to feel treated unfairly. 3. Is compatible with present and future community goals.
Technical	1. Is proven. 2. Does not require highly specialized skills. 3. Is unlikely to have unintended negative consequences.
Administrative	1. Does not require significant staff support.
Political	1. Is popular with elected officials and/or the general public. 2. Has a political "champion".
Legal	1. Has a clear legal basis.
Economic	1. Has a low capital cost. 2. Has a favorable benefit/cost ratio.
Environmental	1. Will comply with environmental regulations. 2. Will be perceived by the community as environmentally beneficial or benign.

See the attached sheet of examples.

Municipality:		Form completed by:		Date:		
Example 1: The town currently has in place a floodplain ordinance from 1990. There are no significant obstacles to adopting the latest SPO model floodplain ordinance other than finding the staff time (Administrative criterion) and a slight possibility of opposition from a segment of the population to increasing the freeboard requirement from 1' to 2' (Social criterion). All other obstacles are judged to be insignificant. It is judged that there would be a moderate degree of benefit to the town.						
CATEGORY	MEASURE	PERFORMANCE RATING	CURRENT STATUS	DEGREE OF NEED/BENEFIT	RESPONSIBLE PARTY	OBSTACLES TO IMPLEMENTATION/ IMPROVEMENT
		(Low, medium, high)		(Low, medium, high)		
	Implement more restrictive flooplain ordinance	Medium	Current ordinance is 1990 version. Should update to SPO floodplain management program 2002 version with 2' freeboard requirement.	Medium	Planner for development of ordinance. CEO for enforcement.	Social - low, Administrative - low
Example 2: The town has no GIS capabilities. There would be significant benefits from obtaining a GIS system. It is recognized that running the system would require highly specialized skills (Technical criterion), a significant amount of staff time (Administrative criterion), and a moderate capital cost (Economic criterion).						
CATEGORY	MEASURE	PERFORMANCE RATING	CURRENT STATUS	DEGREE OF NEED/BENEFIT	RESPONSIBLE PARTY	OBSTACLES TO IMPLEMENTATION/ IMPROVEMENT
		(Low, medium, high)		(Low, medium, high)		
	Invest in GIS software and training to allow municipality to better manage flooding hazards.	Medium	No GIS capability. Currently utilize outside consultant.	High	Planner and/or engineer	Technical - high, administrative - high, economic- medium. $25,000 capital expense for hardware and software.

ALL HAZARDS						
CATEGORY	MEASURE	PERFORMANCE RATING (Low, medium, high)	CURRENT STATUS	DEGREE OF NEED/BENEFIT (Low, medium, high)	RESPONSIBLE PARTY	OBSTACLES TO IMPLEMENTATION/ IMPROVEMENT
PREVENTION	Studies for risk to specific critical facilities					
	Evaluate building codes for disaster resistance					
PROPERTY PROTECTION	Improve structural characteristics of critical facilities					
PUBLIC EDUCATION	Demonstration projects of disaster-resistant construction methods					
	Real estate disclosures of susceptibility to hazards					
	School programs					
	Adult education programs and public workshops					
NATURAL RESOURCE PROTECTION	Erosion and sediment control					
	Stream corridor restoration					
	Watershed management					
	Forest and vegetation management					

ALL HAZARDS						
CATEGORY	MEASURE	PERFORMANCE RATING (Low, medium, high)	CURRENT STATUS	DEGREE OF NEED/BENEFIT (Low, medium, high)	RESPONSIBLE PARTY	OBSTACLES TO IMPLEMENTATION/ IMPROVEMENT
	Wetland restoration and preservation					
EMERGENCY SERVICES	Encourage residents without utilities or in hazardous locations (floodzones, high wind areas) to report to shelters					
	Assess shelters for disaster resistance					
	Provide backup power capacity at all critical facilities and utilities					
	Improve emergency response programs					
	Upgrade emergency response equipment					
	Develop procedures and provide training to identify, locate and communicate to special needs populations					

ALL HAZARDS						
CATEGORY	MEASURE	PERFORMANCE RATING (Low, medium, high)	CURRENT STATUS	DEGREE OF NEED/BENEFIT (Low, medium, high)	RESPONSIBLE PARTY	OBSTACLES TO IMPLEMENTATION/ IMPROVEMENT
	Develop procedures and provide training to identify, locate and communicate to non-English speaking populations					
	Develop Emergency Assistance Fund programs for persons affected by hazards					
	Develop/update requirements that new critical facilities must have backup power generation					
STRUCTURAL PROJECTS	Construct safe rooms for critical functions					

FLOODING						
CATEGORY	MEASURE	PERFORMANCE RATING (Low, medium, high)	CURRENT STATUS	DEGREE OF NEED/BENEFIT (Low, medium, high)	RESPONSIBLE PARTY	OBSTACLES TO IMPLEMENTATION/ IMPROVEMENT
PREVENTION	Participate in NFIP's community rating system/improve current rating					
	Implement more restrictive floodplain ordinance					
	When replacing culverts/drainage systems, consider impacts on upstream and downstream flooding, and size replacement accordingly					
	Continue CSO separation					
	Invest in GIS hardware software and training to allow municipality to better manage flooding hazards					
	Stormwater management regulation for new development and redevelopment					

FLOODING						
CATEGORY	MEASURE	PERFORMANCE RATING (Low, medium, high)	CURRENT STATUS	DEGREE OF NEED/BENEFIT (Low, medium, high)	RESPONSIBLE PARTY	OBSTACLES TO IMPLEMENTATION/ IMPROVEMENT
	In comprehensive plan development and updating, recognize the dangers of floodplain development and plan compatible uses in such areas					
	Develop stormwater management master plans for growth zones					
	Capital Improvement Plan prioritization should consider locations that suffer repetitive losses due to natural hazards					
	Maintain zoning standards in floodplain locations to limit or prohibit structural developments that have risk of damage from flooding					
	Implement building codes for construction in floodplain					

FLOODING						
CATEGORY	MEASURE	PERFORMANCE RATING (Low, medium, high)	CURRENT STATUS	DEGREE OF NEED/BENEFIT (Low, medium, high)	RESPONSIBLE PARTY	OBSTACLES TO IMPLEMENTATION/ IMPROVEMENT
	Require 50-year design storm for municipal or private conveyance systems					
	Implement open space preservation program					
	Flood mitigation grants or loans to homeowners					
PROPERTY PROTECTION	Construction of barriers around structures					
	Relocate, elevate or retrofit critical facilities in flood zones					
	Assist property owners to relocate, elevate or retrofit structures in flood zones					
	Acquire structures in flood zones					
	Strengthen O/M procedures for storm drain system					
EDUCATION	Educate drivers on risks of crossing flooded roadways					

FLOODING						
CATEGORY	MEASURE	PERFORMANCE RATING (Low, medium, high)	CURRENT STATUS	DEGREE OF NEED/BENEFIT (Low, medium, high)	RESPONSIBLE PARTY	OBSTACLES TO IMPLEMENTATION/ IMPROVEMENT
	Educate the public to stay away from flooded riverbanks and coastal wave-action areas					
	Info (particularly to property owners in flood zones) on NFIP, floodproofing, basement protection techniques, post-flood clean-up					
	Workshops by Army Corps of Engineers or SPO floodplain management office for local residents					
NATURAL RESOURCE PROTECTION						
EMERGENCY SERVICES	Warning systems, gauges					
	Implement a flood warning system throughout the county similar to the reverse 911 system					

FLOODING						
CATEGORY	MEASURE	PERFORMANCE RATING (Low, medium, high)	CURRENT STATUS	DEGREE OF NEED/BENEFIT (Low, medium, high)	RESPONSIBLE PARTY	OBSTACLES TO IMPLEMENTATION/ IMPROVEMENT
	Develop an emergency action plan to allow movement of emergency vehicles for events in which trains are stopped blocking streets and intersections					
	Develop a barricade plan to block flooded roadways in order to prevent crossing by drivers Acquire necessary barricade equipment and supplies					
STRUCTURAL PROJECTS	Increase conveyance system capacity					
	Elevate roadways					
	Relocate stream channels					
	Undertake corrective measures to public infrastructure suffering repeated damage from localized flooding					

FLOODING						
CATEGORY	MEASURE	PERFORMANCE RATING (Low, medium, high)	CURRENT STATUS	DEGREE OF NEED/BENEFIT (Low, medium, high)	RESPONSIBLE PARTY	OBSTACLES TO IMPLEMENTATION/ IMPROVEMENT
	Ensure that sanitary sewer pump stations and facilities and drinking water systems are flood-proofed					
	Improve programs for DOT upgrading of flood prone bridges, culverts and roadways					

SEVERE STORMS, ICE, WIND						
CATEGORY	MEASURE	PERFORMANCE RATING (Low, medium, high)	CURRENT STATUS	DEGREE OF NEED/BENEFIT (Low, medium, high)	RESPONSIBLE PARTY	OBSTACLES TO IMPLEMENTATION/ IMPROVEMENT
PREVENTION	Ordinances or other mechanisms to direct development away from vulnerable areas (coastal bluffs, storm surge zones)					
	Develop boat mooring requirements and pre-storm procedures					
	Forecasting					
	Upgrade regulations to increase the areas where underground utilities are required					
	Ensure that building codes/inspections address appropriate wind and snow loads					
	Review land use codes to assure that landscaping standards minimize species susceptible to blowdown or breakage					

SEVERE STORMS, ICE, WIND						
CATEGORY	MEASURE	PERFORMANCE RATING (Low, medium, high)	CURRENT STATUS	DEGREE OF NEED/BENEFIT (Low, medium, high)	RESPONSIBLE PARTY	OBSTACLES TO IMPLEMENTATION/ IMPROVEMENT
	Strengthen ordinance regarding plantings and trees near service lines					
	Implement hurricane surge inundation ordinance					
PROPERTY PROTECTION	Selection by municipal departments of tree types less susceptible to blowdown and breakage					
	Increased removal of limbs which can impact service lines					
	Training program for public works employees to recognize tree maintenance needs and notify appropriate responsible party					
EDUCATION	Educate and encourage homeowners:					

SEVERE STORMS, ICE, WIND						
CATEGORY	MEASURE	PERFORMANCE RATING (Low, medium, high)	CURRENT STATUS	DEGREE OF NEED/BENEFIT (Low, medium, high)	RESPONSIBLE PARTY	OBSTACLES TO IMPLEMENTATION/ IMPROVEMENT
	§ Keeping egress routes clear					
	§ Cutting large trees from around homes, driveways and utilities					
	§ Freeze-proofing water pipes					
	Educate and encourage homeowners (cont'd):					
	§ Preventing ice dams on roofs					
	§ Keeping walkways and utility access cleared of snow					
	§ Removing snow loads from roofs					
	§ Insurance availability for severe storm damages					
	§ Heart stress when working in winter conditions					
	§ Winter driving dangers					
	§ Carbon-monoxide poisoning from heating sources					
	§ Hypothermia					

SEVERE STORMS, ICE, WIND						
CATEGORY	MEASURE	PERFORMANCE RATING (Low, medium, high)	CURRENT STATUS	DEGREE OF NEED/BENEFIT (Low, medium, high)	RESPONSIBLE PARTY	OBSTACLES TO IMPLEMENTATION/ IMPROVEMENT
	§ Backup power options (generator, solar, wind, hydro) and non-electrical heating options					
NATURAL RESOURCE PROTECTION						
EMERGENCY SERVICES	Develop a municipal road snow and ice removal operations plan with prioritization of roads to be cleared					
	Train and equip a quick-response Road Debris Clearance Team from public works, fire department and volunteers					
	Develop mutual aid agreements with local ATV and snowmobile organizations					
	Develop a cross-country ski patrol					
	Develop alternate transportation means for					

SEVERE STORMS, ICE, WIND						
CATEGORY	MEASURE	PERFORMANCE RATING (Low, medium, high)	CURRENT STATUS	DEGREE OF NEED/BENEFIT (Low, medium, high)	RESPONSIBLE PARTY	OBSTACLES TO IMPLEMENTATION/ IMPROVEMENT
	emergency responders					
STRUCTURAL PROJECTS						

EARTHQUAKE						
CATEGORY	MEASURE	PERFORMANCE RATING (Low, medium, high)	CURRENT STATUS	DEGREE OF NEED/BENEFIT (Low, medium, high)	RESPONSIBLE PARTY	OBSTACLES TO IMPLEMENTATION/ IMPROVEMENT
PREVENTION	Adopt appropriate building codes					
	Assure that new and redeveloped structures that are required by building codes to be earthquake resistant are designed and constructed in accordance with such codes					
PROPERTY PROTECTION						
EDUCATION						
NATURAL RESOURCE PROTECTION						
EMERGENCY SERVICES	Develop evacuation plans					
STRUCTURAL PROJECTS						

DAM FAILURE						
CATEGORY	MEASURE	PERFORMANCE RATING (Low, medium, high)	CURRENT STATUS	DEGREE OF NEED/BENEFIT (Low, medium, high)	RESPONSIBLE PARTY	OBSTACLES TO IMPLEMENTATION/ IMPROVEMENT
PREVENTION	Review Emergency Action Plans for any dams with such plans on an annual basis to ensure that					

	contact info is still accurate					
PROPERTY PROTECTION						
EDUCATION						
NATURAL RESOURCE PROTECTION						
EMERGENCY SERVICES	Develop, maintain and update as necessary Emergency Action Plans for all dams rated high or significant; include inundation maps					
STRUCTURAL PROJECTS						

WILDFIRE						
CATEGORY	MEASURE	PERFORMANCE RATING (Low, medium, high)	CURRENT STATUS	DEGREE OF NEED/BENEFIT (Low, medium, high)	RESPONSIBLE PARTY	OBSTACLES TO IMPLEMENTATION/ IMPROVEMENT
PREVENTION	Train all firefighters in wildland firefighting techniques and safety procedures					

WILDFIRE						
CATEGORY	MEASURE	PERFORMANCE RATING (Low, medium, high)	CURRENT STATUS	DEGREE OF NEED/BENEFIT (Low, medium, high)	RESPONSIBLE PARTY	OBSTACLES TO IMPLEMENTATION/ IMPROVEMENT
	Equip fire departments with sufficient wildfire personal protection equipment and firefighting equipment					
	Encourage or require slash reduction through good forestry practices					
	Maintain firefighting access roads					
	Adopt and enforce guidelines on issuance of burning permits during drought conditions					
	Develop back-up water supply plans for drought conditions					
	Develop land use ordinances requiring buffers between structures and forest species susceptible to drought and/or highly flammable					
	Implement building codes requiring fire-proof roofing and					

WILDFIRE						
CATEGORY	MEASURE	PERFORMANCE RATING (Low, medium, high)	CURRENT STATUS	DEGREE OF NEED/BENEFIT (Low, medium, high)	RESPONSIBLE PARTY	OBSTACLES TO IMPLEMENTATION/ IMPROVEMENT
	siding materials					
	Hire or train a Wildland Fire Inspector					
	Complete a detailed GIS study of fuel models, topography, fire weather and structures					
PROPERTY PROTECTION	Implement wildfire property protection measures for all critical facilities (buffers, fire-proof roofing and siding, etc)					
EDUCATION	Educate property owners on tactics to protect their structures from wildfires					
	Educate the public on the dangers of wildfires					
EMERGENCY SERVICES	Develop warning and evacuation plans					