

A photograph showing a flooded residential street. A dark-colored car is partially submerged in the water, with only its roof and the tops of its windows visible. The water is murky and reflects the surrounding environment. In the background, there are trees and a house with a white door and a small porch. The overall scene depicts the aftermath of a flood event.

Assessing the Risk of 100-year Freshwater Floods in the Lamprey River Watershed of New Hampshire Resulting from Changes in Climate and Land Use

Strafford Regional Planning Commission
28 Jan 2009 Rochester, NH

Newmarket, NH April 2007

In recent years New Hampshire has experienced three major flood events in October 2005, May 2006, and April 2007

Comprehensive Flood Management Study Commission 2008

Engaged Scholarship at UNH

At UNH, engaged scholarship is defined as:

“a mutually beneficial collaboration between the University of New Hampshire and community partners for the purpose of generating and applying relevant knowledge to directly benefit the public”

In 2008, the Carnegie Foundation for the Advancement of Teaching officially recognized the University of New Hampshire as a “community engaged” university. This new classification places UNH among 195 higher education institutions selected nationally in 2008 & 2006 by Carnegie

Lamprey River 100 Year Flood Risk Project

Two year project funded by the Cooperative Institute for Coastal and Estuarine Environmental Technology (CICEET)

Interdisciplinary Team:

Cameron Wake, Institute for the Study of Earth, Oceans and Space, UNH

Steve Miller, Great Bay National Estuarine Research Reserve

Kathy Mills, Great Bay National Estuarine Research Reserve

Robert Roseen, UNH Stormwater Center

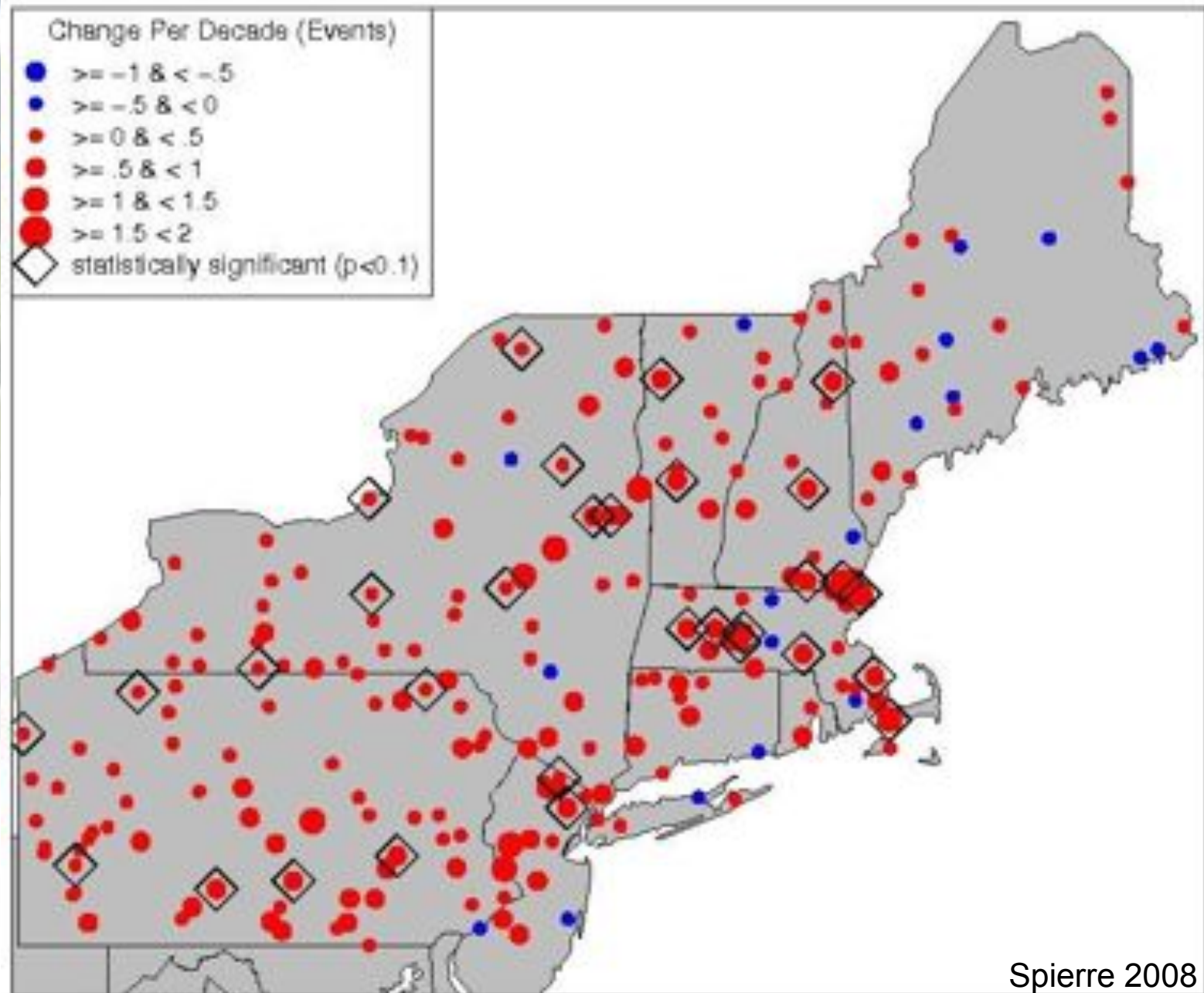
Fay Rubin, Institute for the Study of Earth, Oceans and Space, UNH

Michael Simpson, Antioch University New England

Lisa Townson and Julia Peterson, UNH Cooperative Extension



Mean Decadal Trend 1" Precipitation Events 1948-2007



Spiere 2008

Lamprey River 100 Year Flood Risk Project

Project Objectives:

- Assess flood risk associated with combined land use and climate change scenarios in the Lamprey River watershed.
- Produce maps at the municipal scale of the 100-year flood risk boundaries and river discharge at specific locations.
- Demonstrate the use of associated products to support land use decision-making in coastal communities.
- Serve as a model for other watersheds across New England.

Why focus on the 100 year flood?



Cities Say New FEMA Flood Maps Are Full of Errors

Cities, residents say new FEMA flood plain maps are full of mistakes that could prove costly

By MICHAEL J. CRUMB The Associated Press

DES MOINES, Iowa

More than a year and a half after a massive flood left a huge swath of eastern Iowa underwater, the tiny farming community of Oakville is clinging to survival.

boston.com

Waves of concern

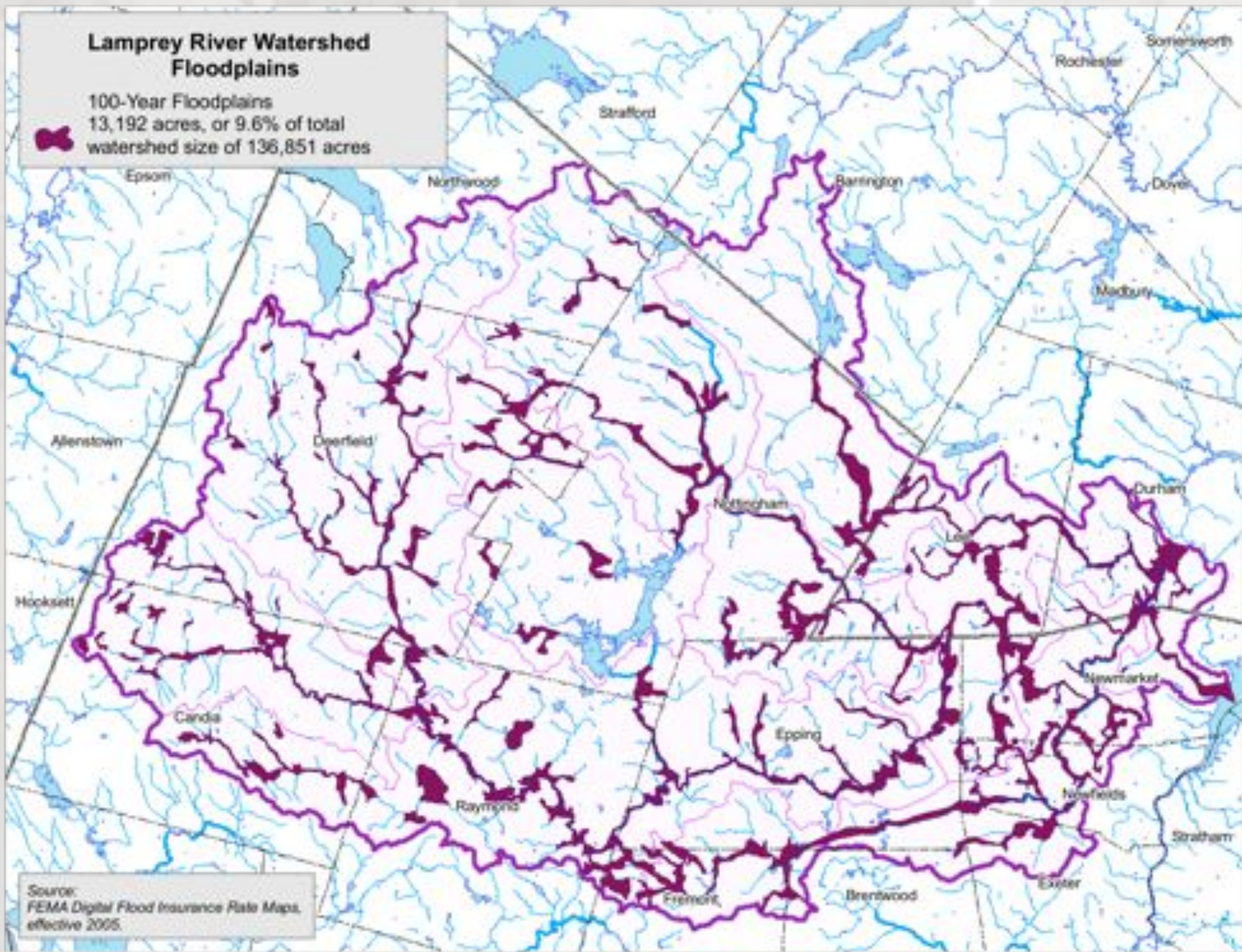
The Boston Globe

Property owners face steep insurance rate hikes, as new federal maps shift flood zone boundaries

By Jenifer B. McKim, Globe Staff | November 7, 2009

Thousands of Massachusetts property owners are discovering their homes and businesses are in newly designated federal flood zones, forcing them to buy additional insurance coverage that can easily exceed \$2,000 annually.

Lamprey River Watershed 100 Year Floodplains



Newmarket 100 Year Floodplain



Lamprey River 100 Year Flood Risk Project

Products should support near-term municipal decisions and planning efforts related to:

- buffer zones around water bodies
- ordinances to protect steep slopes, maintain riparian buffers, and encourage low impact development
- the location and design of future residential subdivisions and commercial development
- the adequacy of road and drainage standards
- the development of open space plans, master plans, and hazard mitigation plans

Products should also support individual/institutional decisions

Lamprey River 100 Year Flood Risk Project

Process:

Technical Analysis

2 climate change scenarios 4 land use scenarios
watershed model to calculate discharge
map level of 100 year floodplain at FEMA cross-sections
calculate river discharge for 100 year flood at specific locations

Dissemination

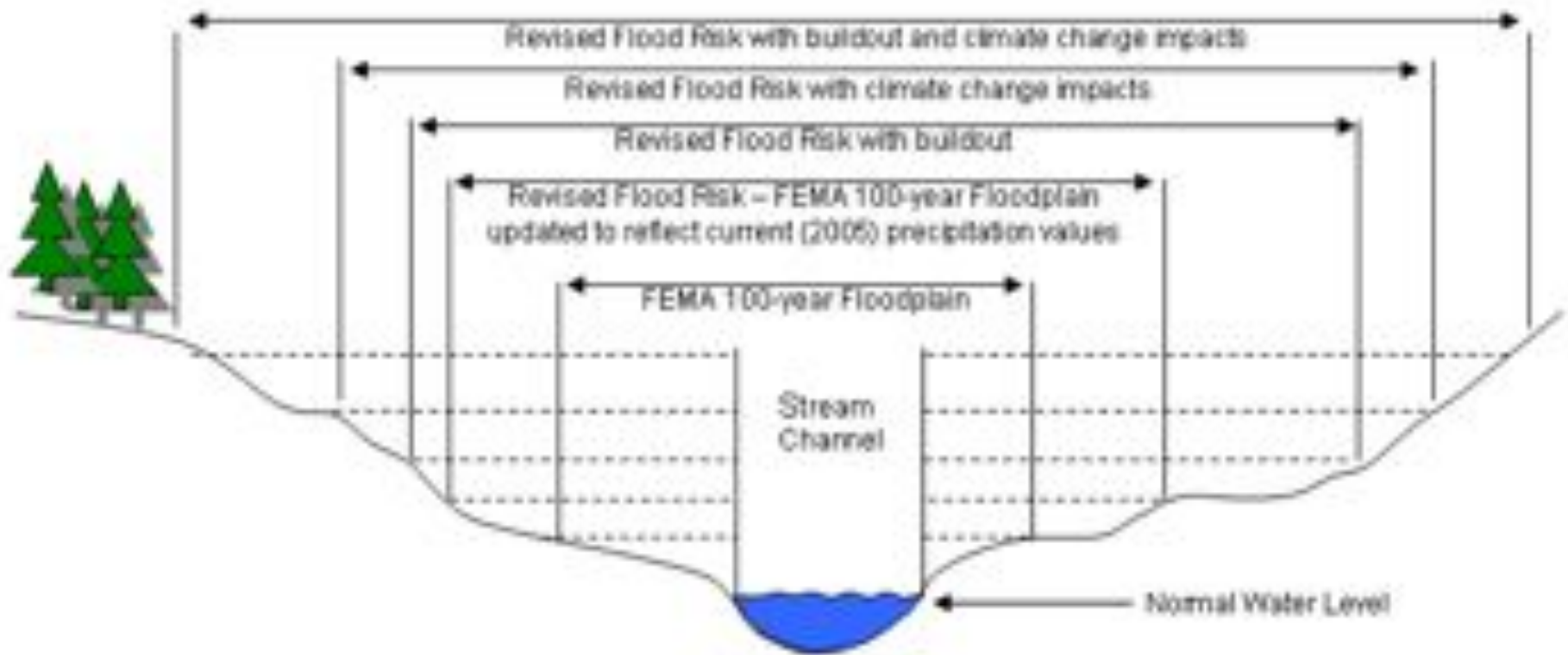
GRANIT website, printed maps, professional meetings, etc.
Workshops

Collaboration

Advisory Board, Facilitated Discussions
Workshops

Evaluation and Feedback

Lamprey River 100 Year Flood Risk Project



Lamprey River 100 Year Flood Risk Project

Climate and Land Use Scenarios to be Evaluated (17 total)

Land Use Condition	Climate Period and GCM Scenario					
	FIS Conditions 1981	1988-2007	2041-2070		2071-2100	
			A1F1 (HI)	B1 (LO)	A1F1 (HI)	B1 (LO)
FIS Conditions 1981	X	X				
Current Conditions(2005)		X	X	X	X	X
Build-out conditions		X	X	X	X	X
LID/build-out		X	X	X	X	X

Lamprey River 100 Year Flood Risk Project

Advisory Committee

municipal, regional, and state representation

Cliff Sinnott, Rockingham Planning Commission (Chair)

Joanne Cassulo, NH Office of Energy and Planning

David Cedarholm, Durham Public Works

Cynthia Copeland, Strafford Regional Planning Commission

Michael Goetz, FEMA Region 1

Diane Hardy, Newmarket Planning Department

Jack Munn, Southern New Hampshire Planning Commission

Jennifer Perry, Exeter Public Works

Ron Poltak & Becky Weidman, NEIWPCC

Carl Spang/Dawn Genes, Lamprey River Watershed Association

Eric Williams, NH Department of Environmental Services

+ developer and/or insurance rep TBD

Lamprey River 100 Year Flood Risk Project

Timeline:

Dec 2009	1 st Advisory Committee Meeting
Nov 2009 – Aug 2010	Technical Analysis & Product Development
Mid-September 2010	2 nd Advisory Committee Meeting
Early October 2010	Focus Groups
<u>Later Oct/Nov 2010</u>	<u>First Workshop</u>
March 2011	3 rd Advisory Committee Meeting
<u>April or May 2011</u>	<u>Second (final) Workshop</u>

Questions, Feedback and Workshop Notice:

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