

Working Forests for Birds, Climate Change, and Your Community

Hanson, MA

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Losing Ground



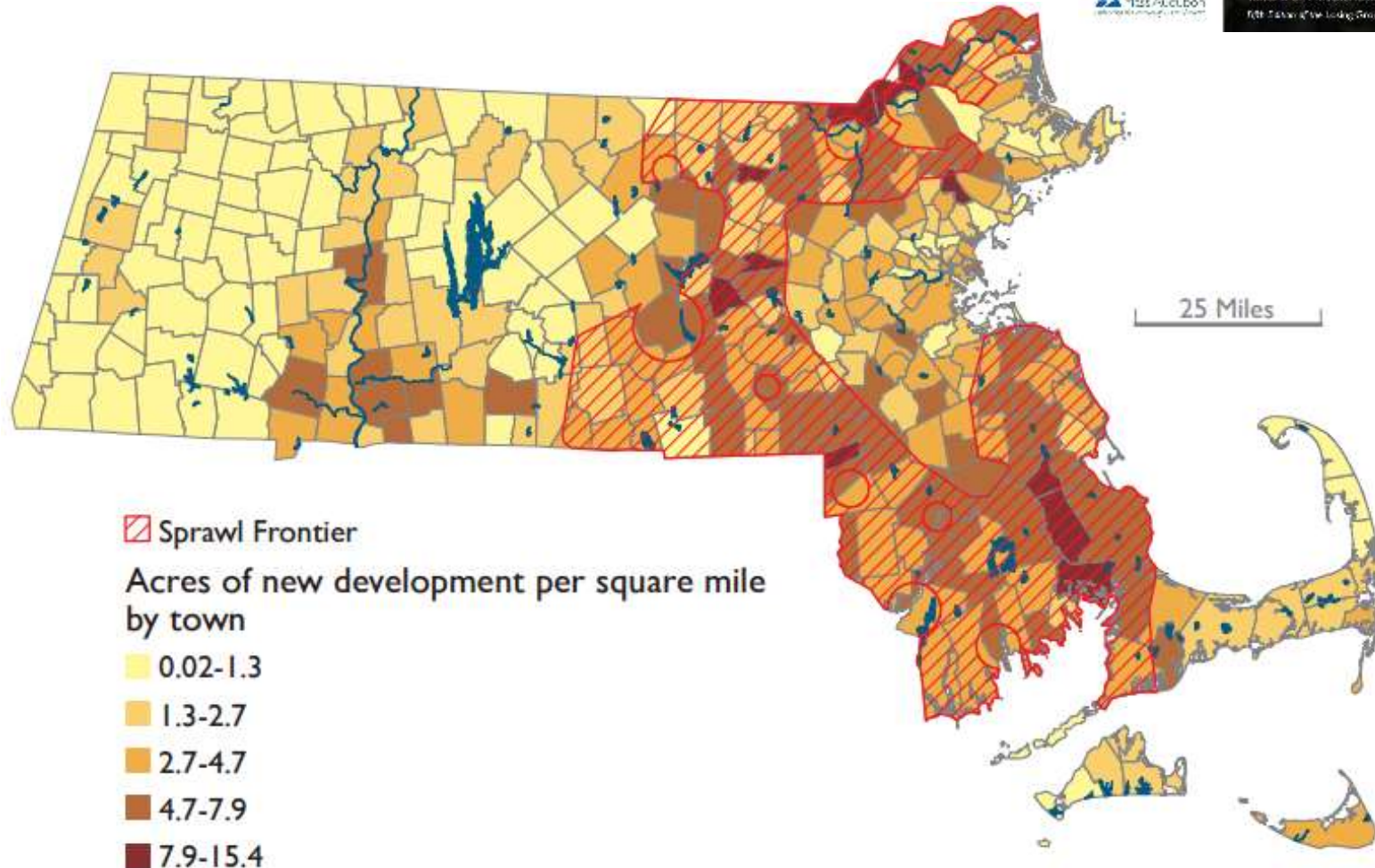
LOSING GROUND

Planning for Resilience

Patterns of development and their impact on the nature of Massachusetts
10th Edition of the Losing Ground Series



July 2017



Shaping the Future of Your Community

- Created in response to Losing Ground
- Works with communities to implement sustainable development and increase conservation efforts – especially in “sprawl frontier”



Changing How We Use Land

Traditional development



Impervious surfaces



Stormwater runoff



Water quality impairment

Infrastructure impacts



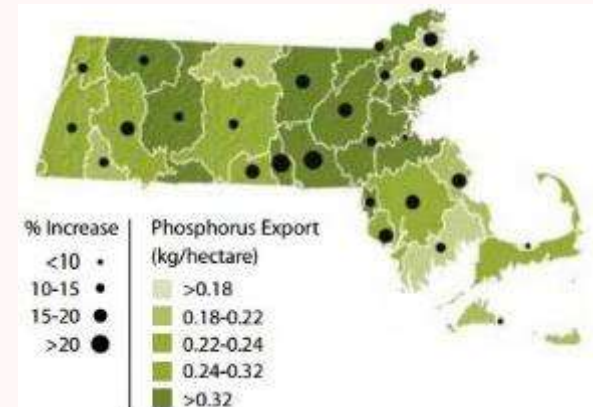
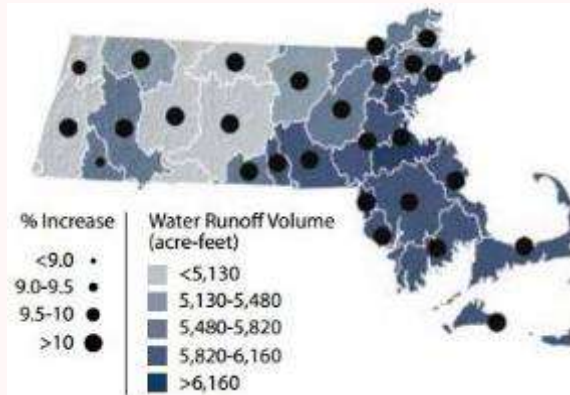
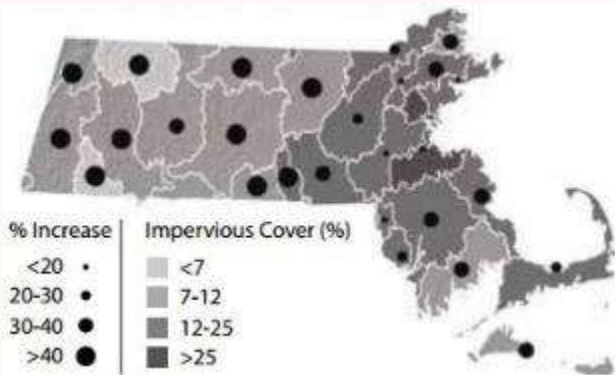
Financial and regulatory burden



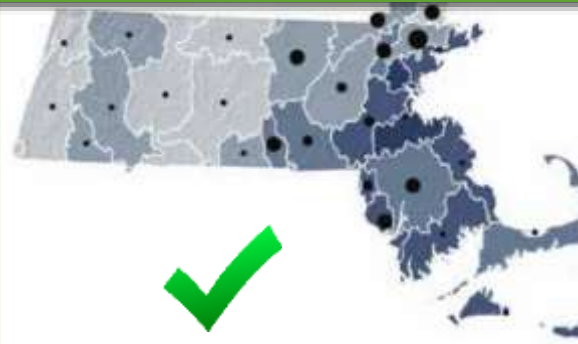
Achieving Conservation, Housing, Clean Water, and Climate Resilience

Source: Harvard Forest *Changes to the Land* 2014

If we continue to follow opportunistic growth, in 2060:



These allow for nearly the **same amount of development**, but 2/3 of it is **clustered development**

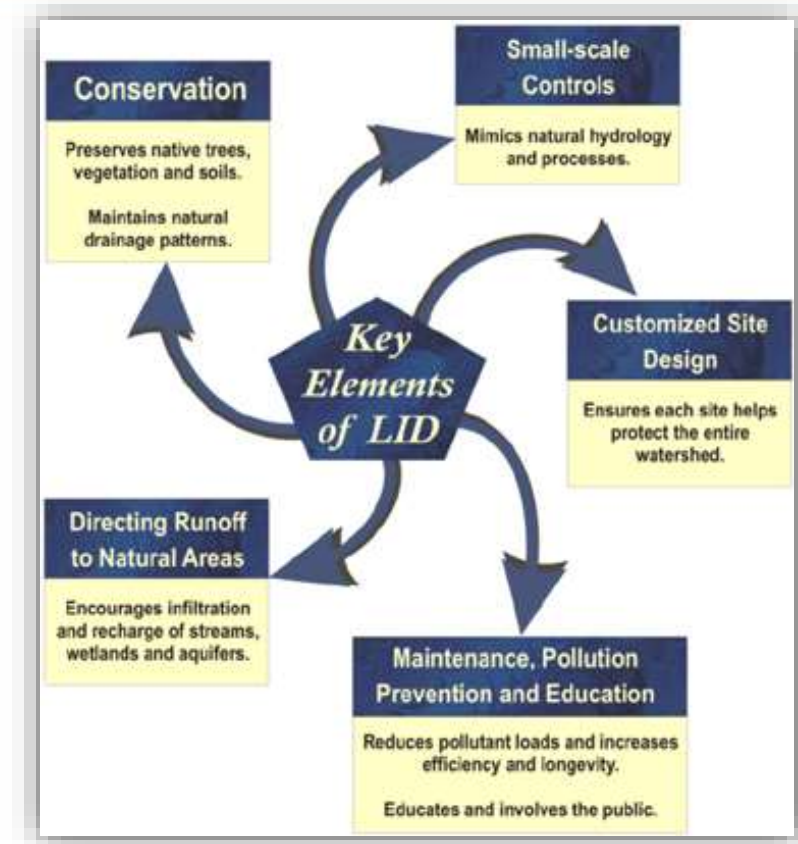


What is Low Impact Development?

“ LID is an approach to land development (or re-development) that **works with nature to manage stormwater** as close to its source as possible.

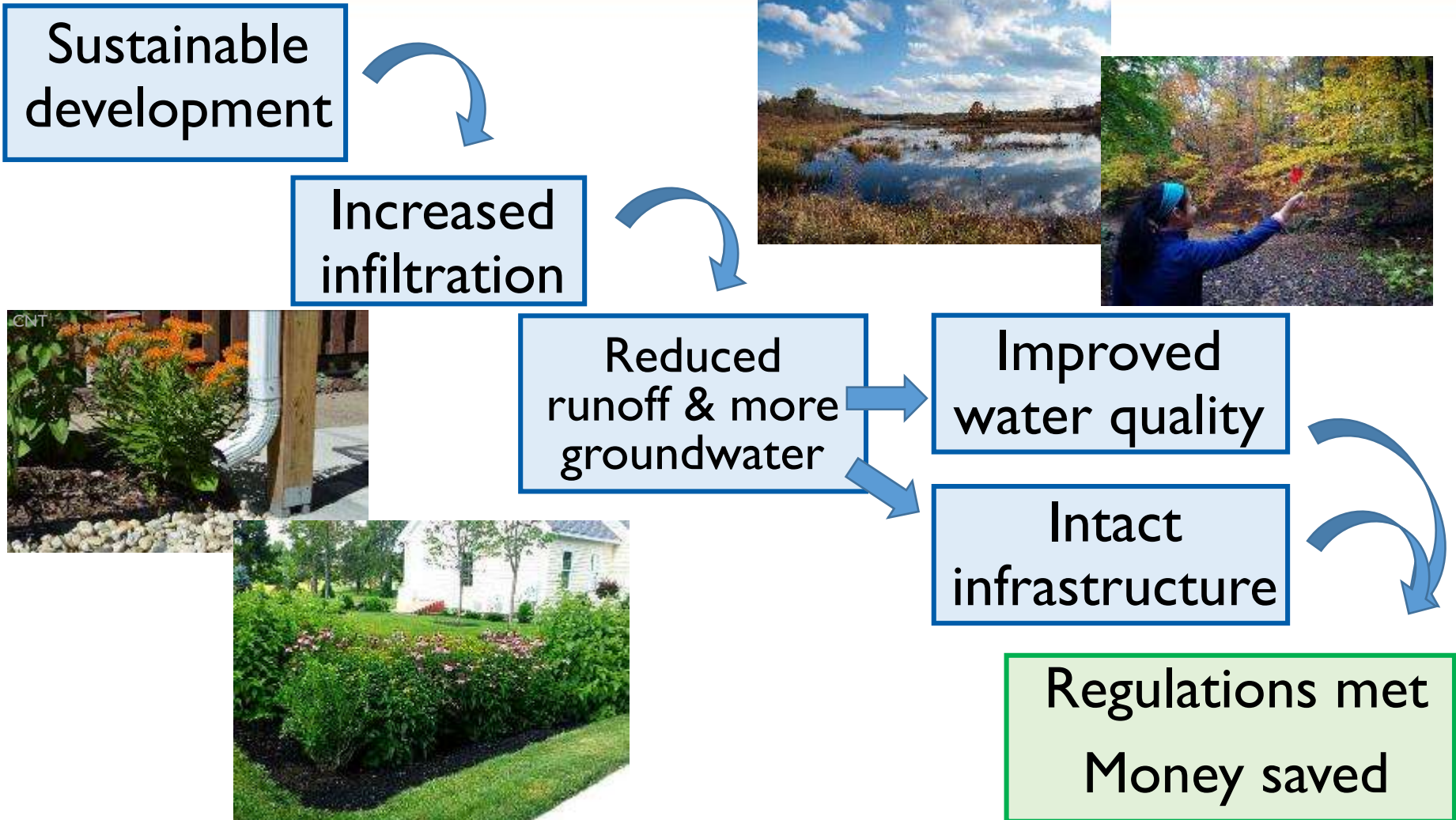
LID employs principles such as **preserving & recreating natural landscape features** and minimizing imperviousness to create site drainage that **treats stormwater as a resource** rather than a waste product. ”

- EPA



Source: Whole Buildings Design Guide, wbdg.com

A Different Direction: Greening Your Community



Start Here.★

- Conserve** the natural green infrastructure already providing free ecosystem services
- Reduce** impact through LID and green infrastructure in new development
- Restore** the resiliency of urban landscapes through LID in redevelopment



conserve



restore





















protect



save money

Benefits of Green Infrastructure & LID (Nature's better)

Benefit	Reduces Stormwater Runoff				Increases Available Water Supply	Increases Groundwater Recharge	Reduces Salt Use	Reduces Energy Use	Improves Air Quality	Reduces Atmospheric CO ₂	Reduces Urban Heat Island	Improves Community Livability					Improves Habitat	Cultivates Public Education Opportunities
	Reduces Water Treatment Needs	Improves Water Quality	Reduces Grey Infrastructure Needs	Reduces Flooding								Improves Aesthetics	Increases Recreational Opportunity	Reduces Noise Pollution	Improves Community Cohesion	Urban Agriculture		
Practice																		
Green Roofs	●	●	●	●	○	○	○	●	●	●	●	●	◐	●	◐	◐	●	●
Tree Planting	●	●	●	●	○	◐	○	●	●	●	●	●	●	●	●	◐	●	●
Bioretention & Infiltration	●	●	●	●	◐	◐	○	○	●	●	●	●	●	◐	◐	○	●	●
Permeable Pavement	●	●	●	●	○	◐	●	◐	●	●	●	○	○	●	○	○	○	○
Water Harvesting	●	●	●	●	●	◐	○	◐	◐	◐	○	○	○	○	○	○	○	●



Yes



Maybe



No

Free Ecosystem Services:

Free services provided by the natural landscape

Every \$1 invested in land conservation offers a **\$4 Return on Investment** in terms of these ecosystem service values

- Flooding
- Public Health
- Air Quality
- Water Quality & Quantity
- Recreation
- Quality of Life
- Property Value
- Carbon Sequestration

MA forests provide over **\$3.8 billion** each year in free ecosystem services



**Natural areas also offer
climate change resilience**



Key **Observed** Climate Changes

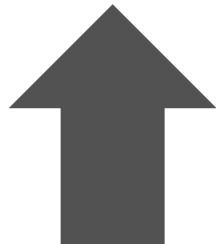
Temperature:



2.8°F

Since 1895

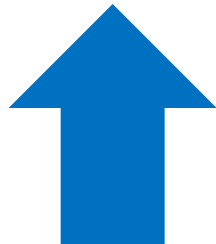
Growing Season:



10 Days

Since 1950

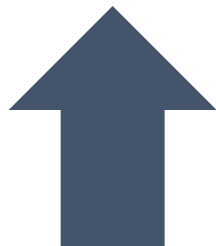
Sea Level Rise:



10 inches

Since 1922

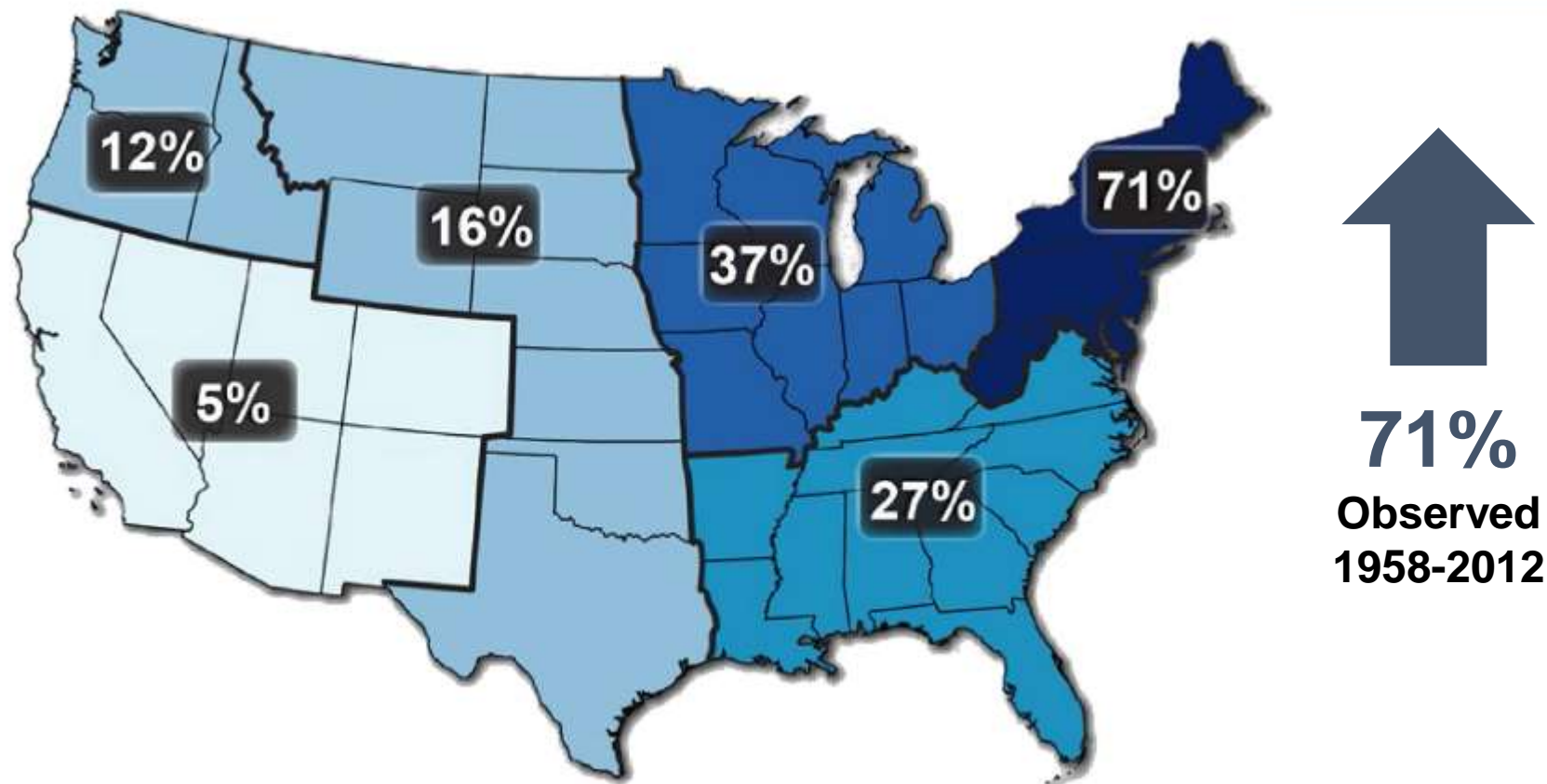
Strong Storms:



71%

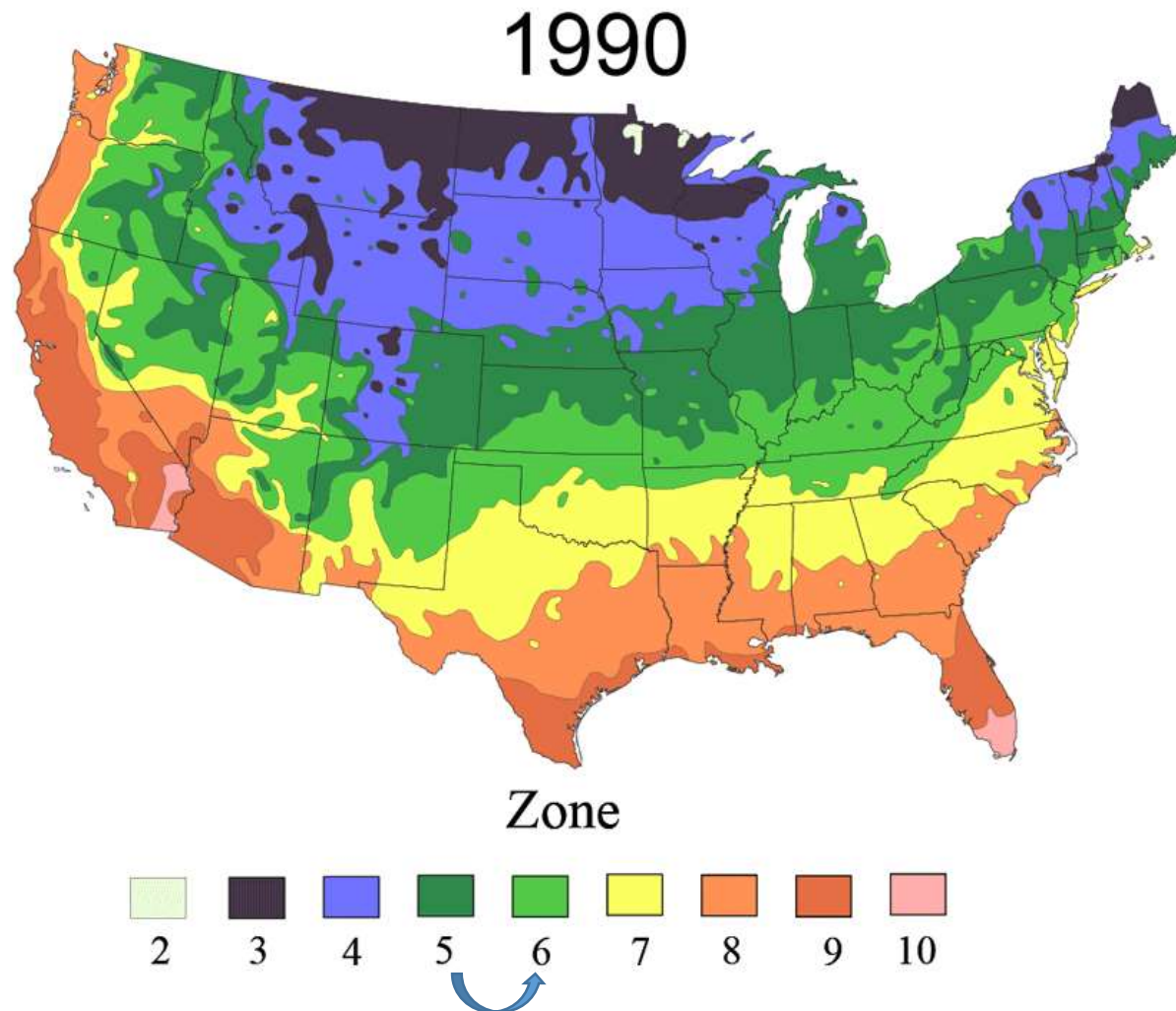
Since 1958

Increase in Extreme Precipitation



The amount falling in the heaviest 1% of precipitation events increased by **71% in the Northeast** from 1958 to 2012.

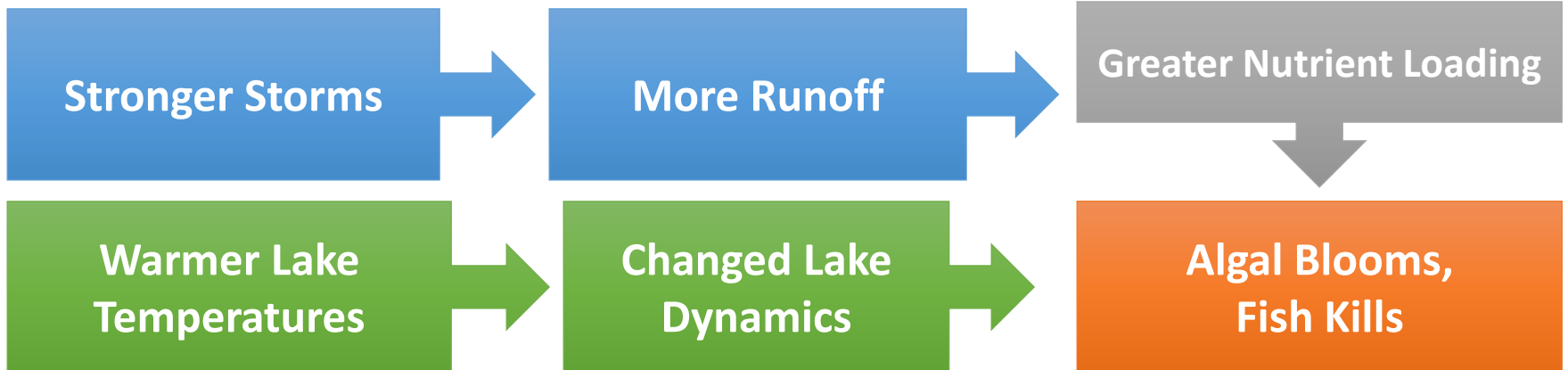
Warming Climate → Shifting Plant Hardiness Zones



Water Quality

Storms + Temps = Algal Blooms

West Monponsett Pond, Halifax, Massachusetts

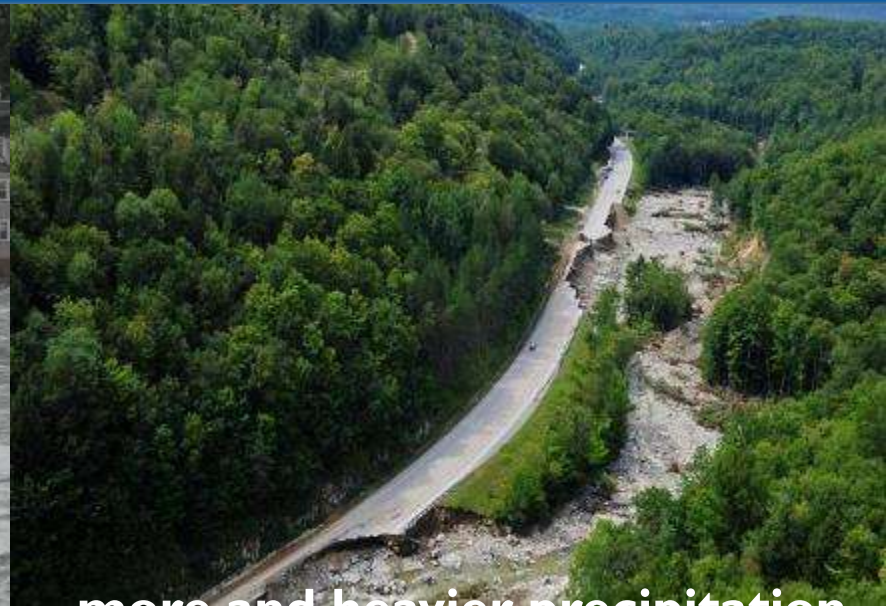


Climate change exacerbates existing problems

rising temps &
more frequent intense storms



more and heavier precipitation



more & longer summer droughts



GI & LID get water in the ground where it belongs

Quantity

Flooding



Droughts

Quality

Sedimentation



Eutrophication

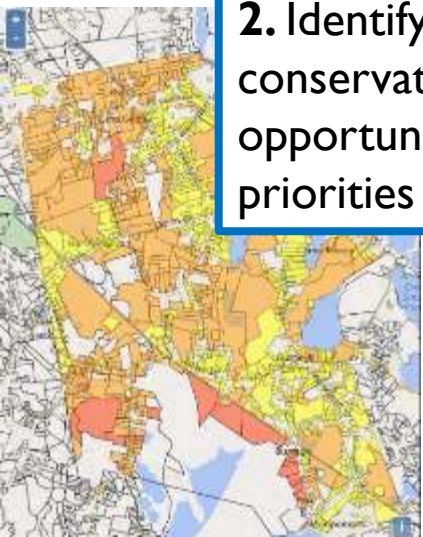
So what do we do now?



1. Identify existing and future problems that GI can help alleviate



5. Prioritize and incentivize sustainable development



2. Identify conservation opportunities and priorities

Plan	Environmental	Urban	Other	Community Planning	Transportation, Pedestrian & Bicycle	Historic Preservation	Greenhouse Gas Reduction
2011-2015 Comprehensive Plan - Environmental							
Climate and Energy	Water	Waste	Land Use	Community Planning	Transportation, Pedestrian & Bicycle	Historic Preservation	Greenhouse Gas Reduction
...
2011-2015 Comprehensive Plan - Urban							
...
2011-2015 Comprehensive Plan - Other							
...

4. Educate the public and local boards to encourage sustainable development

3. Include this information in local planning (OS, Comprehensive plans, zoning, etc.)



Examples



Municipal Vulnerability Preparedness Program

I. Identify existing and future problems that GI can help alleviate



2. Identify conservation opportunities and priorities

WORK

Mapping & Prioritizing Parcels for Resilience Project



Mass Audubon, in partnership with The Nature Conservancy and LandVest, developed **Mapping and Prioritizing Parcels for Resilience (MAPPR)** to allow Massachusetts conservationists to rapidly identify specific parcels that, if protected, could contribute the most to achieving land protection goals.

While land trusts, towns, and agencies have long relied on a wide range of maps and data sets to identify priority areas for land protection to meet their goals, MAPPR takes advantage of newly available digital parcel data to identify specific land protection opportunities. MAPPR also helps land trusts, towns, and agencies to easily define and refine their priorities, discover new opportunities, and extract the data necessary to take the next steps in land

Resources

[MAPPR Tool](#)

[Resources](#)

Questions

For more information:
MAPPR@massaudubon.org

Project Partners



[Ecological Management](#)

[Education & Community Outreach](#)

[Sustainable Planning & Development](#)

[Losing Ground Report](#)

[Shaping the Future of Your Community Program](#)

[Preservation & Development Toolkit](#)

[Guidebook to Involvement in Your Community](#)

[Cost Effective Low Impact Development \(LID\)](#)

[MAPPR Project](#)

[Schools](#)

[Partners](#)

[Visitor Experience](#)

3. Include this information in local planning (OS, Comprehensive plans, zoning, etc.)

Factors	Conventional	Better	Best	Community's Zoning	Community's Subdivision Rules & Regulations	Community's Site Plan Review	Community's Stormwater/LID Bylaw/Regulations
GOAL 1: PROTECT NATURAL RESOURCES AND OPEN SPACE							
Soils managed for revegetation	Not addressed	Limitations on removal from site, and/or requirements for stabilization and revegetation	Prohibit removal of topsoil from site. Require rototilling and other prep of soils compacted during construction	<i>(Not applicable)</i>			
Limit clearing, lawn size, require retention or planting of native vegetation/natu	Not addressed or general qualitative statement not tied to other design standards	Encourage minimization of clearing/ grubbing	Require minimization of clearing/grubbing with specific standards				
Require native vegetation and trees	Require or recommend invasives	Not addressed, or mixture of required plantings of native and nonnative	Require at least 75% native plantings				
GOAL 2: PROMOTE EFFICIENT, COMPACT DEVELOPMENT PATTERNS AND INFILL							
Lot size	Required minimum lot sizes	OSRD/NRPZ preferred. Special permit with incentives to utilize	Flexible with OSRD/NRPZ by right, preferred option		<i>(Not applicable)</i>	<i>(Not applicable)</i>	<i>(Not applicable)</i>
Setbacks	Required minimum front, side, and rear setbacks	Minimize, allow flexibility	Clear standards that minimize and in some instances eliminate		<i>(Not applicable)</i>	<i>(Not applicable)</i>	<i>(Not applicable)</i>
Frontage	Required minimum frontage for each lot/unit	Minimize especially on curved streets and cul-de-sacs	No minimums in some instances, tied into other standards like OSRD design and shared driveways.		<i>(Not applicable)</i>	<i>(Not applicable)</i>	<i>(Not applicable)</i>
Common	Often not allowed,	Allow for 2-3 residential	Allow for up to 4 residential units, preferably				<i>(Not applicable)</i>

4. Educate the public and local boards to encourage sustainable development

- Westford, MA adopted a Conservation Subdivision bylaw in 1978
- Requires developers to submit both conservation and conventional plans & Planning Board chooses
- 48 developments protected over 1,700 of land



- Preserved local habitat
- Protected water resources
- Created 13 miles of hiking trails & public recreation
- Town didn't have to purchase the land themselves, saving millions of dollars

What do you think?

5. Prioritize and incentivize sustainable development



Take Home Messages

- Forests and other natural green infrastructure offer numerous **free ecosystem services**, including **climate resilience**
- We can ID issues, GI solutions, and incorporate into local planning to **prioritize sustainable development**



Thank you!

For more information...

Visit

www.massaudubon.org/shapingthefuture

Contact scovino@massaudubon.org

