

Breaking Down Floodplains: Five things to share with non-floodplain managers

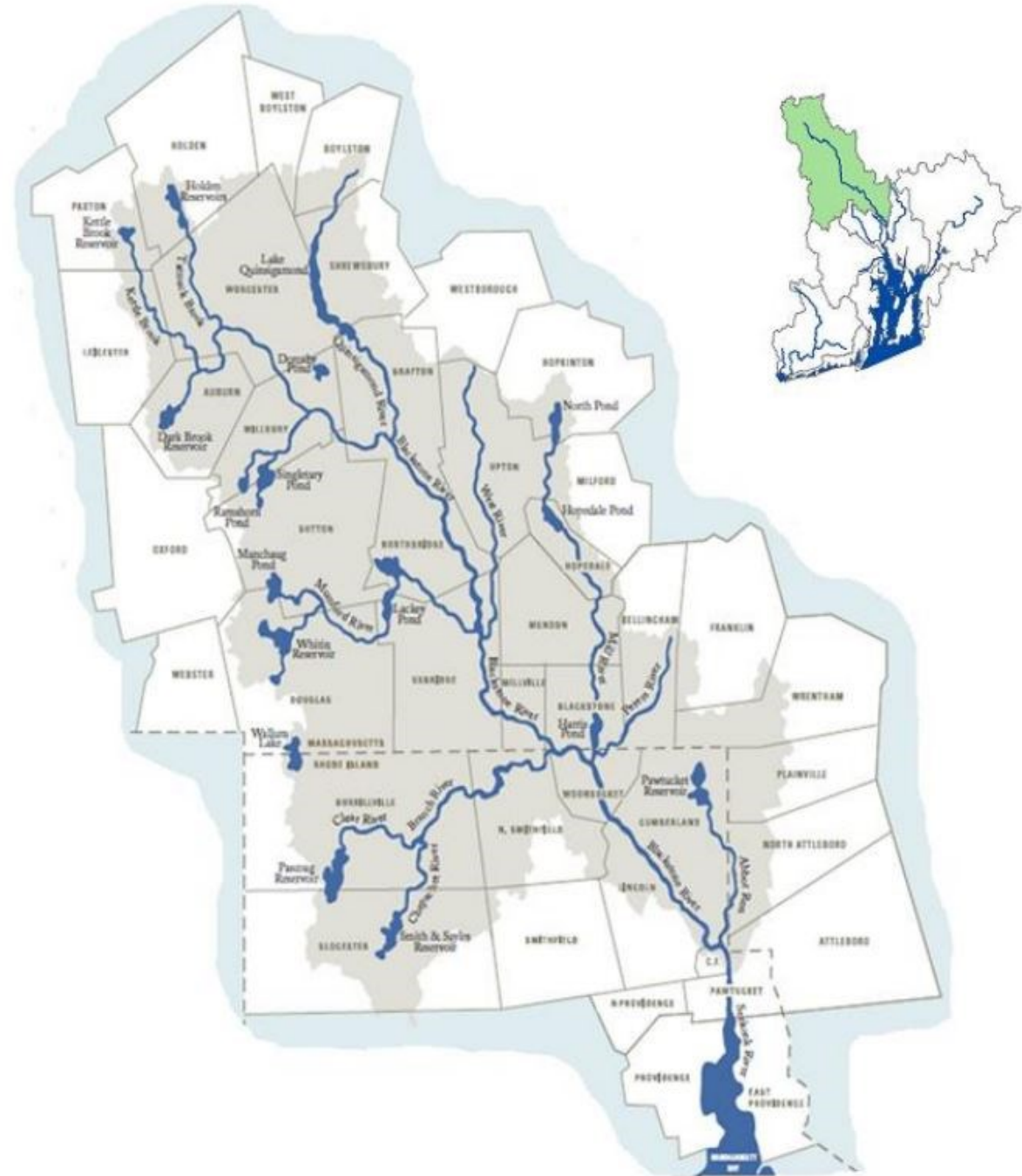
MassFM Conference 10/13/22

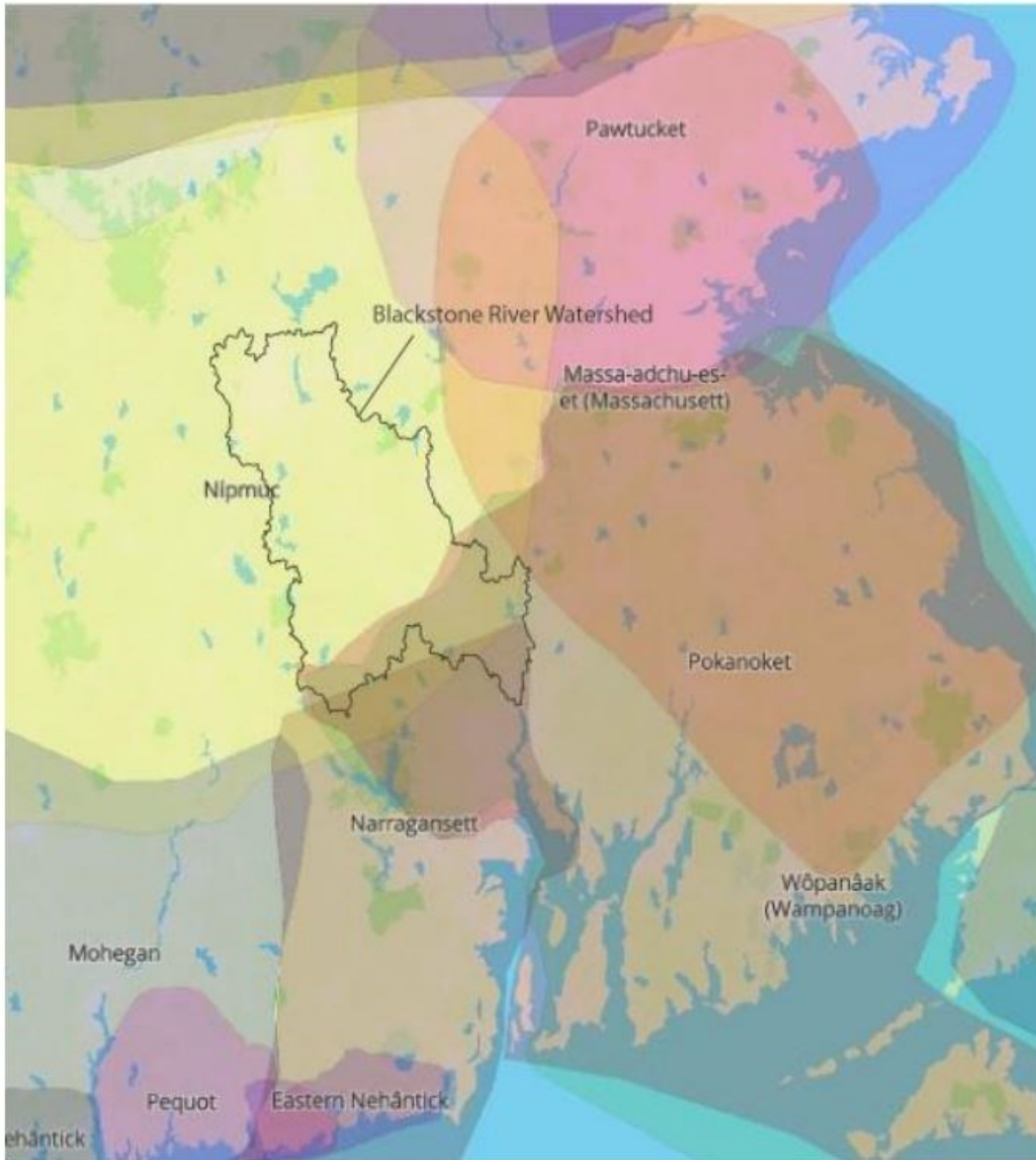
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Blackstone Watershed

- 48 miles long
- Drops 438'
- 475 square miles
- 39 communities
- 2 states





Needs Assessment Report Figure 6: Blackstone Region Indigenous Lands (Native Land Digital, 2021)

Indigenous Lands

- Hassanamisco Band of Nipmuc
- Pokanoket
- Wampanoag
- Narragansett

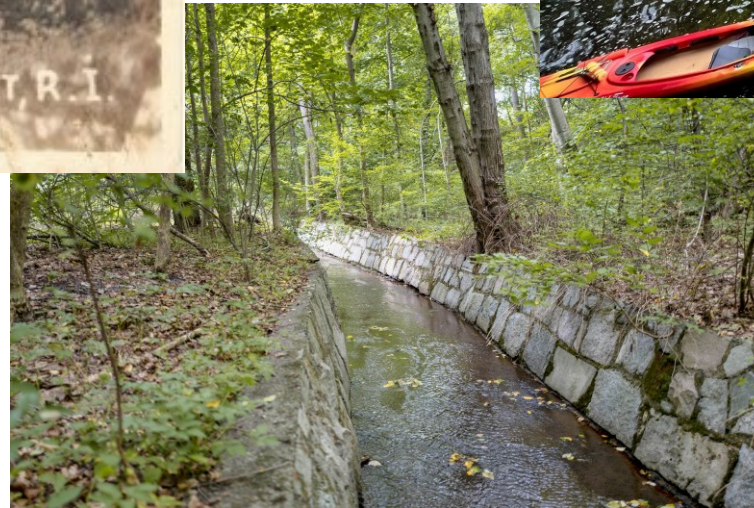
Centuries of careful land stewardship through hunting & gathering with close ties to the river

PAKACHOAG
WHERE THE RIVER BENDS

Linked!



“America’s hardest working river” Modified hydrology & floodplain

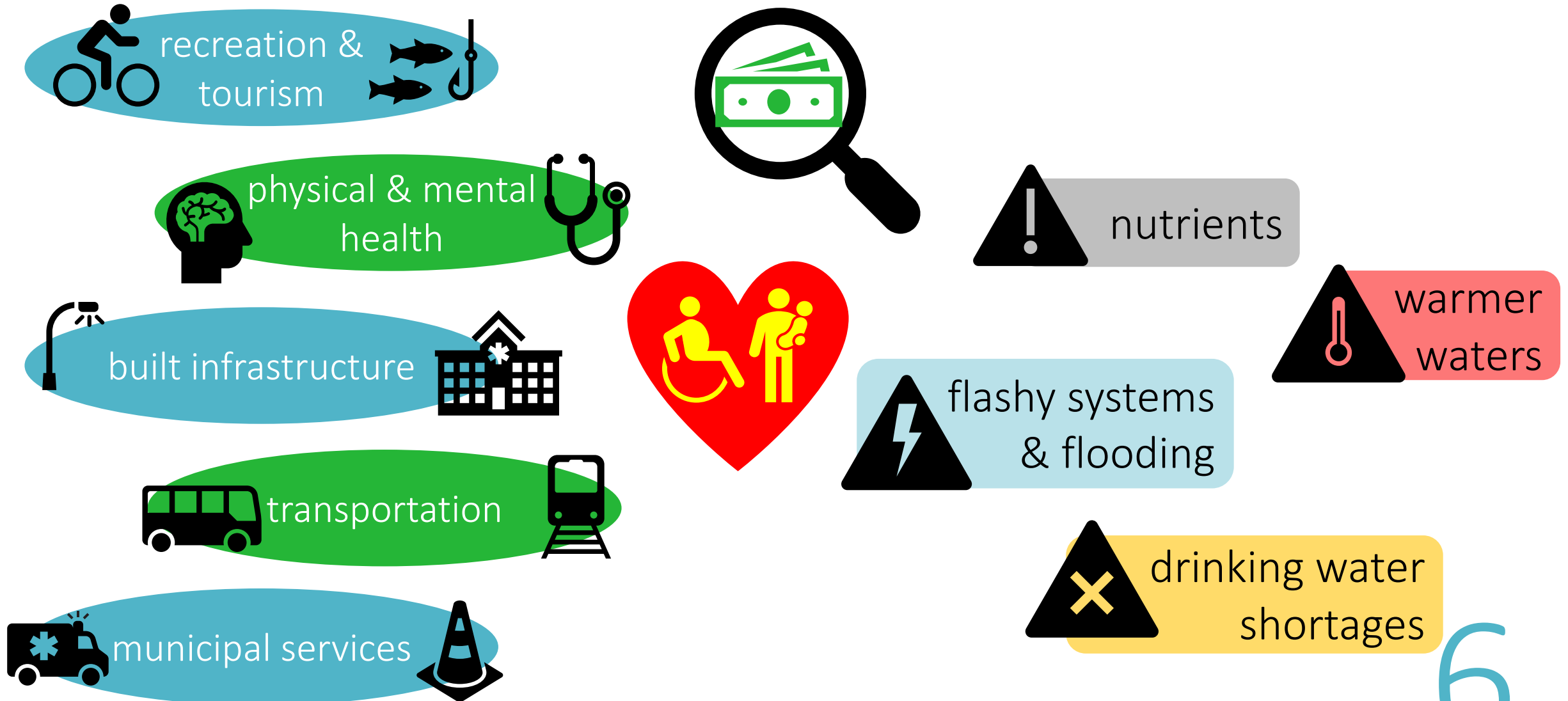


Modified, Impacted, Ignored -> Abused



Modified -> Impacted -> Ignored -> Abused

Healthy communities depend on a healthy watershed



Working together to achieve more



- Fill in **capacity** gaps
- Provide technical **assistance**
- Support **critical projects**
- Unified **messaging**
- **Centralized** place to advocate & celebrate

A Shared Watershed with Shared Goals

Maintenance of waterways



Water chestnut management



Equitable access

access →

appreciation →

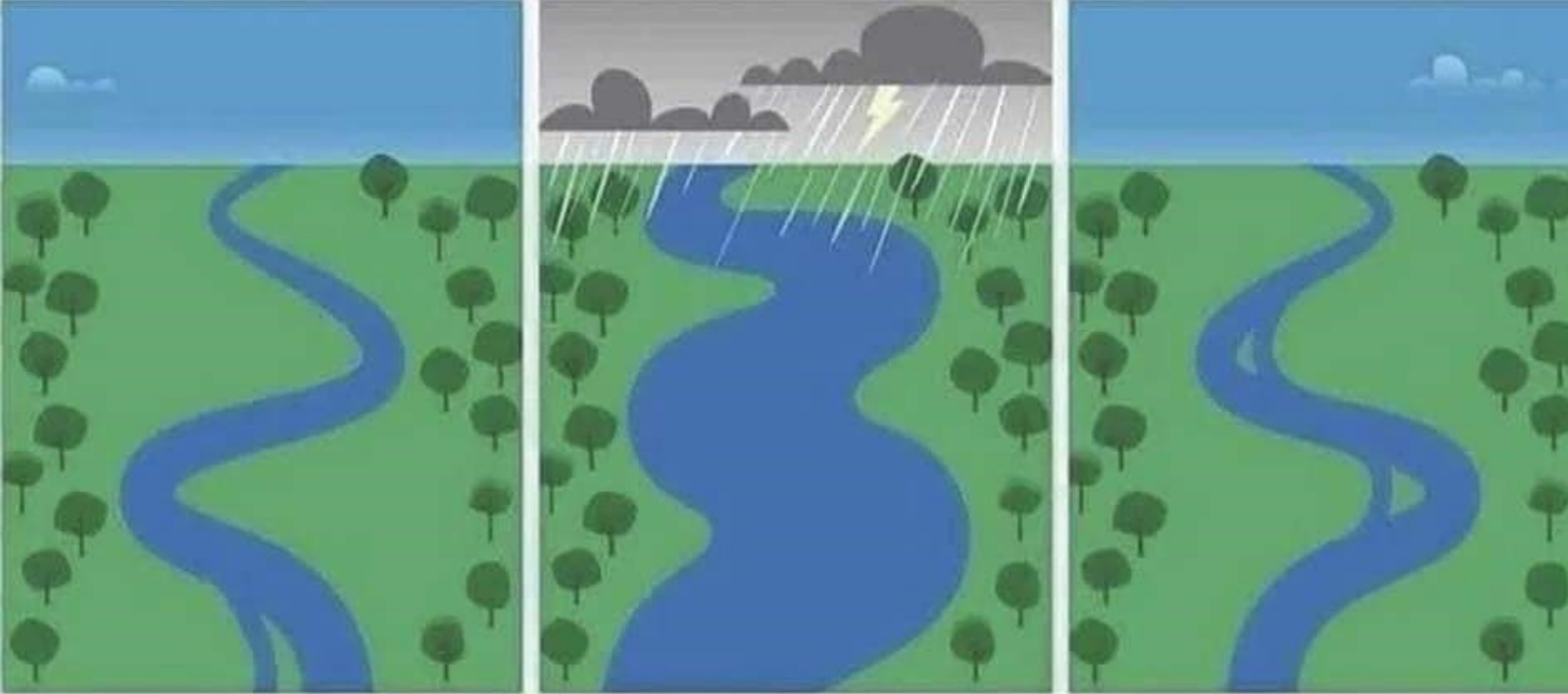
advocacy



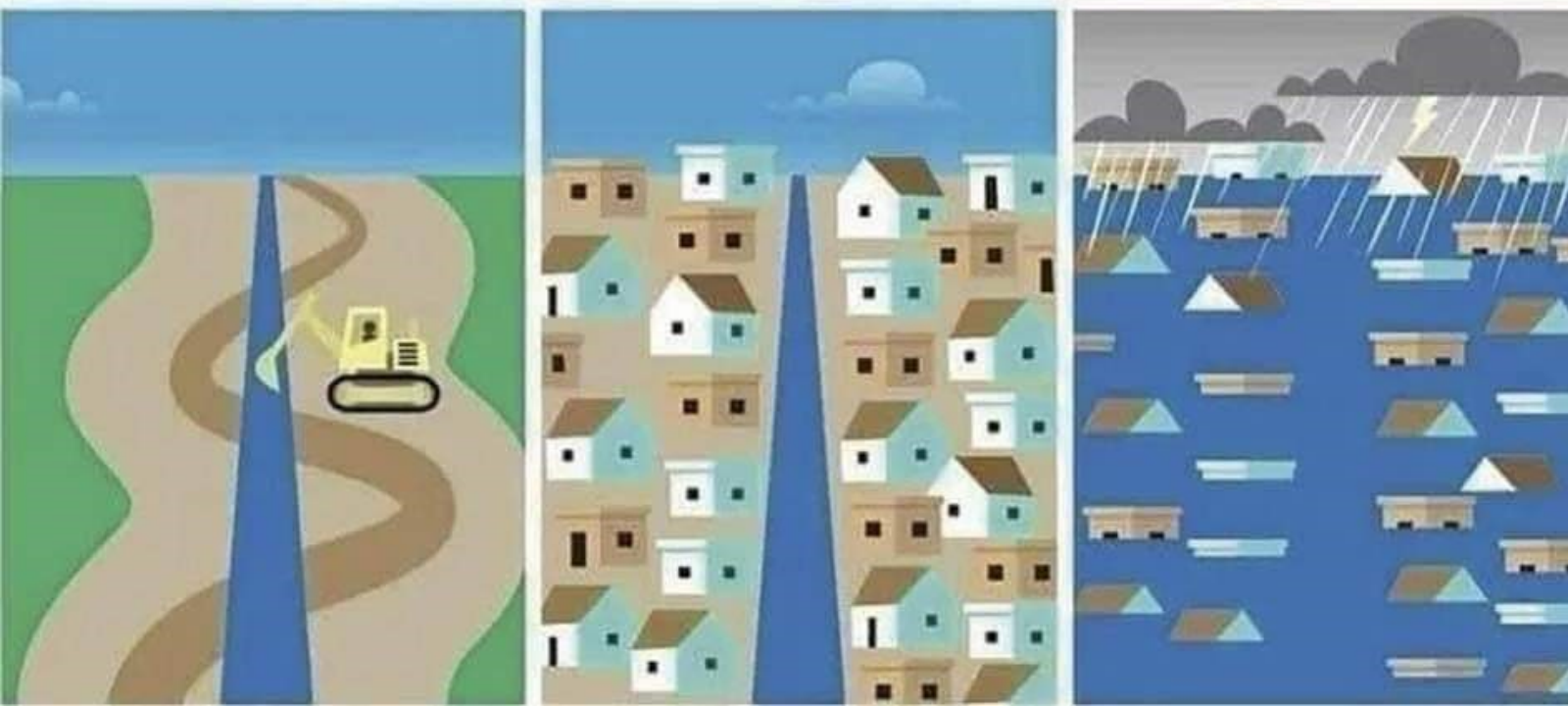
Expanding the bikeway



Creating fish passage over dams

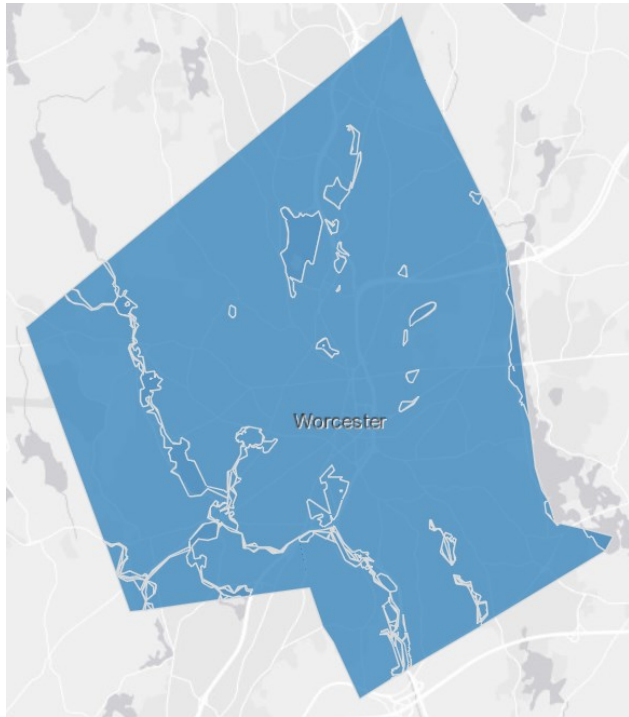


Five things everyone
should know about
floodplains

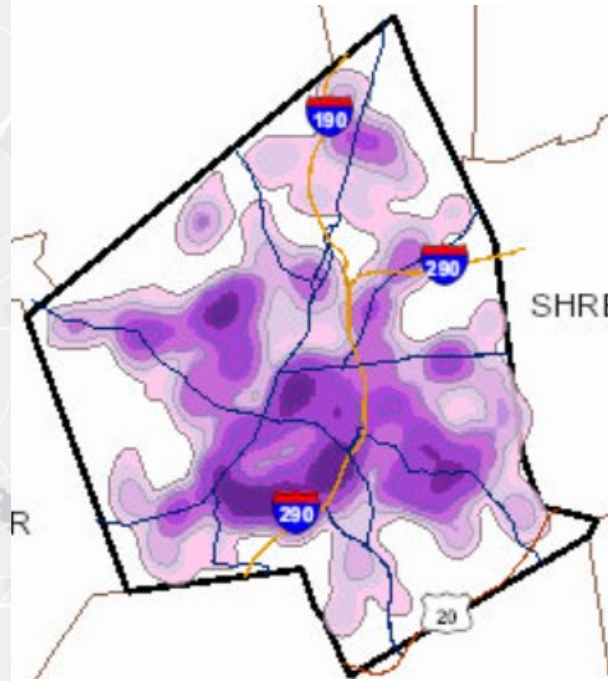


(and no, they don't
currently)

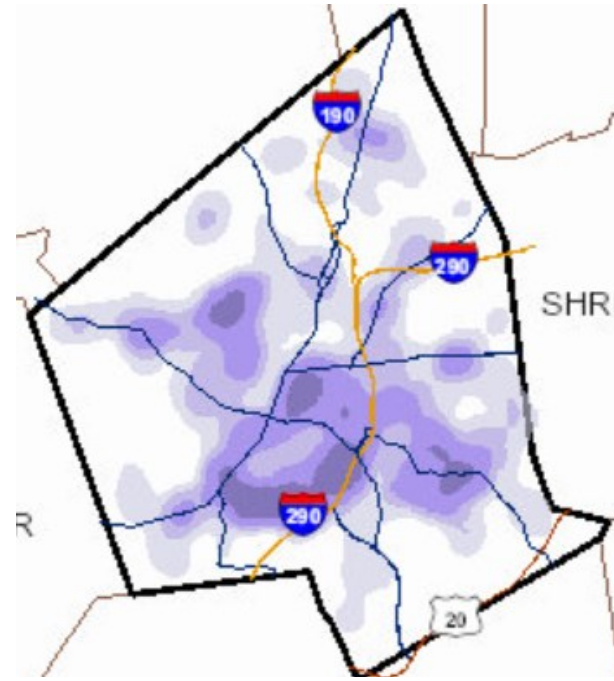
1a. What do we mean by “floodplain?”



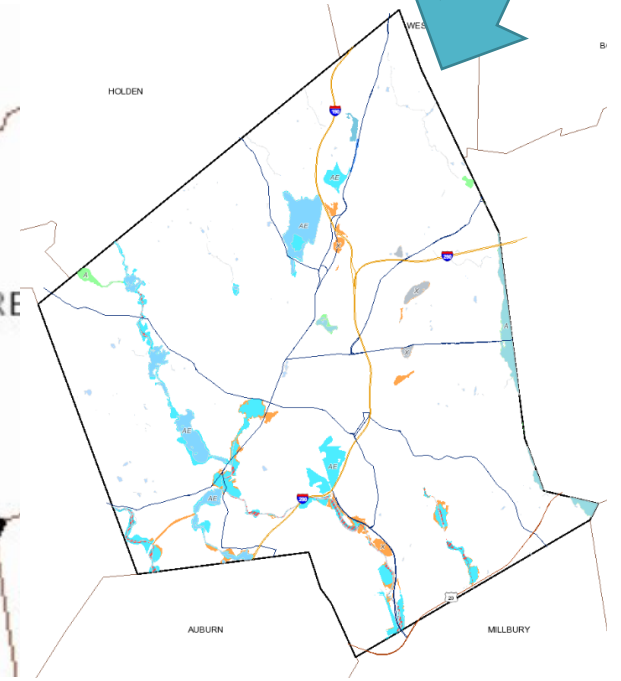
“Flood zones in Worcester”
(X is a zone, right?)



“Reported Flood Events”



“Projected Flood Events”



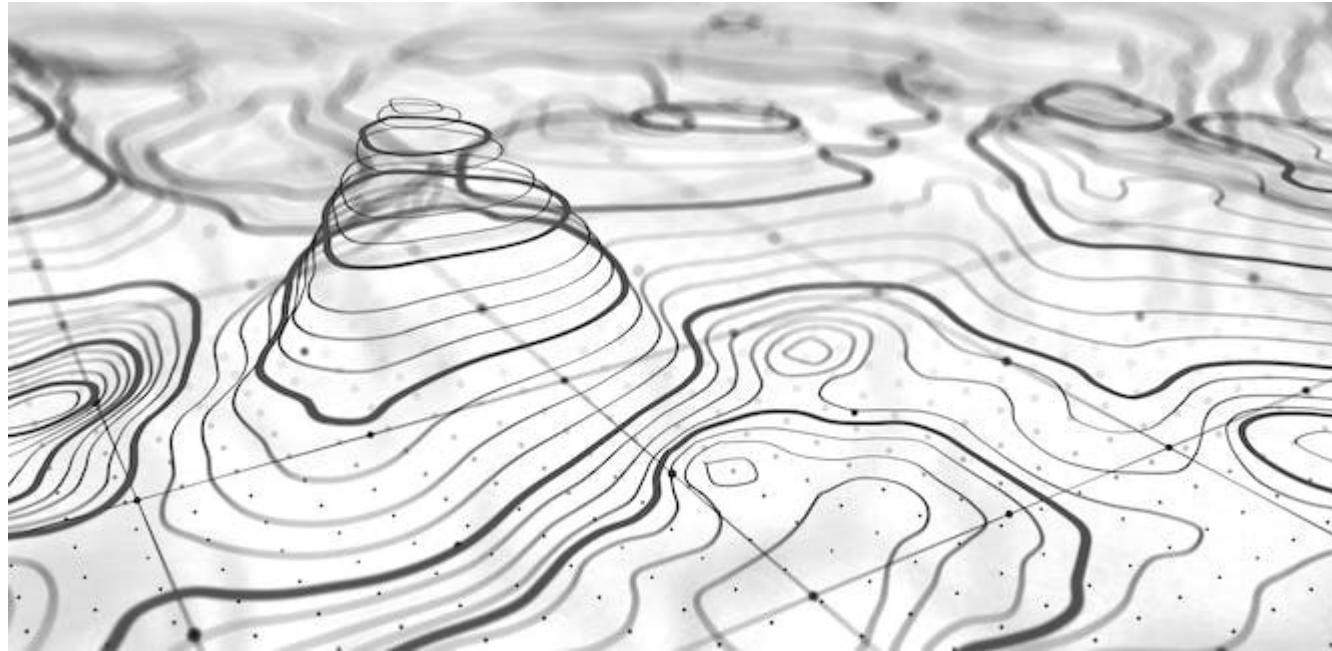
This one.
And usually, just the blue part.

1a. What do we mean by “floodplain?”

- ✓ Federally regulated area determined by FEMA
- ✓ “100 year” / Base Flood Elevation (BFE)
 - ✗ based on statistics from an extraordinarily limited and old dataset
 - ✗ statistically, there’s ~30% chance of that happening in a 30yr mortgage
 - ✗ realistically, every 25 years or so, and becoming more frequent
- ✓ Does not cover everywhere it has or will flood



1b. Floodplains are based on elevations

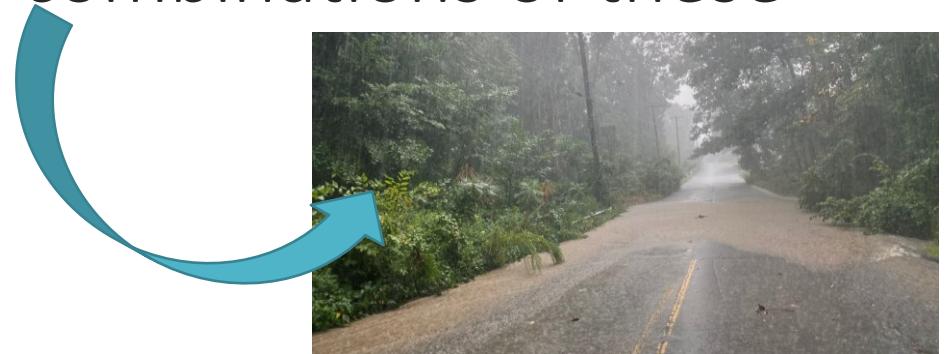


(**not** area, **not** proximity to water,
not because the federal govt says so)

1b. Floodplains are based on elevations (+impact)

They're also based on how we've **impacted** our watersheds

- waterway channelization
- low capacity stormwater pipes
- undersized culverts
- combinations of these



2. What's compensatory storage?

Defined by [310 CMR 10.57\(4\)\(a\)1](#)
(MA Wetlands Protection Act)

If you add **fill**
(building, dirt,
footings...), you have
to add **new** floodplain
at every 1' elevation.

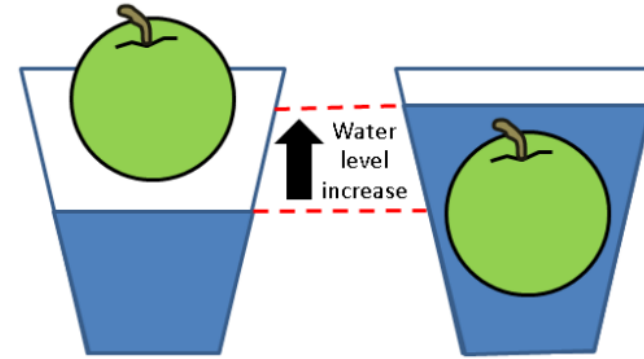


Figure 1 above shows how water levels raise when displaced by a solid object.

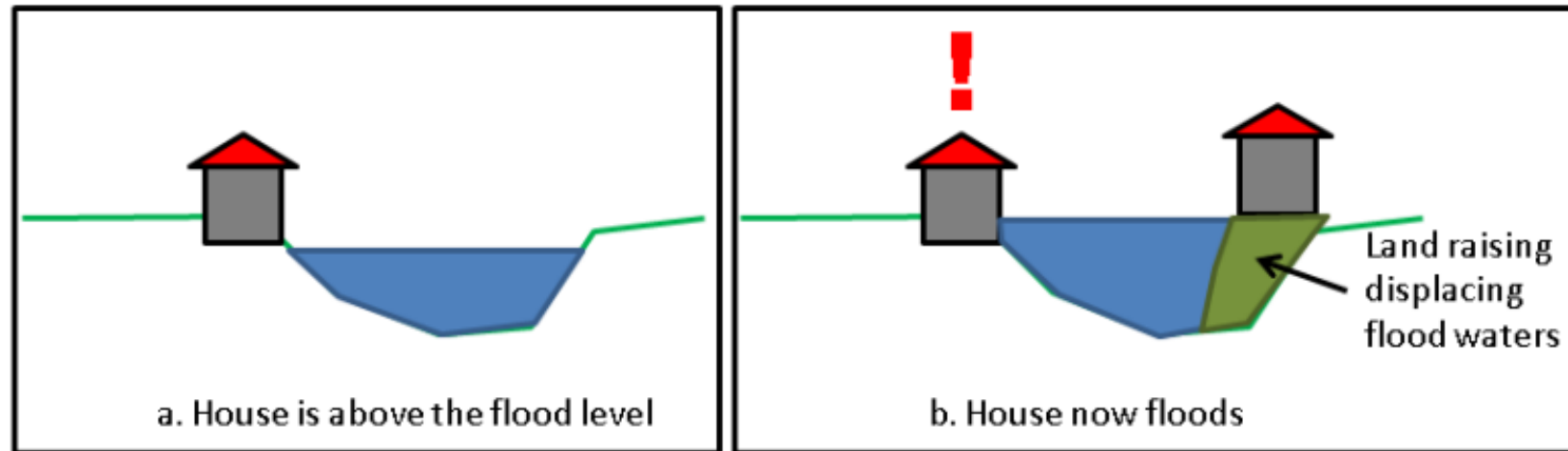
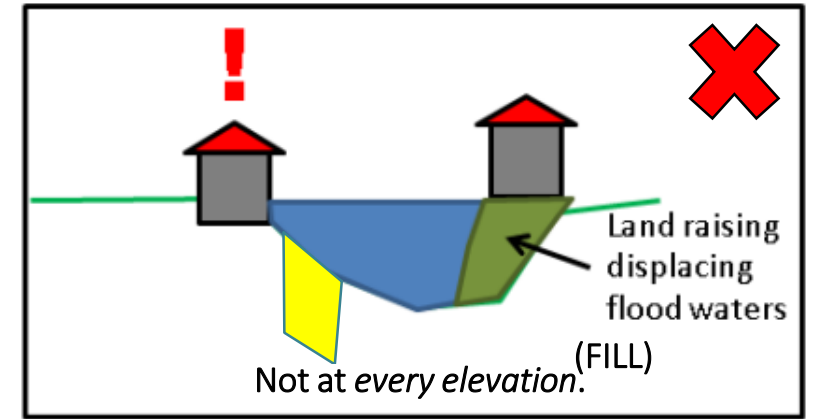
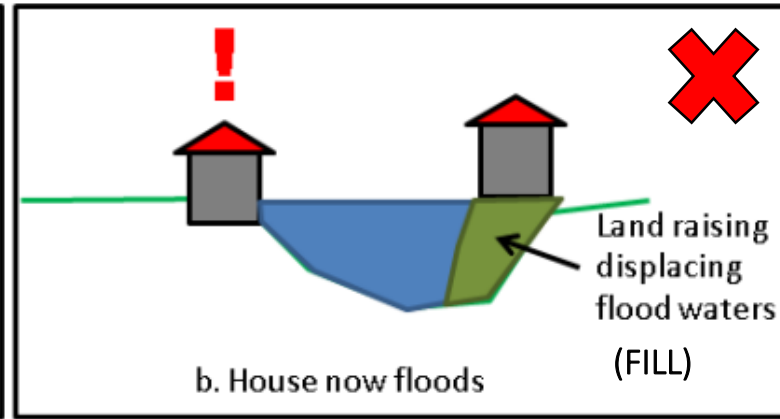
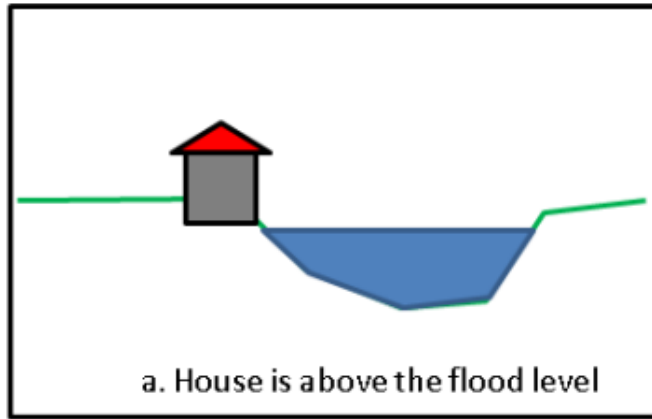


Figure 2 shows how development can displace flood waters and increase flood risk.

2. What's compensatory storage?



If the entire parcel is in the floodplain, there is no opportunity for compensatory storage and you **can't build there.**

3. What's an elevation certificate?

U.S. DEPARTMENT OF HOMELAND SECURITY
Federal Emergency Management Agency
National Flood Insurance Program

OMB No. 1660-0008
Expiration Date: November 30, 2022

ELEVATION CERTIFICATE

Important: Follow the instructions on pages 1-9.

Copy all pages of this Elevation Certificate and all attachments for (1) community official, (2) insurance agent/company, and (3) building owner.

SECTION A - PROPERTY INFORMATION		FOR INSURANCE COMPANY USE		
A1. Building Owner's Name		Policy Number:		
A2. Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.		Company NAIC Number:		
City	State	ZIP Code		
A3. Property Description (Lot and Block Numbers, Tax Parcel Number, Legal Description, etc.)				
A4. Building Use (e.g., Residential, Non-Residential, Addition, Accessory, etc.)				
A5. Latitude/Longitude: Lat. _____ Long. _____		OMB No. 1660-0008 Expiration Date: November 30, 2022		
A6. Attach at least 2 photographs of the building if the Certificate Building Diagram Number _____		FOR INSURANCE COMPANY USE		
A7. Building Diagram Number _____		Policy Number:		
A8. For a building with a crawlspace or enclosure(s):		Company NAIC Number		
a) Square footage of crawlspace or enclosure(s) _____		City		
b) Number of permanent flood openings in the crawlspace or enclosure(s) _____		State		
c) Total net area of flood openings in A8.b _____		ZIP Code		
d) Engineered flood openings? <input type="checkbox"/> Yes <input type="checkbox"/> No		Company NAIC Number		
SECTION C - BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)				
C1. Building elevations are based on: <input type="checkbox"/> Construction Drawings* <input type="checkbox"/> Building Under Construction* <input type="checkbox"/> Finished Construction *A New Elevation Certificate will be required when construction of the building is complete.				
C2. Elevations - Zones A1-A30, AE, AH, A (with BFE), VE, V1-V30, V (with BFE), AR, ARIA, ARIAE, ARI(A1-A30), ARI(AH, ARI(AO. Complete Items C2.a-h below according to the building diagram specified in Item A7. In Puerto Rico only, enter meters. Benchmark Utilized: _____ Vertical Datum: _____				
Indicate elevation datum used for the elevations in items a) through h) below. <input type="checkbox"/> NGVD 1929 <input type="checkbox"/> NAVD 1988 <input type="checkbox"/> Other/Source: _____ Datum used for building elevations must be the same as that used for the BFE.				
Check the measurement used.				
a) Top of bottom floor (including basement, crawlspace, or enclosure floor)	_____	<input type="checkbox"/> feet	<input type="checkbox"/> meters	
b) Top of the next higher floor	_____	<input type="checkbox"/> feet	<input type="checkbox"/> meters	
c) Bottom of the lowest horizontal structural member (V Zones only)	_____	<input type="checkbox"/> feet	<input type="checkbox"/> meters	
d) Attached garage (top of slab)	_____	<input type="checkbox"/> feet	<input type="checkbox"/> meters	
e) Lowest elevation of machinery or equipment servicing the building (Describe type of equipment and location in Comments)	_____	<input type="checkbox"/> feet	<input type="checkbox"/> meters	
f) Lowest adjacent (finished) grade next to building (LAG)	_____	<input type="checkbox"/> feet	<input type="checkbox"/> meters	
g) Highest adjacent (finished) grade next to building (HAG)	_____	<input type="checkbox"/> feet	<input type="checkbox"/> meters	
h) Lowest adjacent grade at lowest elevation of deck or stairs, including structural support	_____	<input type="checkbox"/> feet	<input type="checkbox"/> meters	
SECTION D - SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION				
This certification is to be signed and sealed by a land surveyor, engineer, or architect authorized by law to certify elevation information. I certify that the information on this Certificate represents my best efforts to interpret the data available. I understand that any false statement may be punishable by fine or imprisonment under 18 U.S. Code, Section 1001.				
Were latitude and longitude in Section A provided by a licensed land surveyor? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Check here if attachments.				
Certifier's Name _____		License Number _____		
Title _____		Place Seal Here		
Company Name _____				
Address _____				
City _____	State _____			ZIP Code _____
Signature _____	Date _____			Telephone _____ Ext. _____
Copy all pages of this Elevation Certificate and all attachments for (1) community official, (2) insurance agent/company, and (3) building owner. Comments (including type of equipment and location, per C2(e), if applicable)				

FEMA Form 086-0-33 (12/19)

Replaces all

FEMA Form 086-0-33 (12/19)

Replaces all previous editions.

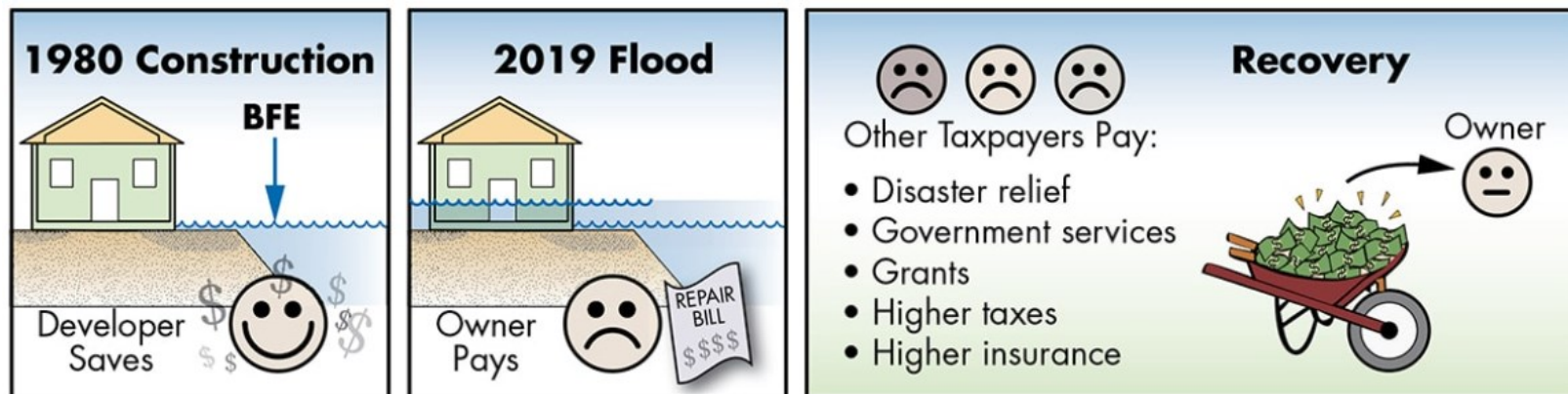
Form Page 2 of 6

- **Survey** of a building and surrounding land at specific points (door ways, openings, critical equipment) to the .01"
- Required to determine relation to the known floodplain **elevation**
- Says if a building is **in or out** of the floodplain (if BFE known)



3. What's an elevation certificate?

- **Homebuyers** should always request an EC before purchasing a home near a known mapped floodplain
- **Homeowners** can request an EC if they think their structure is outside of the floodplain (LOMA & LOMR)
- Municipal **floodplain manager** determines whether a EC is required or not for work
 - To determine whether building is or out
 - To determine substantial improvement



4. What's substantial improvement? (Also called the "50% rule")

Reconstruction, rehabilitation, addition, or other improvement of a structure, including built in appliances, HVAC, roofing, electrical, labor costs (incl. value of volunteer work), etc. ([see here](#))

Regardless of the reason

Structure only, not the land value

Value is based on fair market value. Typically uses tax assessment, but owners can provide their own appraisal, which must be accepted by the municipality.

Repairs meet or exceed 50% of the structure's value.

You can't do the work

If yes...

OR

You need to make the building meet current floodplain regulations (1' freeboard)

4. What's substantial improvement?

WHAT?
I can't improve my
own home?!

The federal government doesn't want to allow **bad investments** with public payout for private, flood-prone homes.

SI is not triggered by alterations to “**historic structures**,” provided that the alterations will not preclude the structure's continued designation.

What about historic
structures?

What if I'm required to
fix violations?

SI is not triggered by improvements to correct **existing, documented health/safety/sanitary violations** (minimum necessary to ensure safe living conditions)

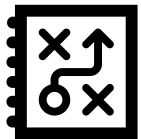
5. Basic land-water interaction



- Water needs a place to go. If you remove its ability to infiltrate, it will find a new place to go. So be intentional, create a place or it'll find its own way



- Plan for more than the 1 year storm in a construction project – that happens too often & TSBs will be overwhelmed



- Planners and permitting authorities can ask for more! Stormwater standards require true the consideration of LID



5 Things To Know About Floodplains

1. What is a floodplain

- FEMA 100 year, based on elevations & impact

2. What is compensatory storage

- fill requires \geq cuts for new floodplain

3. What is an elevation certificate

- determines in or out, homebuyers should get it

4. What is substantial improvement

- can't invest \geq 50% of structure's value

5. Basic land-water interaction

- water will find a way; give it good options



blackstonecollaborative.org

Thank you!



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