



# FEMA Flood Map Updates What's Ahead ?

Municipal Day  
10/28/2022

Ned Swanberg

[ned.swanberg@vermont.gov](mailto:ned.swanberg@vermont.gov)

VTDEC Flood Hazard Mapping Coordinator



Is your  
community  
ready?

## **FLOOD READY VERMONT**

Learn what you can do to prepare for the next flood.

**floodready.vt.gov**

COMMUNITY DATA • ERAF STATUS • HAZARD MAPS • ASSISTANCE IN UPDATING PLANS

1. FEMA Flood Map Updates Statewide
2. Most Bylaws will need to be updated within 3 – 5 years
3. Many Plans will need to be updated too!

Please start now

What can we do to avoid increasing the risk to vulnerable residents, protect community services, and have a safe and prosperous community?

## No Adverse Impact - Model Bylaws

### 1. River Corridor Protection

Don't build closer than what is already there.

*Leave room for rivers*

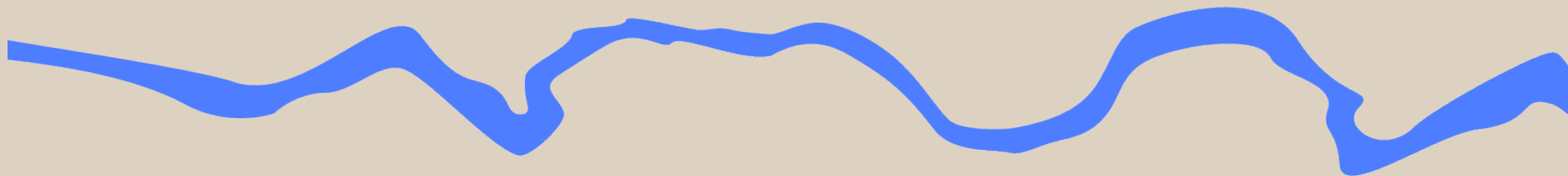
### 2. Special Flood Hazard Area

No net fill

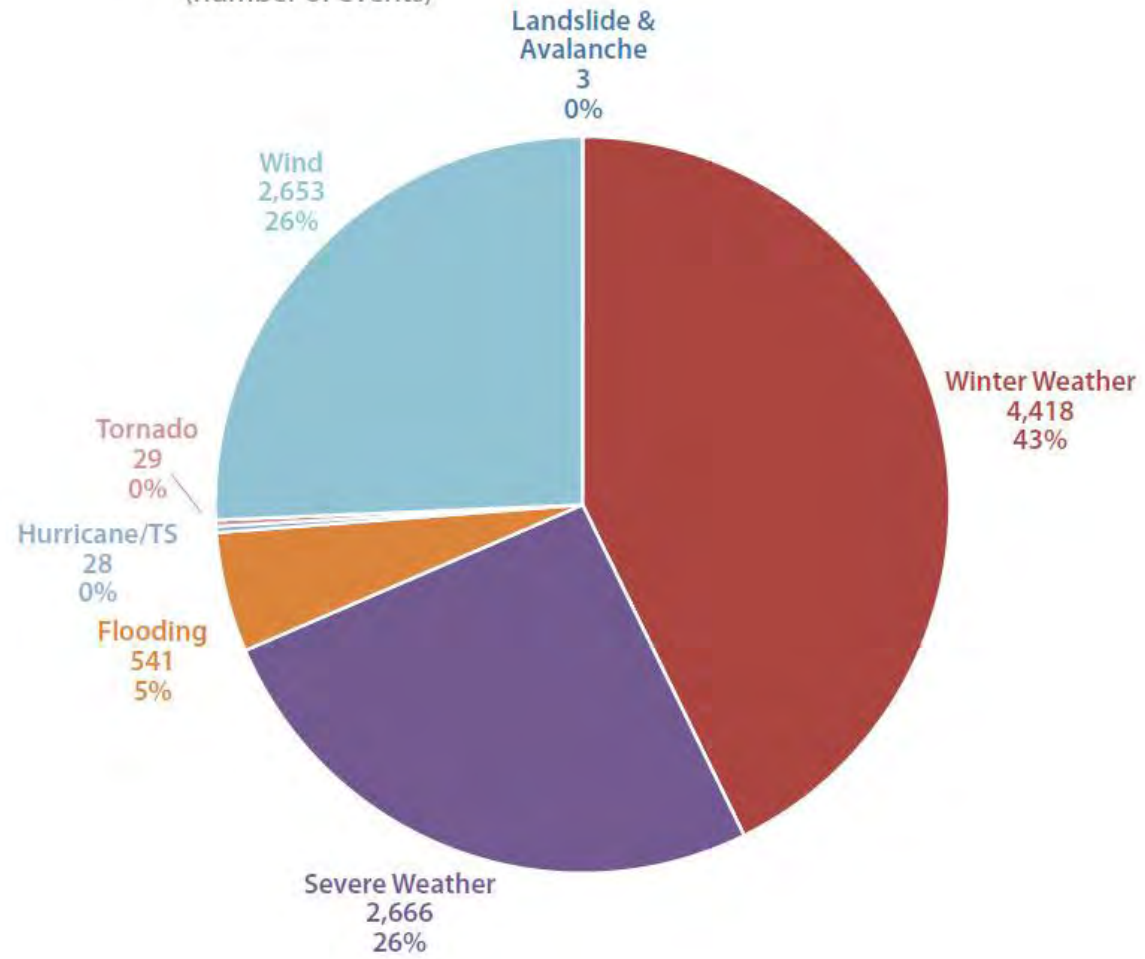
Lowest floor 2 feet above flood water

*Let floodplains work for all of us.*

*Don't increase the risk for those already at risk.*



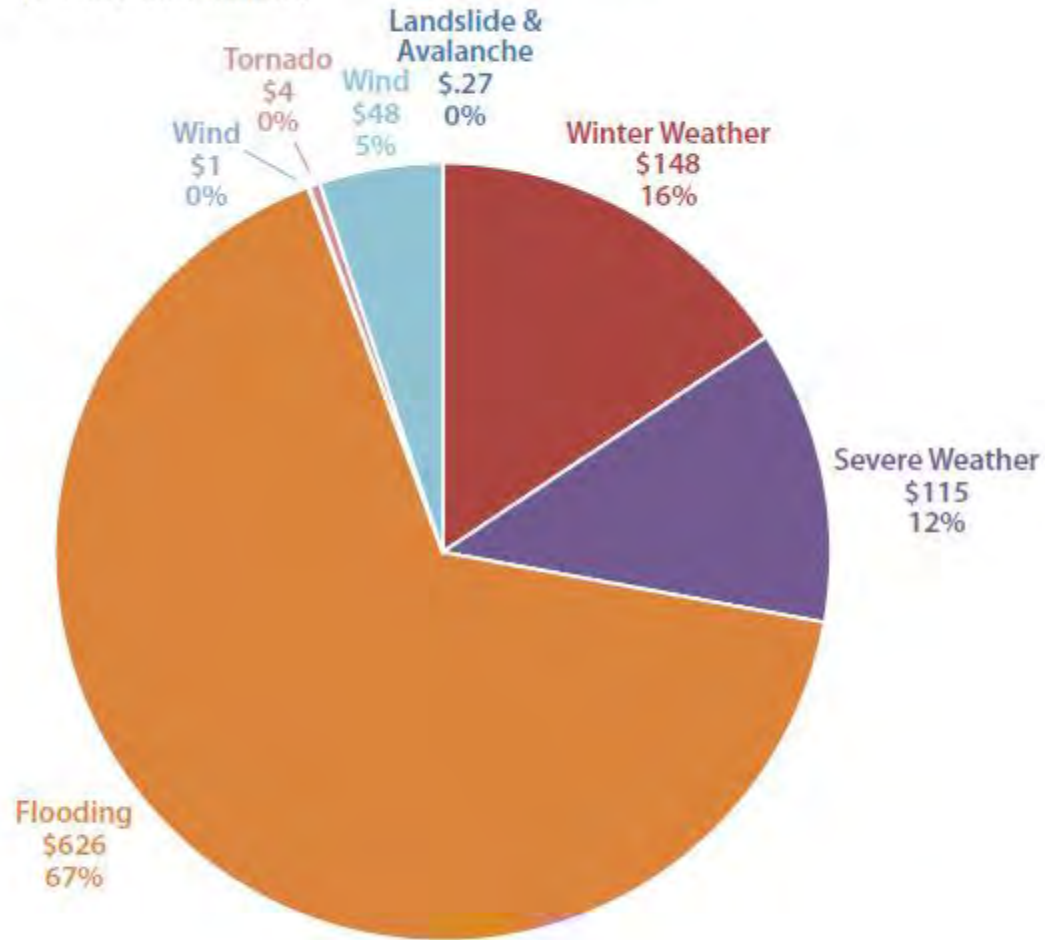
## Distribution of Hazard Events (number of events)



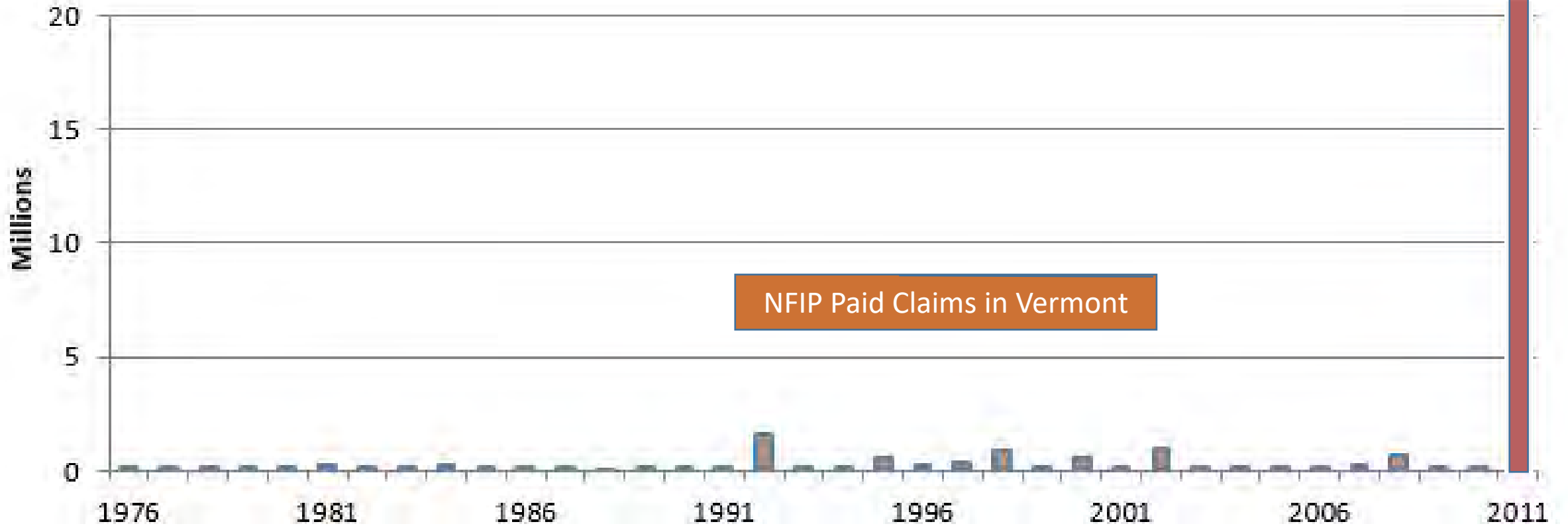
# VERMONT

Hazard Losses  
1960-2009

Distribution of Losses by Hazard Type  
(in 2009 USD million)



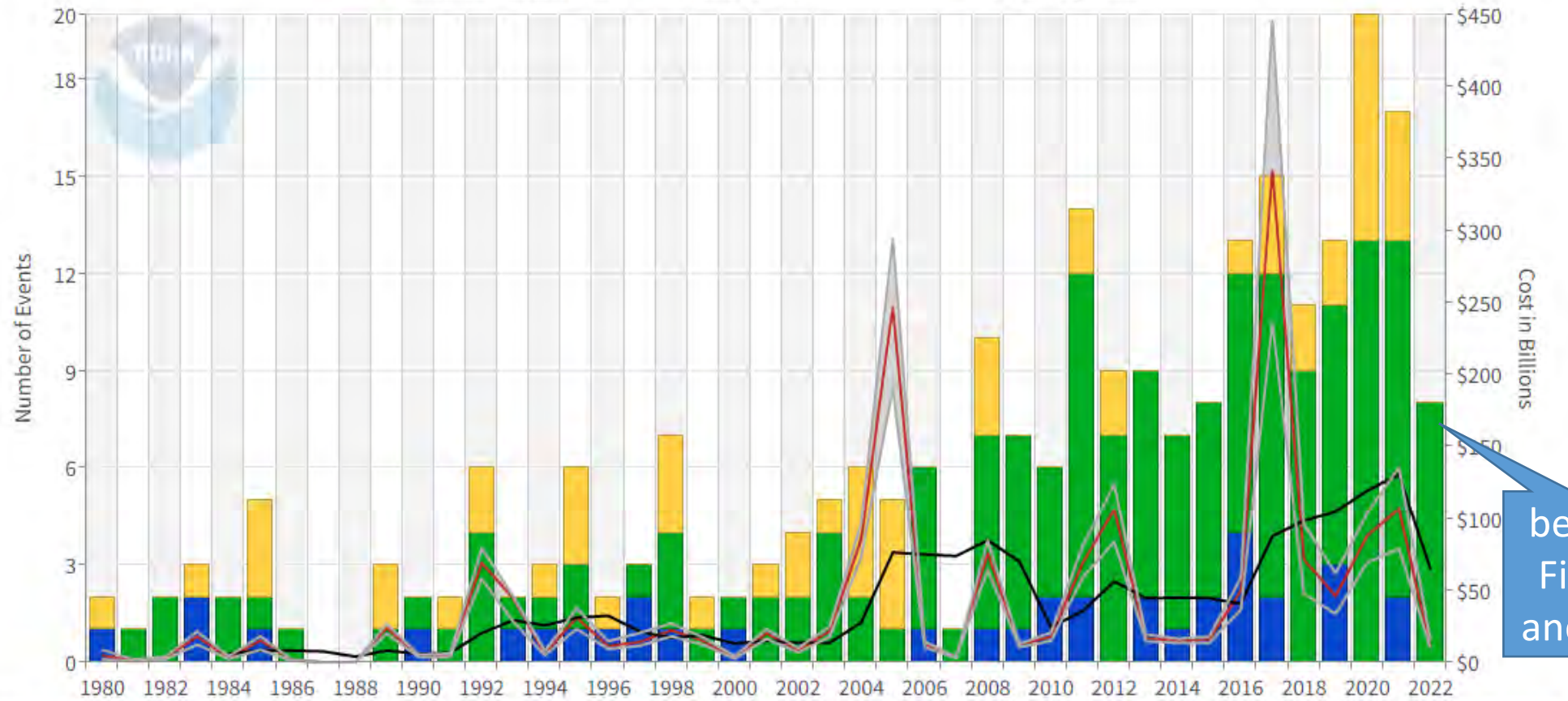
2011: over \$53 million.



NFIP Paid Claims in Vermont

### United States Billion-Dollar Disaster Events 1980-2022 (CPI-Adjusted)

- Flooding Count
- Severe Storm Count
- Tropical Cyclone Count
- Combined Disaster Cost
- Costs 95% CI
- 5-Year Avg Costs



Updated: July 11, 2022

Powered by ZingChart

before Fiona and Ian

## Choose Flood Resilience:

Where are your hazard areas?  
River Corridors and Floodplains?  
What is Already at Risk?

Protect What Works and  
Avoid Aggravating the Problem

Work Toward Reliable Roads and Reducing Risk

Prepare for Emergency

Insure Residual Risk





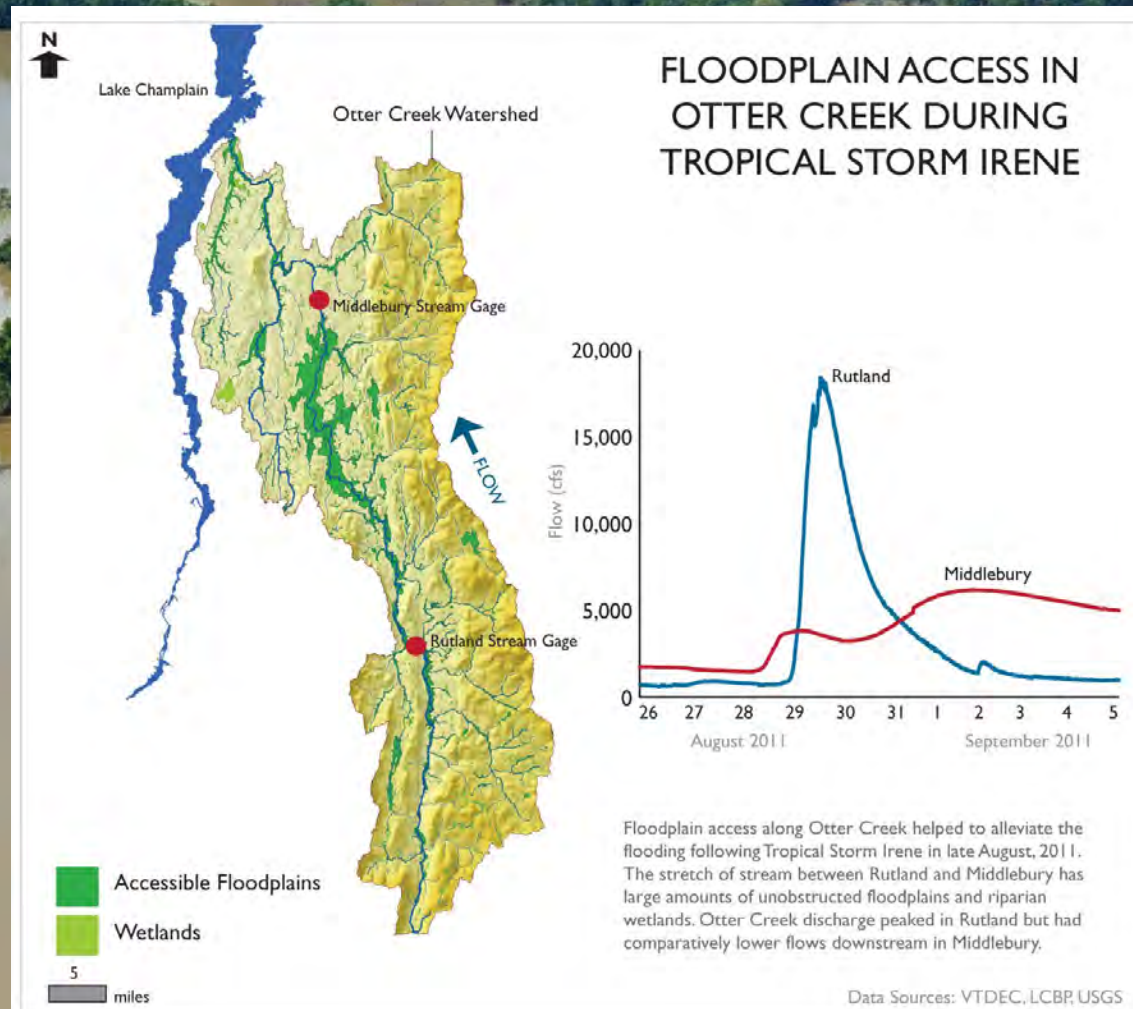
# Floodplain Natural and Beneficial Functions

- Store and move floodwater, ice, debris
- Keep water clean (trapping sediments, nutrients)
- Enrich soil
- Recharge water supply
- Provide space for agriculture, forestry
- Wildlife and natural communities
- Recreation, beauty, inspiration
- Reduce flood levels and flood power.



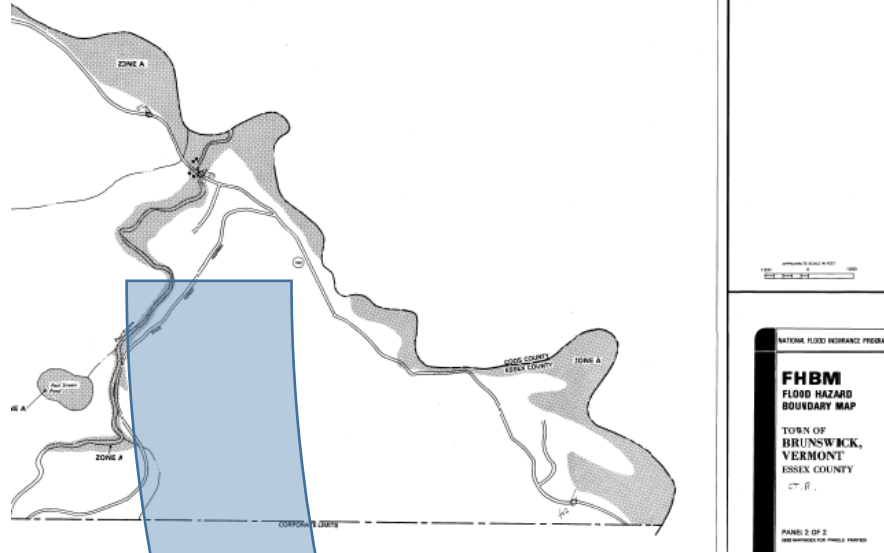


Otter Creek, Pittsford, September 3, 2011  
 Photo: Lars Gange, Mansfield Heliflight

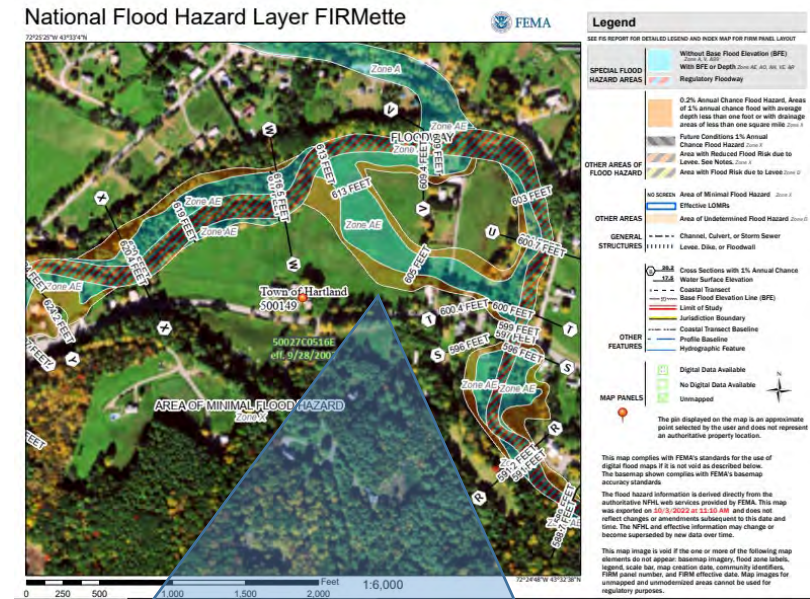


Floodplain access along Otter Creek helped to alleviate the flooding following Tropical Storm Irene in late August, 2011. The stretch of stream between Rutland and Middlebury has large amounts of unobstructed floodplains and riparian wetlands. Otter Creek discharge peaked in Rutland but had comparatively lower flows downstream in Middlebury.

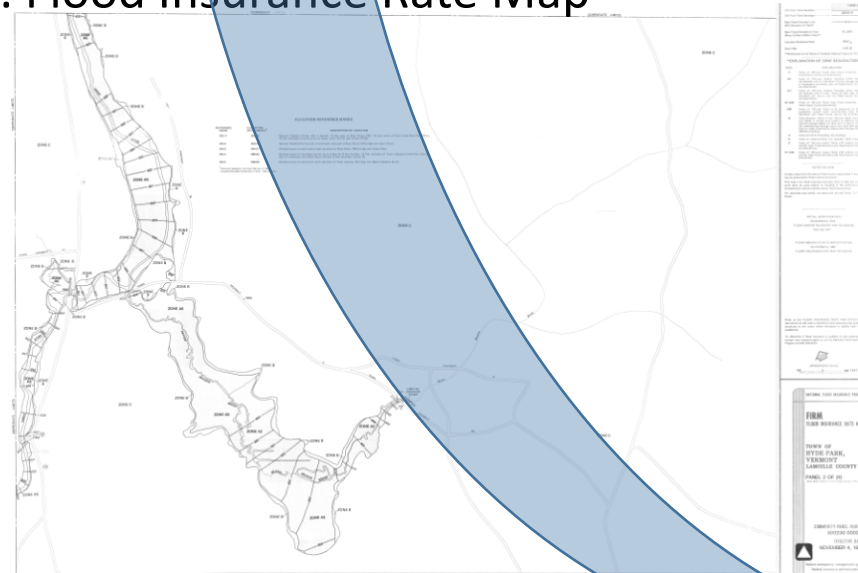
# 1. Flood Hazard Boundary Map



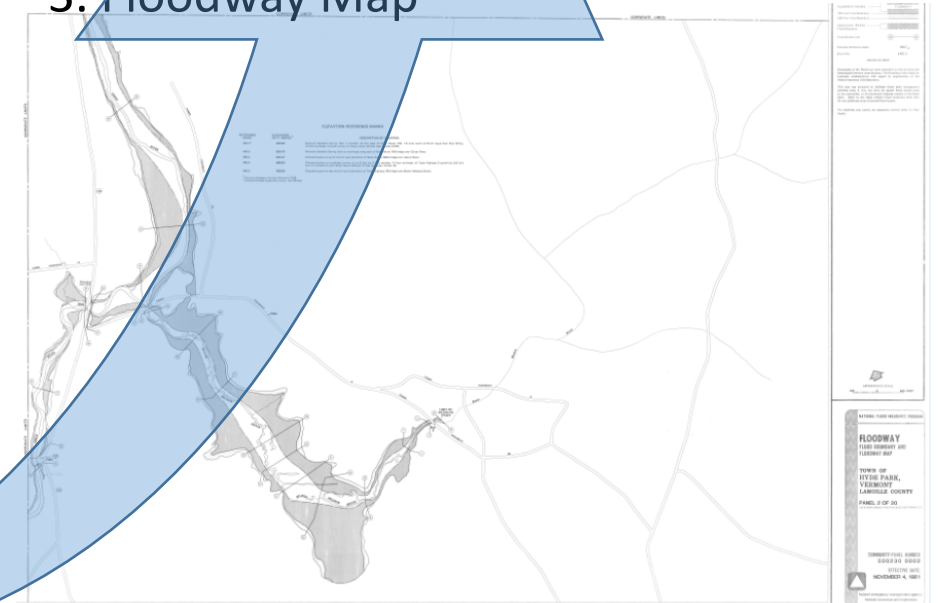
# 4. Digital Flood Insurance Rate Map

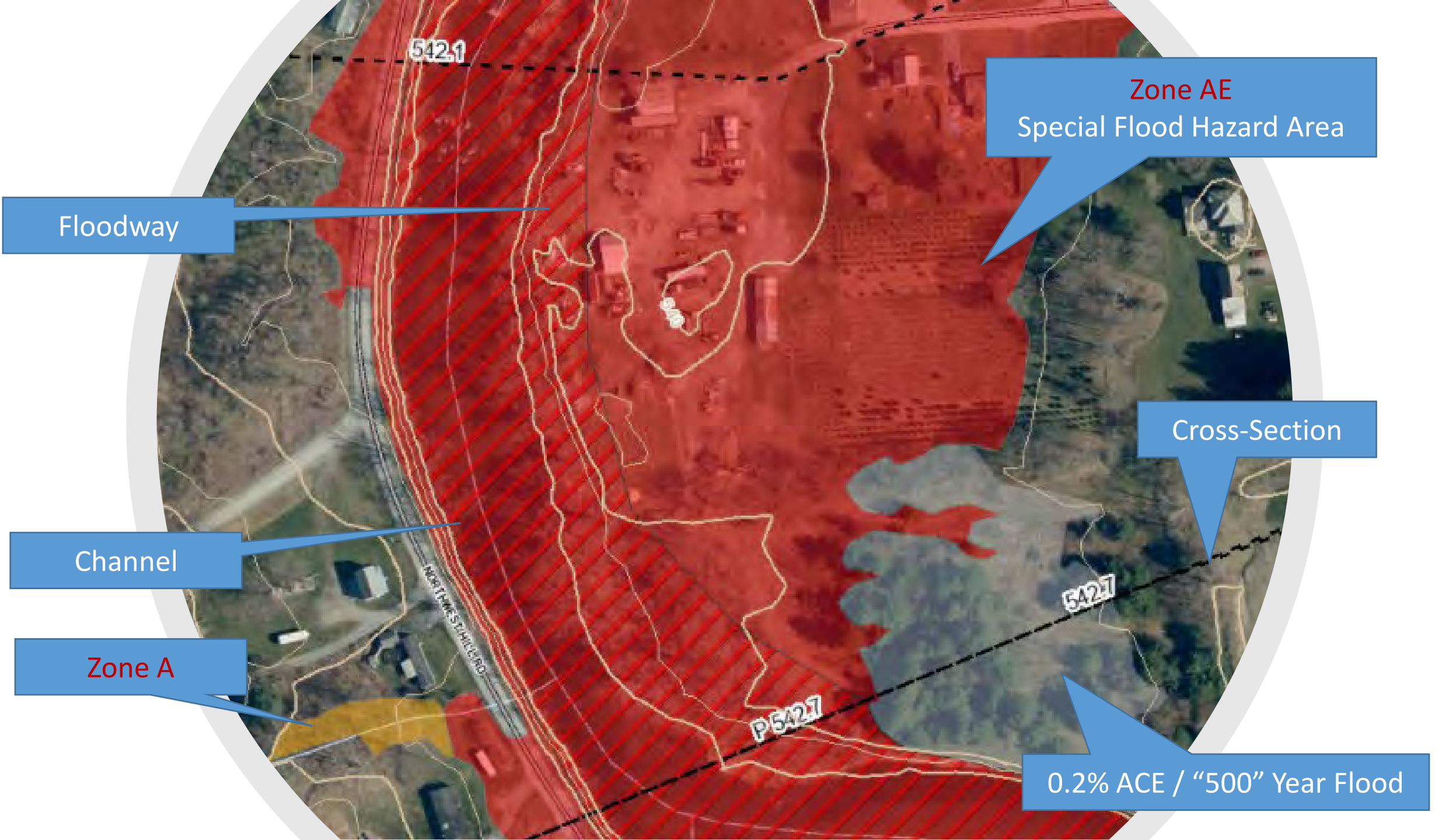


# 2. Flood Insurance Rate Map



# 3. Floodway Map





Floodway

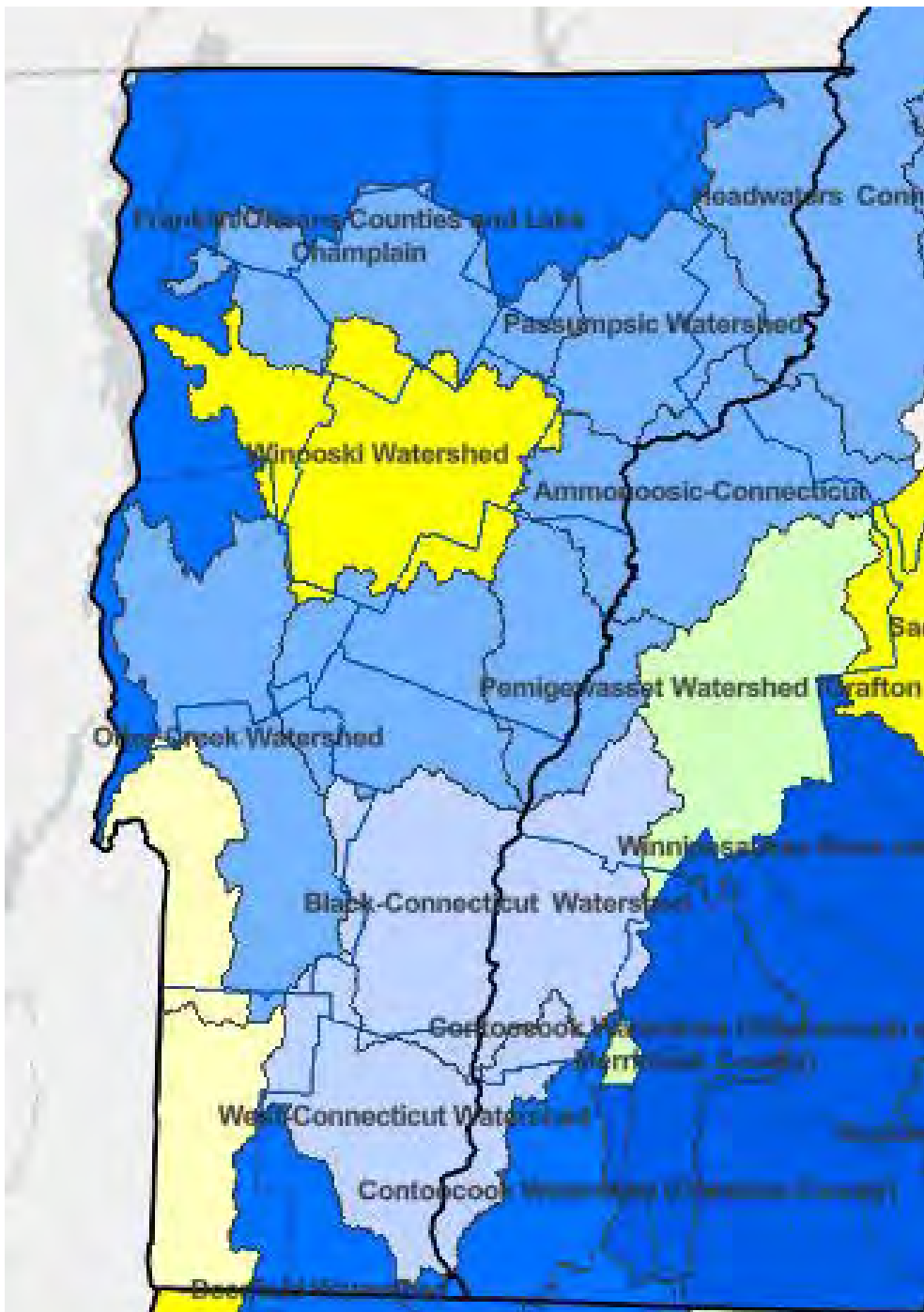
Zone AE  
Special Flood Hazard Area

Channel

Cross-Section

Zone A

0.2% ACE / "500" Year Flood



### Projected County Work Map Meeting Date

1	Grand Isle	
2	Franklin	
3	Orleans	Winter 2023?
4	Essex	
5	Windsor	Spring 2023?
6	Caledonia	
7	Chittenden	
8	Lamoille	
9	Orange	
10	Washington	Summer 2023?
11	Addison	
12	Bennington	
13	Rutland	
14	Windham	Summer 2025?

## FEMA Flood Map and Bylaw Updates in Vermont

Find this online at: [floodready.vt.gov/info](http://www.floodready.vt.gov/info)

**FEMA is updating Flood Insurance Rate Maps in Vermont.** From start to finish this is roughly a five-year process. Before the final maps become effective, FEMA will need to confirm that your community's flood hazard bylaws meet or exceed the criteria for the National Flood Insurance Program (NFIP).

Current information on the map and bylaw process is available on the Flood Training website [bit.ly/fema-map-update](http://bit.ly/fema-map-update). Find out when your municipal plan will expire with an [Expiring Community Report at Flood Ready Vermont](#).

To update a bylaw it may take some communities at least a year and a half. If you need to adopt a plan first - you may need three years. Please identify the timeline and process for your community to gracefully support inclusive and meaningful community learning and discussion.

**Deadline** - Municipal officials should complete any needed bylaw updates by the **"Prep Deadline."** (Sooner better!) From the County Work Map Meeting there is only about 16 months until the "Prep Deadline". Your community may need 12 to 18 months or more for a bylaw adoption, and that again for a plan if needed.

**Bylaw Updates** - Some communities have recently updated their bylaws and they may be all set. Contact your Regional Floodplain Manager to find out. Most communities will need to update their bylaws to be sure that they meet or exceed the requirements for a community that participates in the National Flood Insurance Program.

**Model No Adverse Impact Bylaws** - are available from VT DEC at [bit.ly/model-regulations](http://bit.ly/model-regulations). These bylaws have been approved by FEMA. The bylaws incorporate no adverse impact standards for floodplains and river corridors. The bylaws also align with state regulatory standards, flood resilience plans, and hazard mitigation plans. By incorporating river corridor protection, the bylaws qualify the community for the highest level of state support after disaster through ERAF, the Vermont Emergency Relief and Assistance Fund. [tinyurl.com/erafvt](http://tinyurl.com/erafvt)

**You are not alone** - There are model bylaws and a substantial amount of information available to you online. Regional Planners may be able to help you with process questions. Also, your [Regional Floodplain Manager](#), and [Neil Swartzberg](#), the Vermont Flood Hazard Mapping Coordinator can answer your questions.

**FEMA Map Update Process** - (see current estimated dates at [bit.ly/fema-map-update-1](http://bit.ly/fema-map-update-1))

1. FEMA announces a **Discovery Meeting** to request municipal priorities for flood map updates.
2. FEMA releases a **Discovery Report** - summarizing the findings.
3. FEMA announces a **Work Map Meeting** for the County - this is the first look at the new flood studies maps. The maps will use one-foot contour data from lidar. Zone A areas will be mapped by automated Base Level Engineering (BLE). Currently valid detailed studies for Zone AE areas will be redelineated to the more precise contours. In a few places there may be new detailed studies with new hydrology. Feedback and formally issues a Preliminary FIRM for the county. This initiates the process for higher quality engineering before the end of the April.

[www.floodready.vt.gov/info](http://www.floodready.vt.gov/info)

[bit.ly/fema-map-update](http://bit.ly/fema-map-update)

GET READY FOR  
**NEW FEMA MAPS**

## Hazard Area Bylaws

Vermont DEC has prepared model regulations for communities to work with. They have been pre-reviewed by FEMA and meet or exceed the requirements of the National Flood Insurance Program. In addition, adoption and enforcement of Section D, River Corridors, qualifies communities for enhanced cost share under the [Emergency Relief and Assistance Fund](#).

### [2022 VT Model Stand Alone Flood Hazard Bylaw](#)

- [2022 Annotated VT Model Stand Alone Flood Hazard Bylaw](#)

### [2018 Model Hazard Bylaws Release Cover](#)

- [Section A - Introduction Language](#)
- [Section B - Abbreviations and Definitions](#)
- [Section C - Administration](#)
- [Section D - River Corridors \(Erosion\)](#)
- [Section E - Flood Hazard Areas \(Inundation\)](#)

[Community Procedure for Determinations of Substantial Improvement/Substantial Damage](#).

Also, please see more information on the [After the Flood](#) page.

### [Frequently Asked Questions](#)

[Higher Standards Cross-walk](#); a side by side comparison and discussion of model bylaw standards against the federal minimum requirements.

Contact your [DEC Regional Floodplain Manager](#) if you have questions or would like a Word version of the text for editing.

# Stand Alone No Adverse Impact Model Bylaws

1. Ready to use
2. Consistent with flood resilience.
3. Pre-vetted by FEMA for the NFIP
4. Qualifies community for highest level of ERAF
5. Consistent with state and other regulations.

[bit.ly/model-regulations](https://bit.ly/model-regulations)

Town of \_\_\_\_\_

## Flood Hazard and River Corridor Bylaw

I. Statutory Authorization and Effect

II. Purpose

III. Summary Table: Development Review in Hazard Areas

IV. River Corridor Protection

V. Flood Hazard Area Protection

VI. Other Provisions

VII. Administration

VIII. Definitions

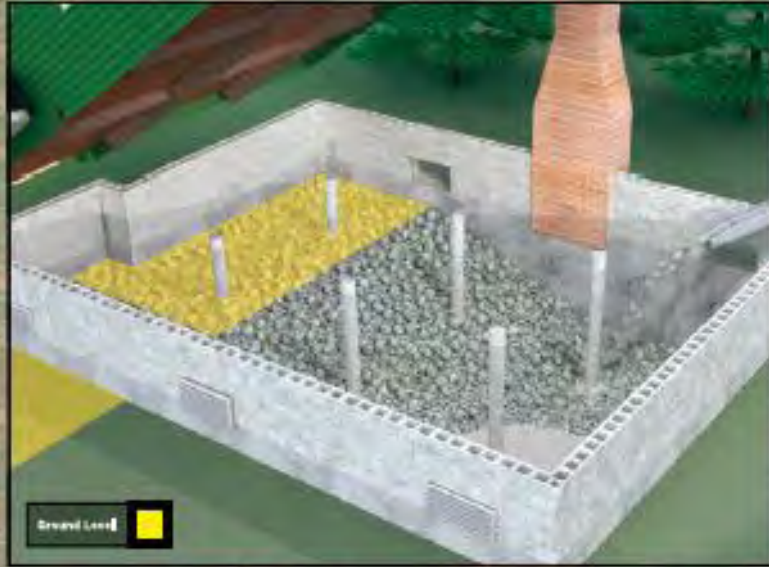
Within the River Corridor  
don't build closer than  
what's already there.

No net fill in the  
Special Flood Hazard Area.

No Adverse Impact  
Stand Alone Model  
[bit.ly/model-regulations](http://bit.ly/model-regulations)

Substantial Improvements  
two feet above the base flood.





Relocation

Basements

Elevation



Utilities

Flood Openings

NFIP Insurance:

Reducing claims for damage from inundation

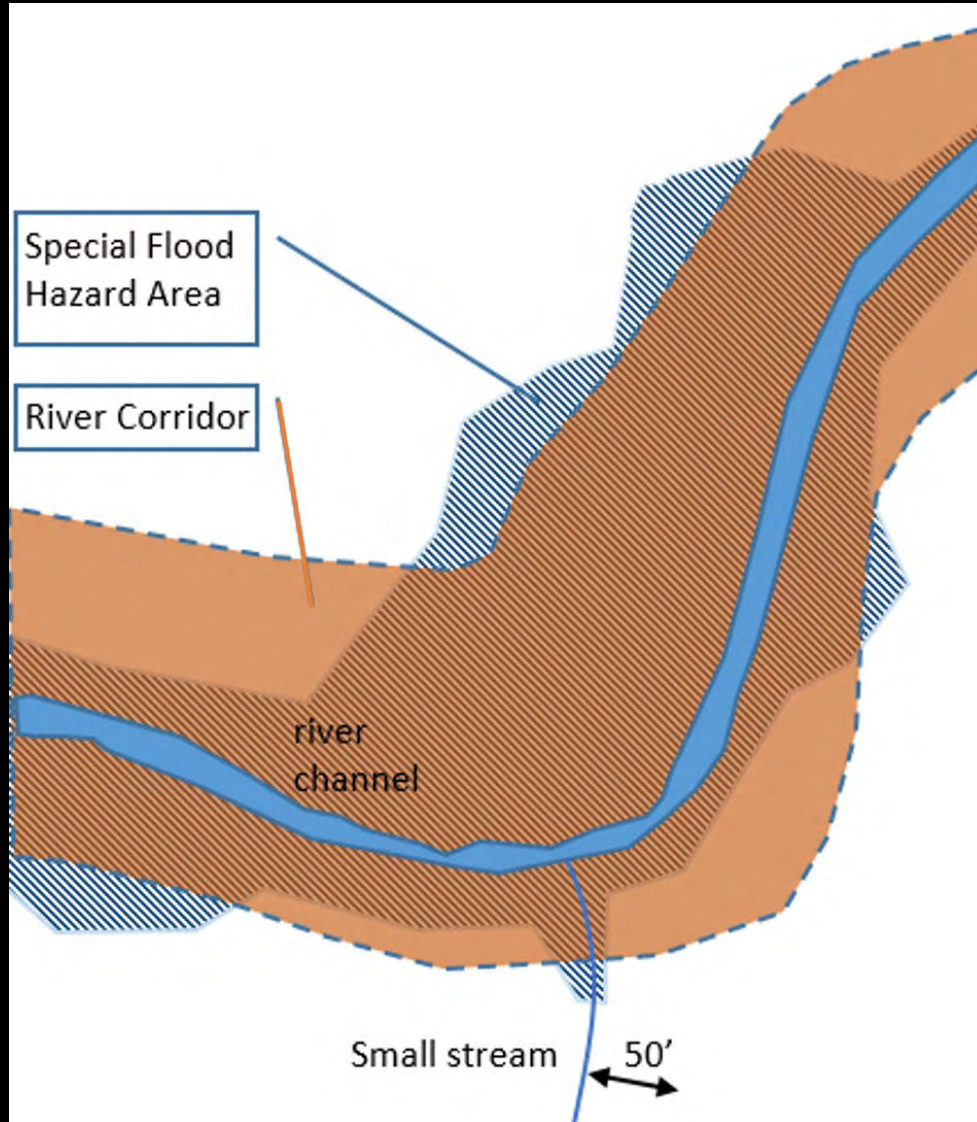
- Hazard Mitigation Assistance
- Flood Resilient Communities Fund

Does elevating the building really solve the problem?



Photo: Mansfield Helicopters 2011



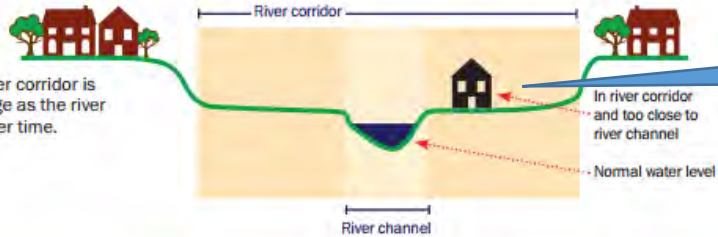


- *Protect the room needed by the river*
- *Protect floodplain functions*

*No adverse impact*

**1. Development in River Corridor**

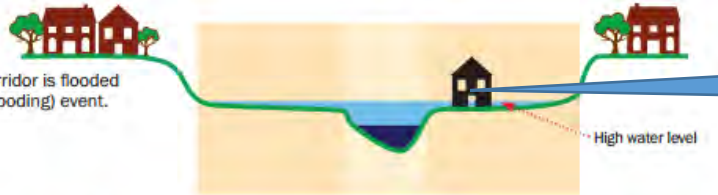
Structure built in river corridor is vulnerable to damage as the river channel changes over time.



House placed too close to stream!

**2. Flooding Event**

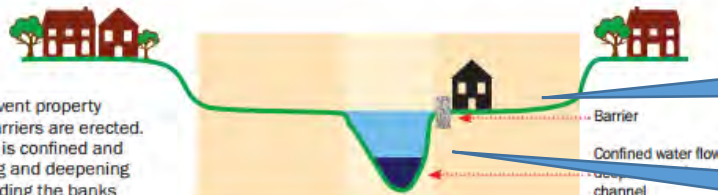
Structure in river corridor is flooded during high water (flooding) event.



House damaged by water and erosion

**3. Attempt to Protect Property after Flooding**

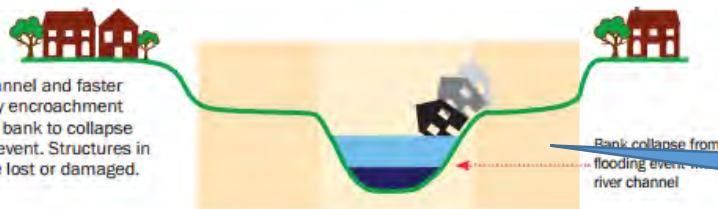
In an attempt to prevent property damage, physical barriers are erected. As a result, the river is confined and flows faster, scouring and deepening the channel and eroding the banks downstream.



Bank armoring to protect house.

**4. Unintended Damage**

The deeper river channel and faster water flow caused by encroachment eventually leads the bank to collapse during a high water event. Structures in the river corridor are lost or damaged.



Stream bank fails.

**5. Reduced Flood Risk**

The energy from scouring water redistributes sediments and establishes a new floodplain. With room in the river corridor for the river to move and to flood, property damage is reduced.

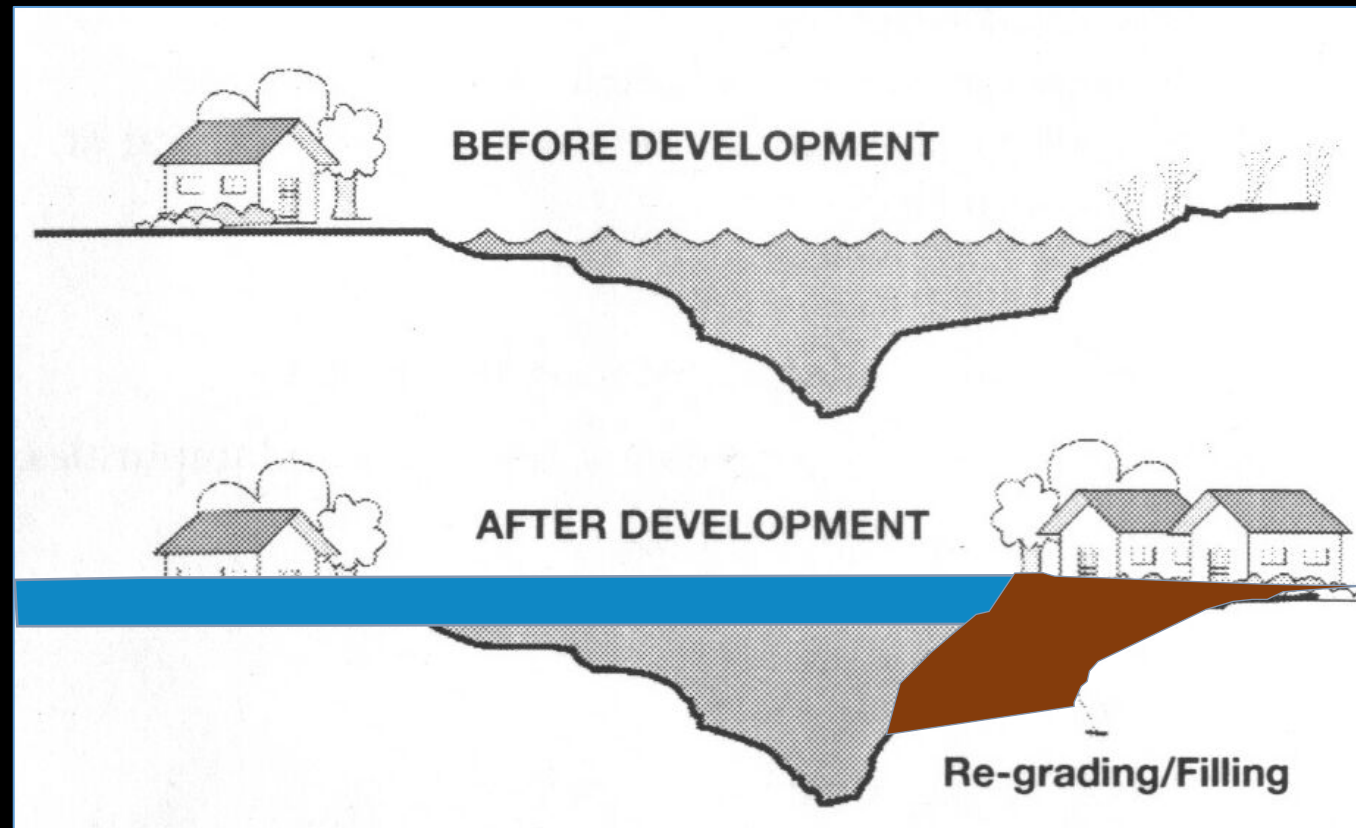




Base Flood Elevation ?



## Why not add fill in a flood hazard area?



- Fill deflects flood waters toward and onto other land
- Increases flood water heights, power, and erosive damage.

How can we avoid losses  
due to flooding?



Develop data to identify  
inundation and erosion  
hazards.

Provide model regulations

Develop incentives for  
communities.

Regulations to avoid known  
hazards, and to not aggravate the  
risk to structures, families, and  
assets already in the hazard zone.

Take steps to reduce existing  
exposure, and

improve emergency response.

Make a family plan.  
Prepare an emergency kit.  
Practice the plan.  
Get insurance.  
Get finances in order.  
Elevate structure.  
Relocate structure.





Graph 1

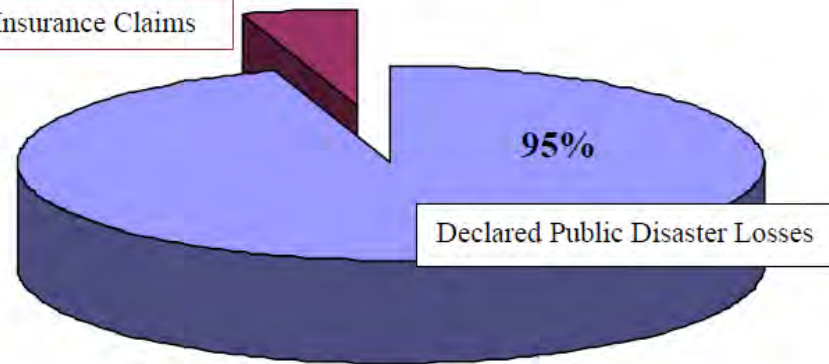
### Disaster Damage in Vermont 2003 - 2008

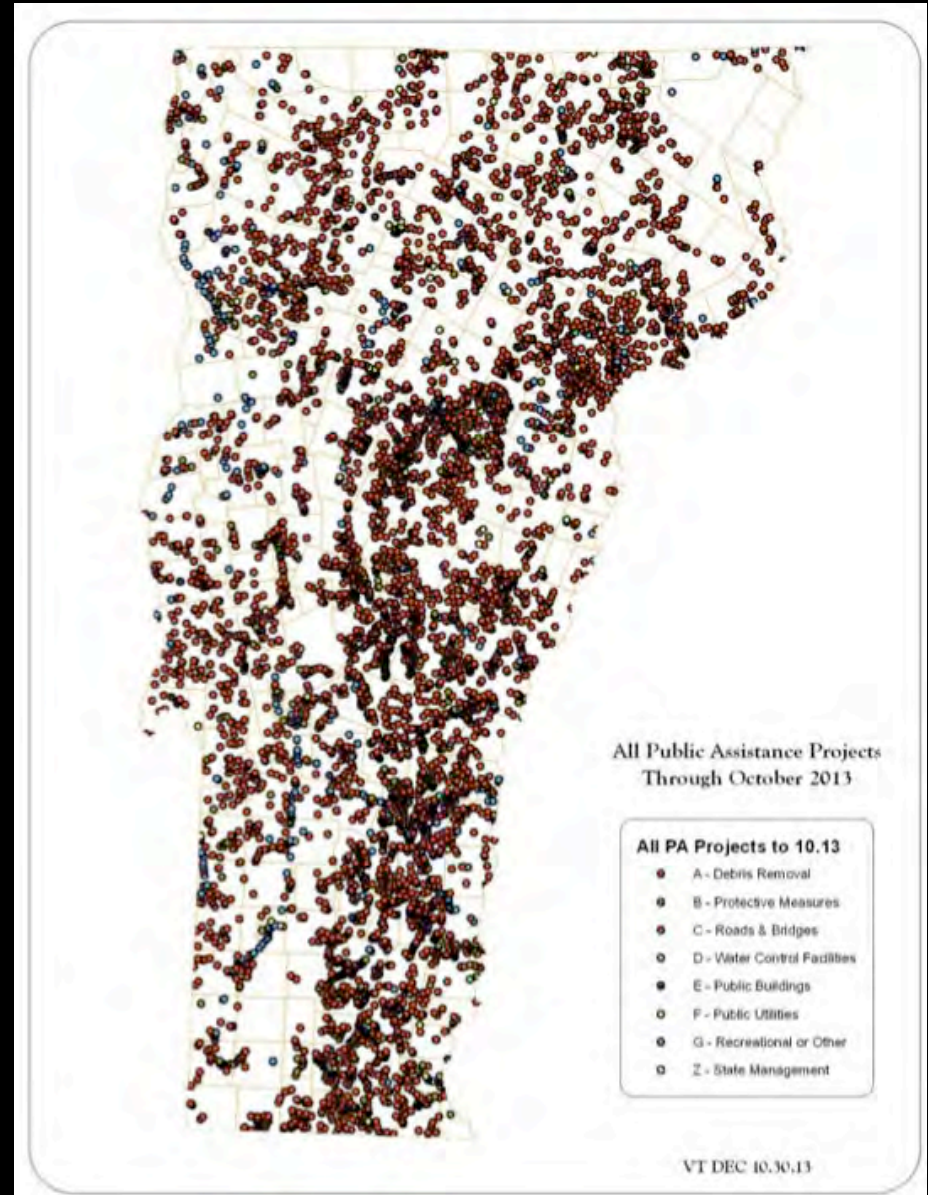
Flood Insurance Claims

5%

Declared Public Disaster Losses

95%

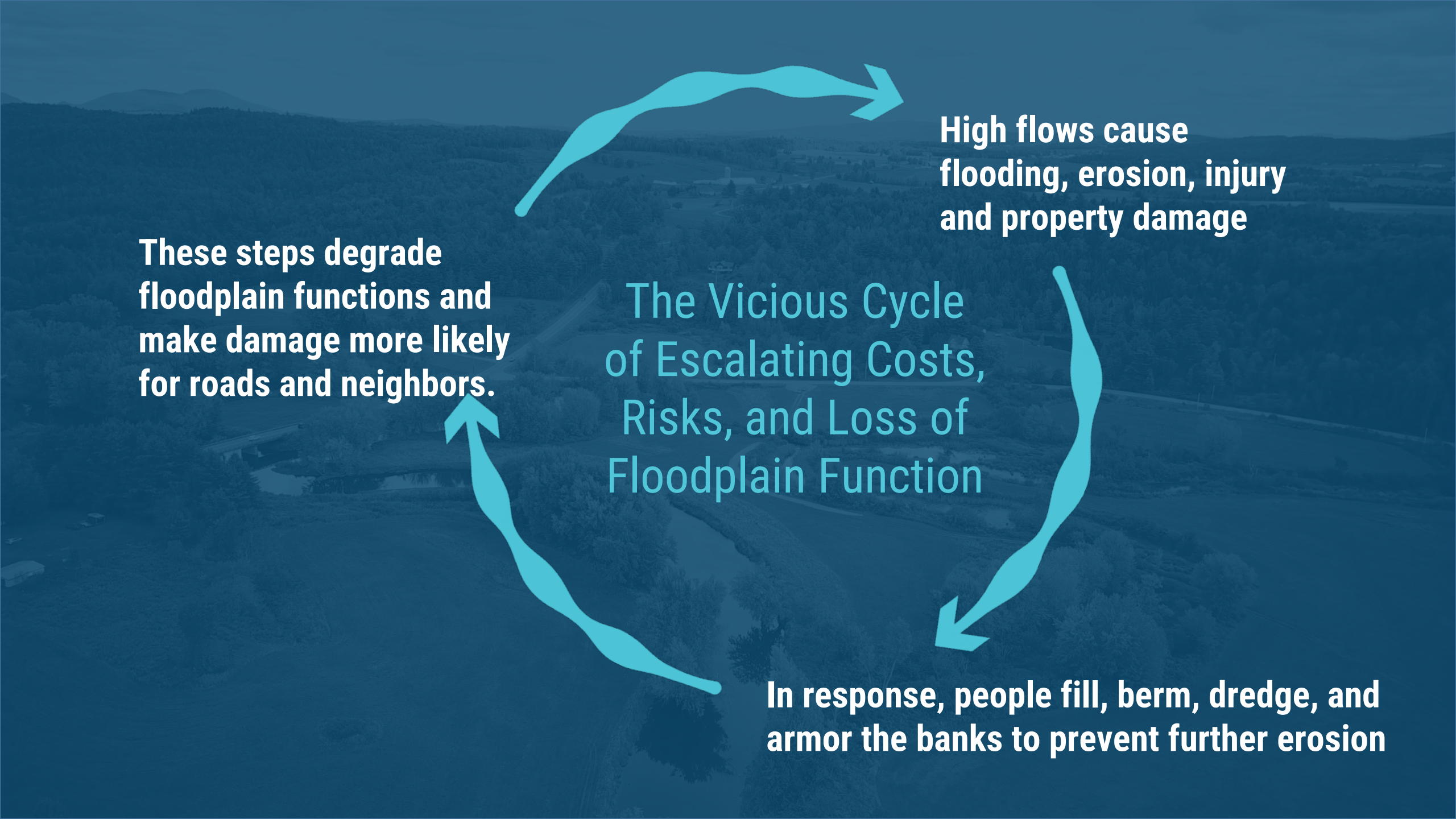




Disaster is  
**not necessary**

**FLOOD READY VERMONT**



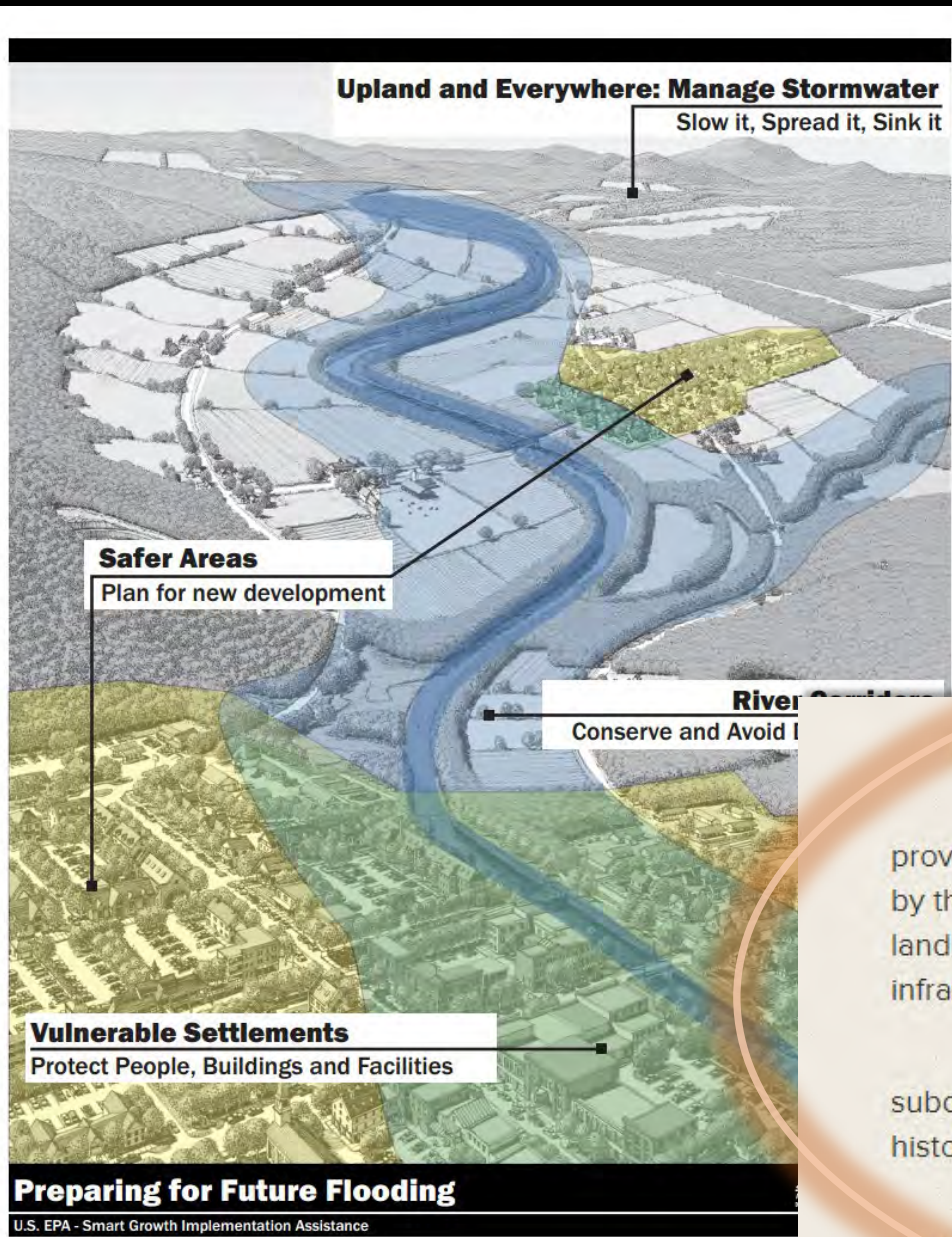


**These steps degrade floodplain functions and make damage more likely for roads and neighbors.**

**High flows cause flooding, erosion, injury and property damage**

**The Vicious Cycle of Escalating Costs, Risks, and Loss of Floodplain Function**

**In response, people fill, berm, dredge, and armor the banks to prevent further erosion**



(12)(A) A flood resilience plan that:

(i) identifies flood hazard and fluvial erosion hazard areas, based on river corridor maps provided by the Secretary of Natural Resources pursuant to 10 V.S.A. § 1428(a) or maps recommended by the Secretary, and designates those areas to be protected, including floodplains, river corridors, land adjacent to streams, wetlands, and upland forests, to reduce the risk of flood damage to infrastructure and improved property; and

(ii) recommends policies and strategies to protect the areas identified and designated under subdivision (12)(A)(i) of this subsection and to mitigate risks to public safety, critical infrastructure, historic structures, and municipal investments.

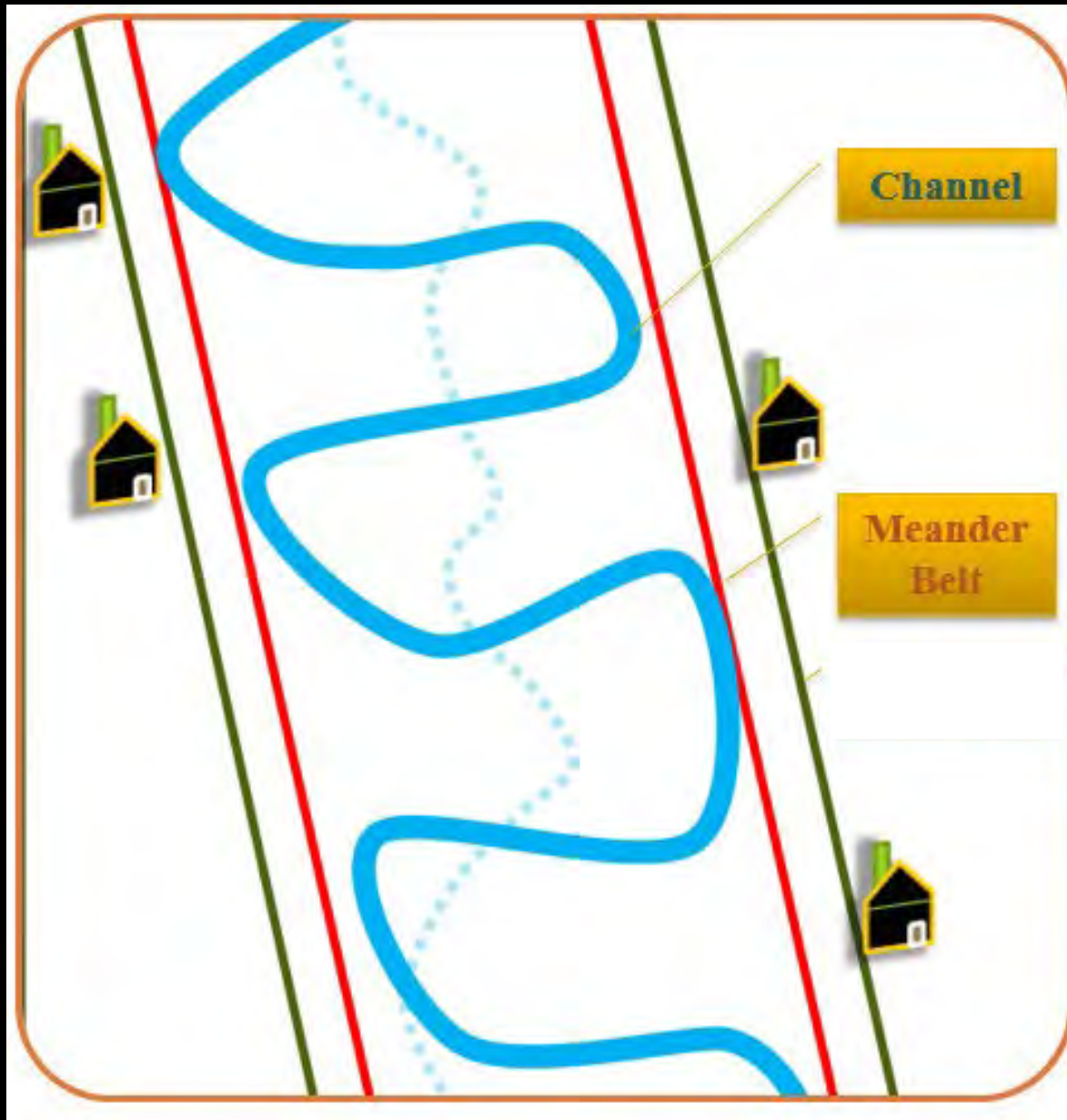
(B) A flood resilience plan may reference an existing local hazard mitigation plan approved under 44 C.F.R. § 201.6.

## Room for Rivers



Don't build closer to river than what is already there.





The River Corridor includes the **meander belt** and an area for a **stable bank**.

**A protected River Corridor allows the river to move over time, maintaining the slowest, least erosive path.**



River Corridors protect us.

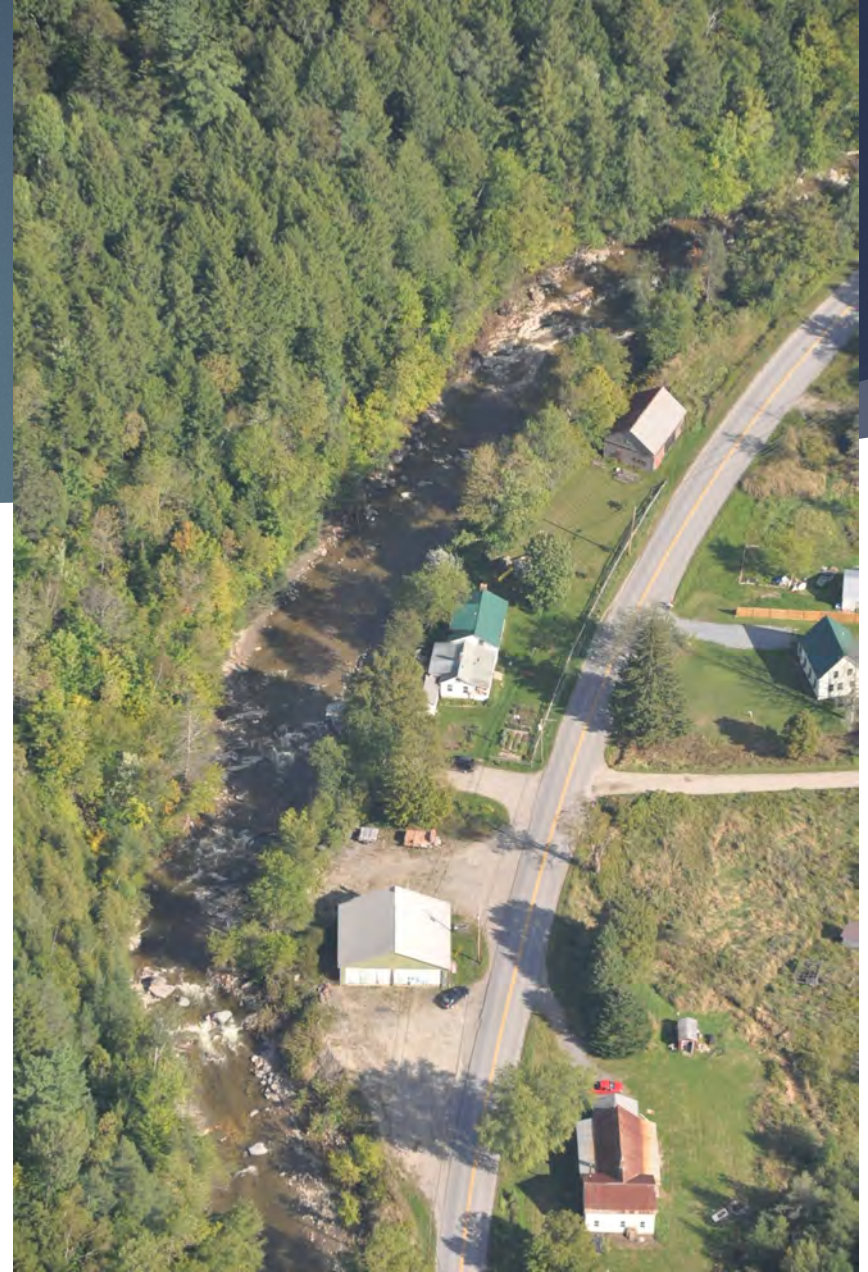


**A restricted or straightened river becomes deeper, more powerful, and destructive.**



## River Corridor Protection for ERAF

- No adverse impact
- Small stream with 50' setback



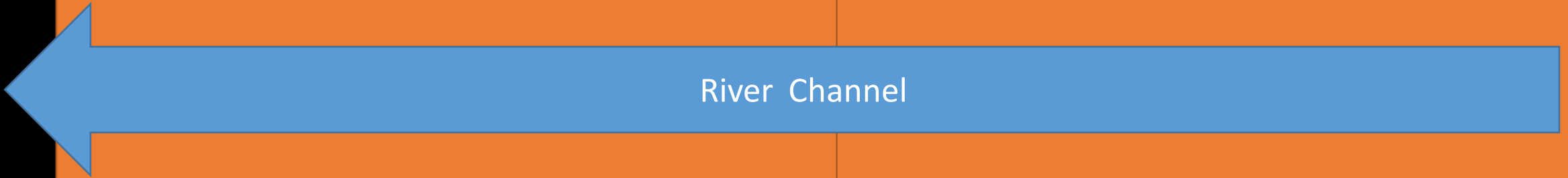
Shadow Area

River Corridor boundary

Infill Area

River Corridor boundary

River Channel



## Flood Ready State of Vermont

Home

Rising Danger - Flood Costs

Community Risk Assessment

Update Your Plans

Use Natural Flood Protection

Improve Infrastructure

Find Funding

National Flood Insurance Program

Emergency Relief Assistance Fund

Hazard Mitigation Assistance

Post-Disaster Funds

Making It Happen

Get Help

**Map Your Community**



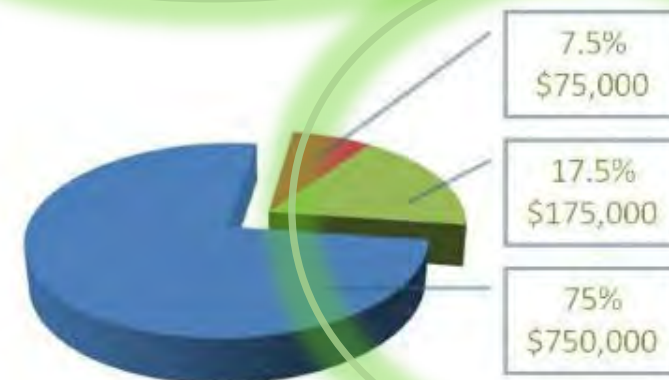
### Emergency Relief Assistance Fund

The Emergency Relief and Assistance Fund (ERAF) provides State funding to match [Federal Public Assistance](#) after [federally-declared disasters](#). Eligible public costs are reimbursed by federal taxpayers at 75%. For disasters after October 23, 2014, the State of Vermont will contribute an additional 7.5% toward the costs. For communities that take specific steps to reduce flood damage the State will contribute 12.5% or 17.5% of the total cost.

Links to sections below:

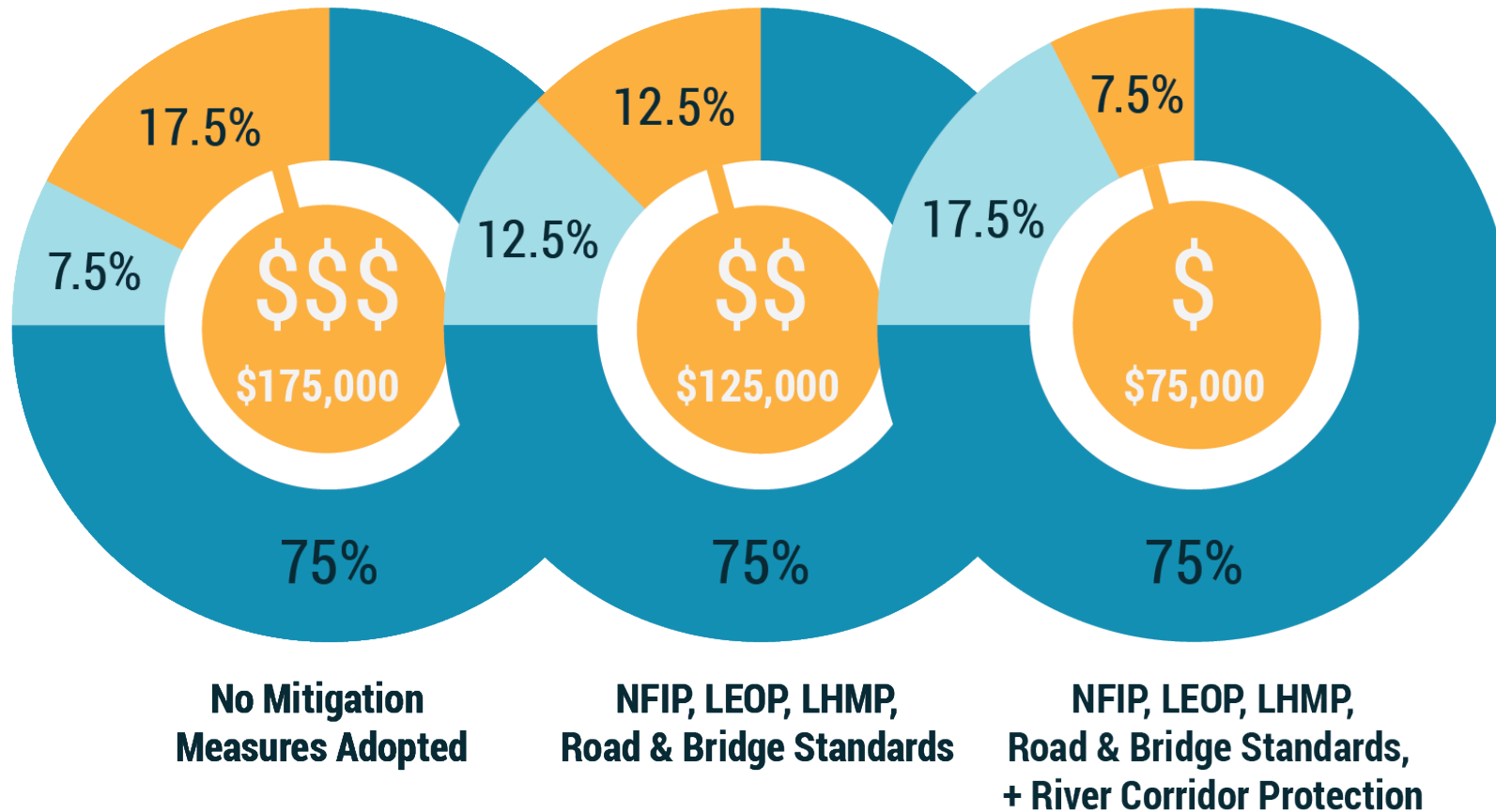
- [Letter to Vermont Select Boards](#)
- [What specific steps can we take?](#)
- [What has my community done?](#)
- [How can we become more flood resilient?](#)
- [Who administers ERAF?](#)

[tinyurl.com/erafvt](http://tinyurl.com/erafvt)

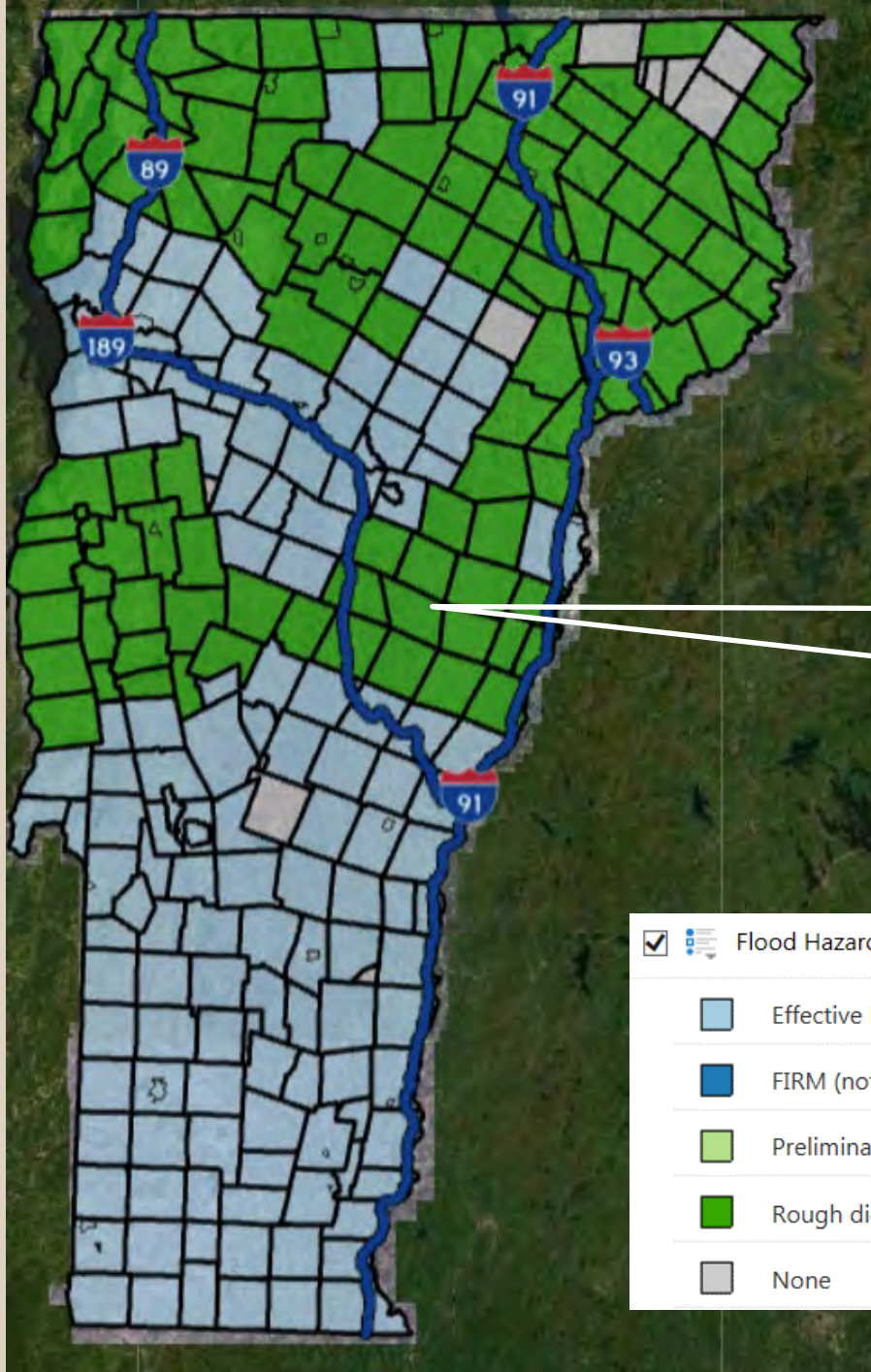


# Emergency Relief and Assistance Fund (ERAF) Rates

Local State Federal



In the event of a \$1,000,000 recovery project, the dollar value shown would be the town's responsibility.

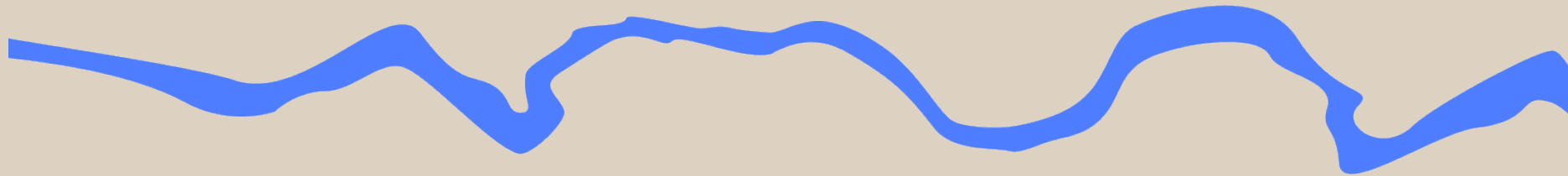


**Green areas do not  
have Digital FIRMs**

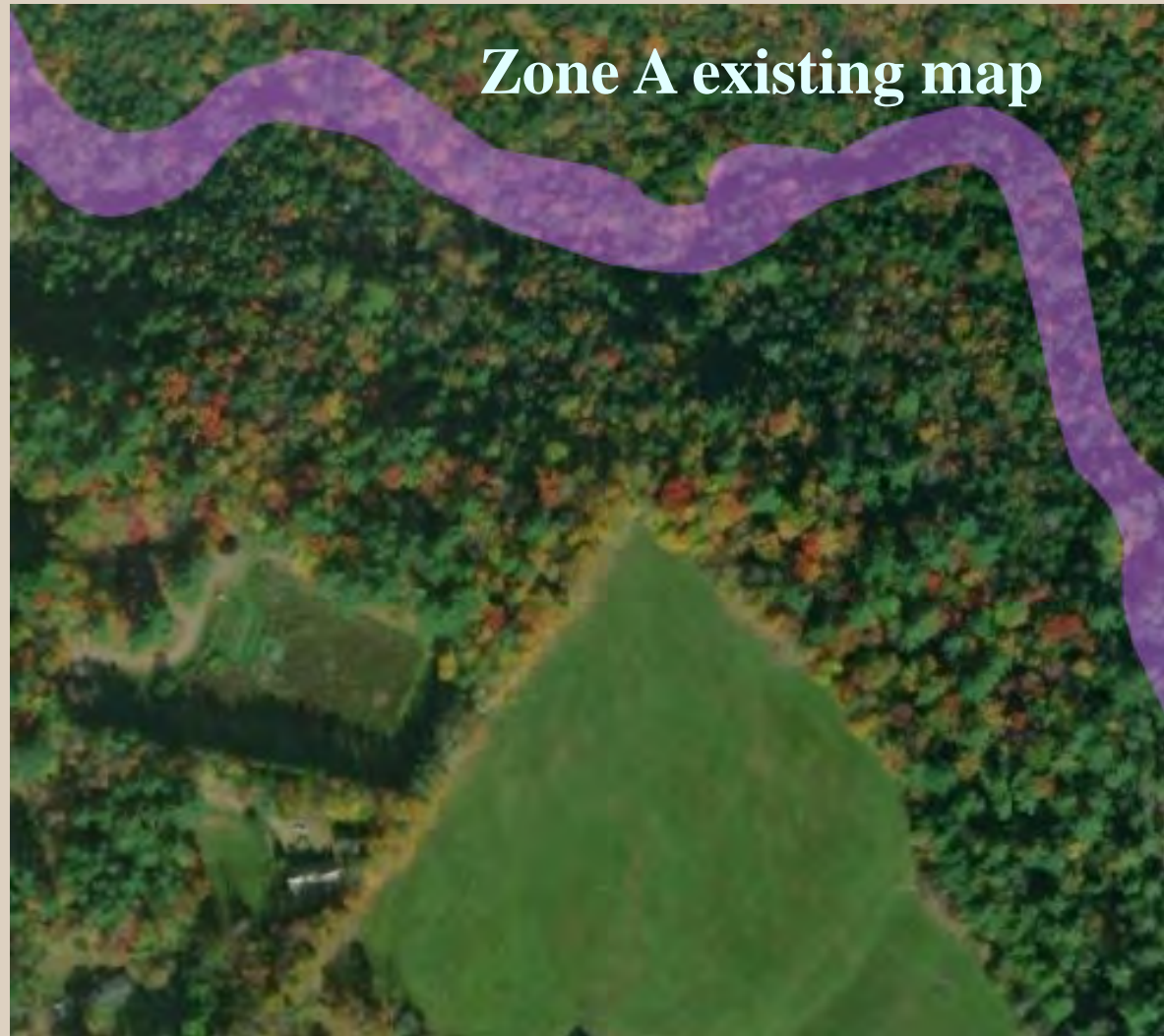
- Flood Hazard Mapping
- Effective DFIRM
- FIRM (not digitized)
- Preliminary DFIRM
- Rough digital data
- None

## Updated FEMA Flood Insurance Rate Maps Underway

1. **Zone A** from 2D Base Level Engineering (BLE)
2. Redelineated **Zone AE** using the new 1' contours
3. Possibly an updated detailed study Zone AE and Floodway



**Zone A existing map**



**Zone A from new Base Level Engineering**

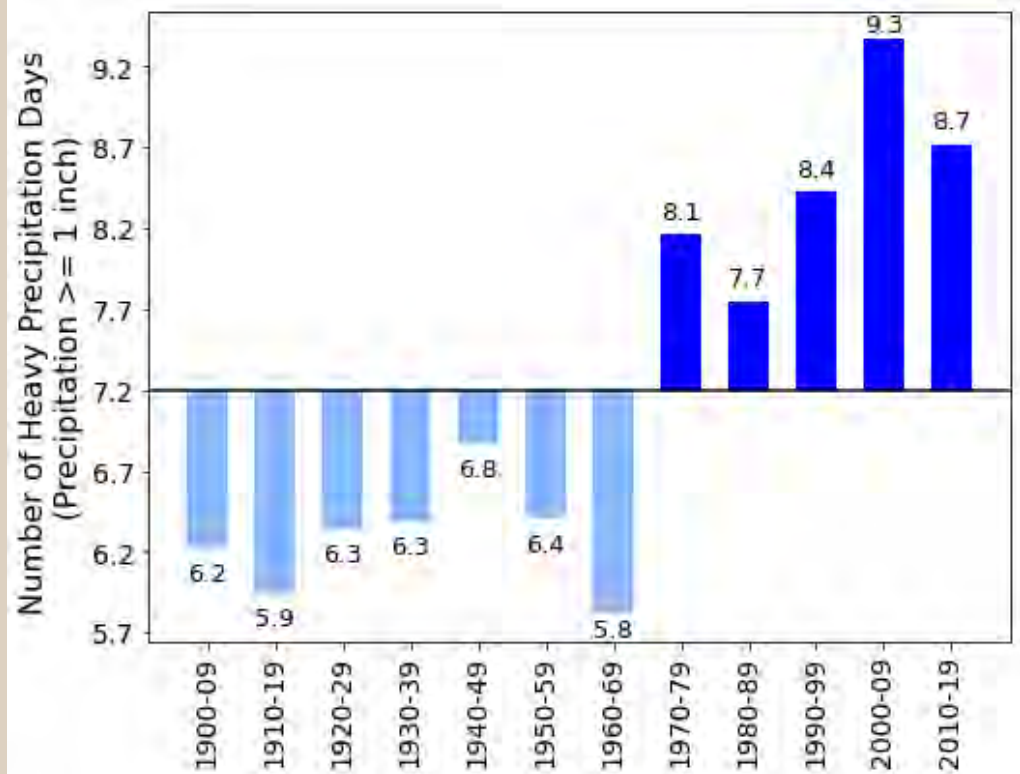






# VERMONT CLIMATE ASSESSMENT

CLIMATE CHANGE IS HERE





Nov 1927

Aug 2011

Q100

NOV 03 1927  
AUG 28 2011  
SEP 22 1938  
JUN 27 1998  
MAR 06 1979  
AUG 10 1977  
AUG 10 1976  
APR 18 1982  
MAR 31 1987  
JAN 19 1996  
JUN 02 1947  
JUN 30 1973  
DEC 31 1948  
OCT 24 1990

## FEMA Watershed Discovery Meetings

[bit.ly/fema-map-update](https://bit.ly/fema-map-update)

Update **Municipal Plan** or Local Hazard Mitigation Plan?

- Check **Community Report** [www.floodready.vermont.gov](http://www.floodready.vermont.gov)
- Coordinate Selectboard and Planning Commission
- Review Model Bylaw [bit.ly/model-regulations](https://bit.ly/model-regulations)
- **Inclusive meaningful public engagement** on plans and bylaw

## FEMA County Wide Work Map Meeting

Update **Bylaw**

- Get approved **FEMA Checklist** for your Draft Bylaw from VT DEC
- Get FEMA Region 1 approval (> 4 months before Effective)

**Prep Deadline – Adopted bylaw and Checklist to VT DEC and FEMA**

***Plan Update Process***

Community engagement

5/17/2023

PC Plan Vote

11/13/2023

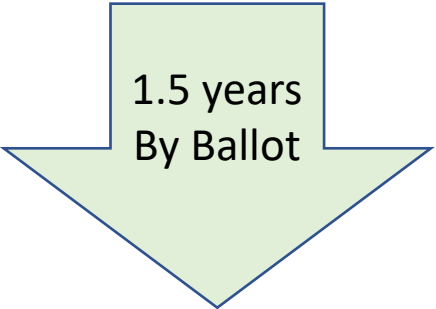
SB Warn

12/13/2023

**Town Meeting**

3/12/2024

**Rural Adoption  
by Ballot**



1.5 years  
By Ballot

**County  
Work Map  
Meeting**



~  
2 years

***Bylaw Update Process***

Community engagement

5/17/2024

PC Bylaw Vote

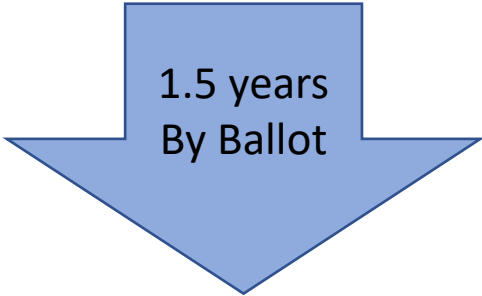
11/13/2024

SB Bylaw Warn

11/13/2024

**Town Meeting - March**

**3/13/2025**



1.5 years  
By Ballot

---

**Winter 2025 Prep Deadline**

What has your  
community already  
done?

Get a community report at  
[www.FloodReady.vt.gov](http://www.FloodReady.vt.gov)



# Community Reports

How many public buildings are in the Special Flood Hazard Area (SFHA)?

How many structures in the flood hazard area have insurance today?

What are the next steps we can take to become more flood resilient?

The links below will bring you to the search box for each report.

*Be sure your browser allows pop-ups so you can see the reports!*

## Community

- [Expanded Community Report](#)  
Flood risk data, ERAF mitigation actions and dates, and status of plans.

## Summaries by community, region, county, or state

- [Flood Hazard Summary Report](#)  
Summary of flood risk data and mitigation actions for ERAF.
- [ERAF Summary Sheet](#)  
Community mitigation actions and dates for ERAF.
- [Municipal Road and Bridge Standards Summary Report](#)  
Summary of standards and grants information
- [Municipal River Corridor Protections Summary Report](#)
- [FEMA Data and Other Reports Online](#)



[floodready.vermont.gov/assessment/community\\_reports](https://floodready.vermont.gov/assessment/community_reports)

# ERAF Summary Report

Summary of Flood Hazard Mitigation Actions for:

County= Orleans

Region =

Community =

Show All = N

10/6/2022  
11:22:50 AM

Community	ERAF Rate	(1) NFIP	(2) Rd Stds	(3) LEMP	(4) LHMP	(5) RC	RC Interim	NFIP Enrolled	Road Stds	LEMP (Current)	LHMP (Approved)	RC Bylaw
Albany	7.5%	No	No	Yes	Yes	No			04/16/2013	04/19/2022	In Process	
Albany Village	7.5%	No	Yes	Yes	Yes	No			04/16/2013	04/19/2022	In Process	
Barton	12.5%	Yes	Yes	Yes	Yes	No		04/03/1978	04/21/2020	04/20/2022	03/30/2018	
Barton Village	7.5%	Yes	Yes	No	Yes	No		04/03/1978	07/16/2019	04/12/2021	03/30/2018	
Brownington	7.5%	No	Yes	Yes	Yes	No			07/24/2019	04/12/2022	12/23/2021	
Charleston	7.5%	No	Yes	Yes	Yes	No			07/11/2019	03/24/2022	04/12/2021	
Coventry	12.5%	Yes	Yes	Yes	Yes	No		09/27/1985	07/15/2019	04/18/2022	06/11/2019	
Craftsbury	7.5%	Yes	Yes	No	Yes	No		05/01/2000	11/19/2019	04/21/2020	In Process	
Derby	7.5%	Yes	Yes	Yes	Yes	No		09/27/1985	07/29/2019	05/02/2022	02/19/2021	
Derby Line Village	12.5%	Yes	Yes	Yes	Yes	No			10/08/2019	05/02/2022	02/19/2021	
Glover	7.5%	Yes	Yes	No	No	No		08/05/1991	07/25/2019	05/13/2021	Expired	
Greensboro	7.5%	Yes	Yes	Yes	No	No		09/27/1985	07/10/2019	04/13/2022	Expired	
Holland	7.5%	No	Yes	Yes	Yes	No			06/25/2019	03/09/2022	05/04/2018	
Irasburg	7.5%	No	Yes	Yes	Yes	No			07/08/2019	03/30/2022	Expired	
Jay	7.5%	Yes	Yes	Yes	No	No		08/23/2000	07/15/2019	03/23/2022	Expired	
Lowell	7.5%	Yes	Yes	No	Yes	No		12/04/1985	06/25/2019	06/22/2021	In Process	
Morgan	7.5%	No	Yes	No	No	No			08/26/2019	04/21/2021	Expired	
Newport City	12.5%	Yes	Yes	Yes	Yes	No		08/19/1981	05/04/2020	04/18/2022	11/17/2017	
Newport Town	7.5%	Yes	Yes	Yes	No	No		09/18/1985	10/03/2019	04/07/2022	Expired	
North Troy Village	12.5%	Yes	Yes	Yes	Yes	No		07/16/1980	09/24/2019	04/19/2022	In Process	
Orleans Village	12.5%	Yes	Yes	Yes	Yes	No		03/15/1978	04/26/2020	03/28/2022	03/30/2018	
Troy	17.5%	Yes	Yes	Yes	Yes	Yes	Interim	12/02/1980	03/14/2013	04/19/2022	In Process	
Westfield	7.5%	Yes	Yes	Yes	No	No		04/01/1998	09/16/2019	06/20/2022	Expired	

# Expanded Community Report for Corinth

Emergency Relief and Assistance Fund (ERAF) - State Post-Disaster Funding

10/6/2022  
11:24:58 AM

## Flood Hazard Summary Report

Mitigation Actions for:

County = Franklin

Region =

Community =

Show All = N

(4) LHMP	(5) RC	(a) # In SFHA	(b) % Insured	(c) # critical or public	(d) % of all
Yes	Yes	14	?	0	2%
No	No	19	16%	0	3%
No	Yes	2	?	0	0%
No	No	24	13%	0	2%
Yes	No	35	?	0	2%
Yes	No	61	?	1	6%
No	No	45	?	0	7%
Yes	No	57	2%	3	6%
No	Yes	28	18%	0	1%
Yes	Yes	48	6%	0	3%
Yes	Yes	16	6%	1	6%
Yes	Yes	27	4%	0	5%
No	No	30	10%	0	4%
No	No	53	2%	3	2%
No	No	283	8%	1	9%
Yes	Yes	162	10%	1	4%
No	No	16	19%	0	

Responsible	ERAF Status
Corinth	Yes
Corinth	No
Corinth	Yes
Corinth	No
Corinth	Yes
Corinth	7.6%

Mailed from a9(11 sites),  
30)  
force.  
[also (est. from a9(11 sites.)  
file)  
M. Rough Draft, Power)

Valid for Corinth?  
r Corinth?  
g for ERAF?  
Corinth?  
Records and Date  
DWJ  
District 7  
ur Regional Planner  
for and Flood Hazard Maps





**Flood Ready Map**  
Vermont Agency of Natural Resources

vermont.gov



**LEGEND**

- River Corridors (Jan 2, 2015)
- Buildings (E911)
- Town Boundary

**NOTES**

Map created using ANR's Flood Ready Map

321.0 0 160.00 321.0 Meters  
 WGS\_1984\_Web\_Mercator\_Auxiliary\_Sphere 1" = 527 Ft. 1cm = 63 Meters  
 © Vermont Agency of Natural Resources THIS MAP IS NOT TO BE USED FOR NAVIGATION

1: 6,319  
 August 31, 2015

DISCLAIMER: This map is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. ANR and the State of Vermont make no representations of any kind, including but not limited to, the warranties of merchantability, or fitness for a particular use, nor are any such warranties to be implied with respect to the data on this map.

Flood Ready Atlas  
[bit.ly/floodatlas](http://bit.ly/floodatlas)

# Keep what works

- *Protect the room needed by the river*
- *Protect floodplain functions*

*No adverse impact*

# Equity-Centered Process for Environmental Justice

Who is most at risk?

Who is not at the table?

Meaningful engagement

Establishing trusting relationships

What can be prioritized to reduce harm?

Are we transparent and accountable?





Is your  
community  
ready?

## **FLOOD READY VERMONT**

Learn what you can do to prepare for the next flood.

# **floodready.vt.gov**

COMMUNITY DATA • ERAF STATUS • HAZARD MAPS • ASSISTANCE IN UPDATING PLANS

[www.floodready.vt.gov](http://www.floodready.vt.gov) (community reports)

[www.floodtraining.vt.gov](http://www.floodtraining.vt.gov) (map update information)

[bit.ly/floodatlas](http://bit.ly/floodatlas) (river corridor and flood maps)

[bit.ly/model-regulations](http://bit.ly/model-regulations) (model bylaws)

[floodready.vermont.gov/info](http://floodready.vermont.gov/info) (handouts)

Ned Swanberg

[ned.swanberg@vermont.gov](mailto:ned.swanberg@vermont.gov)

VTDEC Flood Hazard Mapping Coordinator