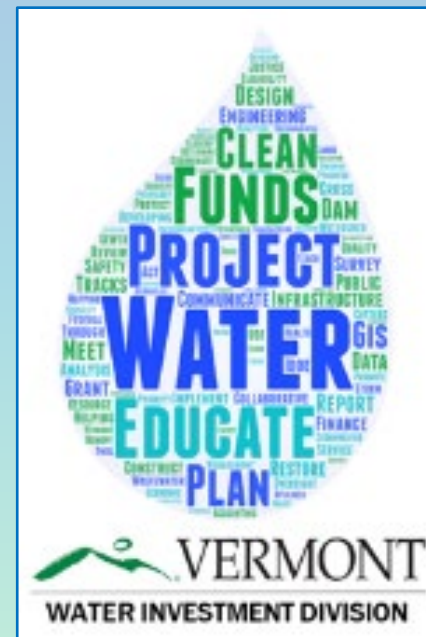


# Agency of Natural Resources Climate & Watershed Planning for Flood Resiliency

Marie Levesque Caduto  
Watershed Planner





# Climate Resiliency

- The ability to anticipate, prepare for, and respond to hazardous events, trends, or disturbances related to climate.
- The ability to prepare for, recover from, and adapt to these impacts
  - [Center for Climate and Energy Solutions](#)
- The capacity of a community, business, or natural environment to prevent, withstand, respond to, and recover from a disruption.
  - [US Climate Resilience Toolkit](#)
- The ability to prepare for, withstand, and recover from the challenges presented by climate change.
  - [Concern Worldwide](#)

# Climate Action Plan Timeline

**First meeting of  
the Vermont  
Climate Council**

*November 20, 2020*

**Initial Climate  
Action Plan Adopted  
by the Vermont  
Climate Council**

*December 1, 2021*

**Global Warming  
Solutions Act  
Enacted**

*September 23, 2020*

**Subcommittees  
begin meeting**

*February 2021*

**Implementation of Climate  
Action Plan and development of  
climate programming in CAO**

*Ongoing*

**Creation of the Climate Action  
Office in ANR**



# State Staff Support to Date for the Climate Action Plan Development

## INITIAL VERMONT CLIMATE ACTION PLAN

Vermont Climate Council  
DECEMBER 2021

Includes a broad and far-reaching set of recommendations that directly builds on numerous programs in ANR

### Initial Climate Action Plan identifies:

- 26 pathways
  - Written broadly; high-level
- 64 strategies
  - Statements of measurable activity
- 234 specific action steps
  - Operational tasks



# Climate Action Office in ANR

- Climate action requires a **long-term intergovernmental structure** to coordinate and manage this statewide effort.
- CAO will coordinate and provide **significant expertise and capacity** on state-led climate initiatives, as well as the monitoring, assessment and tracking of climate adaptation, mitigation, and resilience activities.
- Work closely within the Agency of Natural Resources and across state Agencies to understand the actions state government are taking to make measurable progress to meeting the requirements and goals of the Global Warming Solutions Act but also more broadly to **support climate action**.
- Acknowledgment of the importance of the **public's role**, specifically those of frontline and impacted communities and the CAO's work is enhanced by collaboration with Environmental Justice and Civil Rights Unit in Secretary's Office.



# Supported through an Inter-Agency Advisory Board

The objectives of this group is the following:

1. To provide a space for proactive coordination on climate action across state government.
2. Articulating where policy and financial implications overlap around climate action to ensure resources are maximized.
3. To support the monitoring of progress over time in meeting the state's climate goals.
4. Identification and framing up of gaps where the climate action office might prioritize support.
5. Development of state positions on issues related to climate change.

Include the following governmental agencies:

- PSD
- AOT
- ANR
- VEM
- AAFM
- BGS
- AHS (DCF and VDH)
- ACCD
- State Climatologist

# Climate Action Office within ANR



**Climate  
communications**



**Measuring and  
tracking climate  
progress**



**Adding capacity to  
climate  
programmatic work**

# Watershed Resiliency

## FUTURE STATE:

- The landscape is managed to minimize damage caused by flooding
- Rivers and streams have room to move through the landscape in natural way
- Streambanks and lakeshores are protected from damage by riparian vegetation
- Communities are not threatened by flooding because they are not in harms way







# Landscape Adaptation for Resiliency

- Access floodplains to provide water storage and reduce downstream flooding
- Remove barriers and constrictions to water flow that cause back-ups and flooding
- Create more natural river systems that slow flows and retain sediment
- Prevent future impacts that worsen these issues
- Keep people out of harms way

# Watershed Planning Program



- Forward-looking, landscape approach to resiliency
- What we can do on the landscape today that will mitigate future damage
- Long-term effort

# Why a Landscape-level Approach?



National Flood Insurance Program (NFIP) deals with *inundation* losses in Vermont



In Vermont, most flood damages are caused by **Fluvial Erosion**

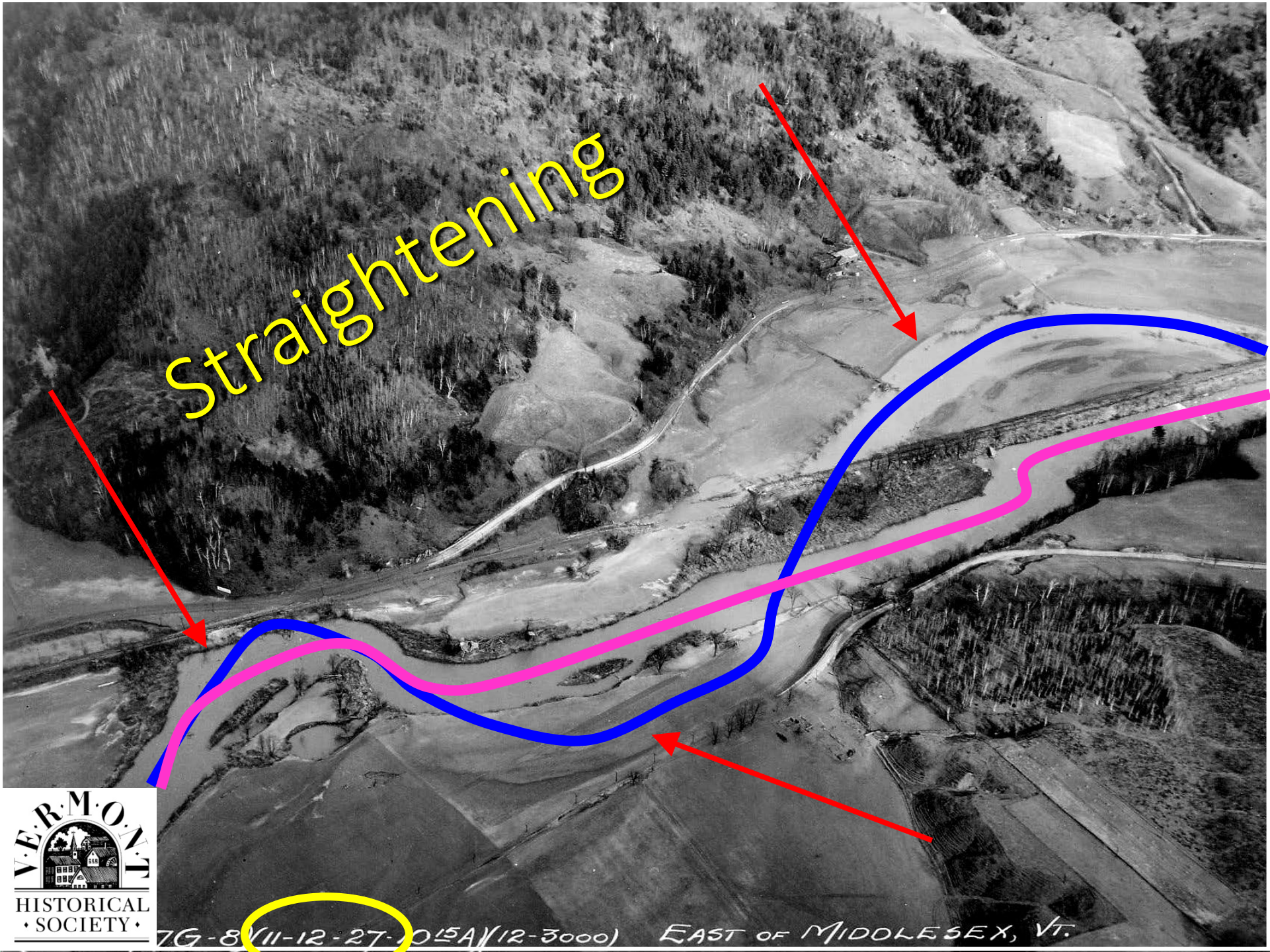
# Not in the Floodplain





# What We Do Matters

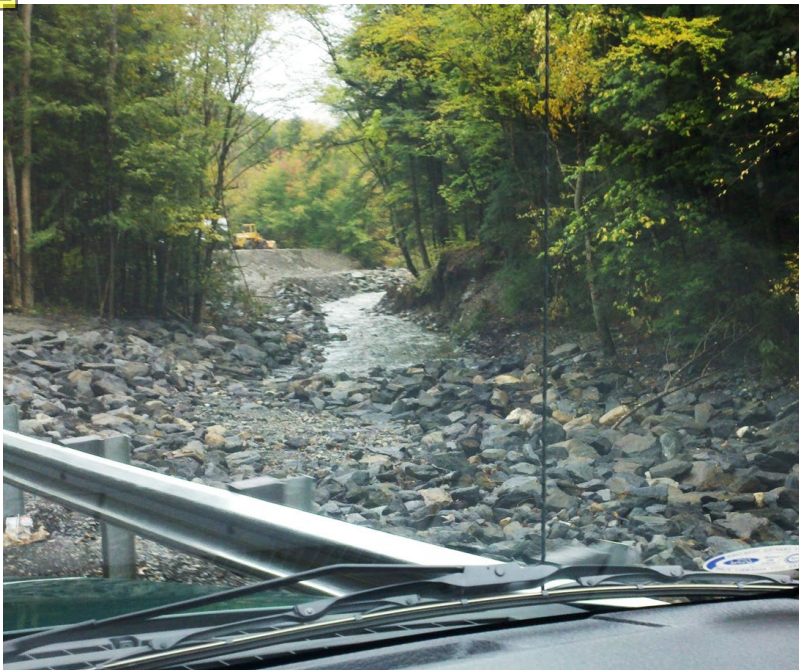




Straightening



7G-8 (11-12-27-1915A) (12-3000) EAST OF MIDDLESEX, VT.



# The Results...







# Why a Landscape-level Approach?

We **CAN** make things Better

Things We Got Right



2011



# Floodplain Protection

2023



# Melrose Terrace Buy-out & Floodplain Restoration



**2011**



**2023**



# West Windsor Harrington Dam



**2011**



**2023**



# West Windsor Harrington Dam





# West Windsor Firehouse Dam





# West Windsor Firehouse Dam



# Road Standards







# Road Standards



**Still Work To Do**

# Rebuilding in the Flood Zone



2011



2023



2023

# Neglecting Infrastructure



**2011**



**2023**

# Resiliency Projects Make a Difference

- Resiliency projects are identified in Tactical Basin Plans
- Resiliency projects have and are being implemented
- **Done at NO COST to landowners**
- Resiliency projects can be identified in the Watershed Projects DB as:

| ID   | Project Name                                                 | Project Type      | Status   |
|------|--------------------------------------------------------------|-------------------|----------|
| 2740 | Woodstock Village sewer resiliency                           | Hazard Mitigation | Proposed |
| 2753 | 3466 South Road                                              | Hazard Mitigation | Proposed |
| 2757 | South Woodstock Wastewater Treatment Facility                | Hazard Mitigation | Proposed |
| 2759 | 4895, 4903 South Road Buy-outs                               | Hazard Mitigation | Proposed |
| 2761 | Green Mountain Horse Association - disaster planning         | Hazard Mitigation | Proposed |
| 2762 | Green Mountain Horse Association - equipment storage         | Hazard Mitigation | Proposed |
| 2935 | EAP on state owned dams                                      | Hazard Mitigation | Proposed |
| 2936 | Woodward Reservoir dam rehab & EAP                           | Hazard Mitigation | Proposed |
| 3045 | Phase IV Jacobs Road Project - Moretown                      | Hazard Mitigation | Proposed |
| 3046 | Moretown Common Road Landslide                               | Hazard Mitigation | Proposed |
| 4642 | Rush Meadow Rd. Utility Repairs                              | Hazard Mitigation | Proposed |
| 4692 | Flamstead Rd. Bridge replacement                             | Hazard Mitigation | Proposed |
| 4698 | Windsor High School Sewer Line Retrofit                      | Hazard Mitigation | Proposed |
| 4699 | Rt 44 Home Buyout                                            | Hazard Mitigation | Proposed |
| 4700 | Railroad Transportation Resiliency (M09)                     | Hazard Mitigation | Proposed |
| 4701 | Infrastructure Resiliency at Rt. 103 and Rt. 10 Intersection | Hazard Mitigation | Proposed |
| 4702 | Railroad Bridge near Newton Rd.                              | Hazard Mitigation | Proposed |
| 4703 | Smokeshire Rd. Resiliency                                    | Hazard Mitigation | Proposed |

- Hazard Mitigation
- Floodplain/Stream/Lake Shore/Wetland Restoration
- Road Project Implementation

- Water Resource Protection
- Dam Removal

# Watershed Planning Program

## [Tactical Basin Planning District Map \(opens in new tab\)](#)

### **Ethan Swift - Program Manager**

Management of the Monitoring, Assessment and Planning Program. Expertise areas include monitoring program design, statewide and local water quality assessment, the Surface Water Management Strategy and Tactical Planning, and Water Quality Standards.

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### **Angela Allen - Watershed Coordinator**

#### [Rutland Office](#)

Job Description: Watershed planning and watershed restoration projects in the Poultney Mettowee watershed, Otter Creek watershed, and Battenkill-Hoosic-Walloomsac watershed.

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### **Karen Bates - Watershed Coordinator**

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### **Marie Levesque Caduto - Watershed Coordinator**

#### [Springfield Office](#)

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### **Ben Copans - Watershed Coordinator**

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### **Keith Fritschie - Watershed Coordinator**

Watershed planning and watershed restoration projects in the Winooski River Watershed, the White River Watershed, and the Stevens, Wells, Waits, Ompompanoosuc Watershed.

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[802-490-6176](tel:802-490-6176)

# Questions

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