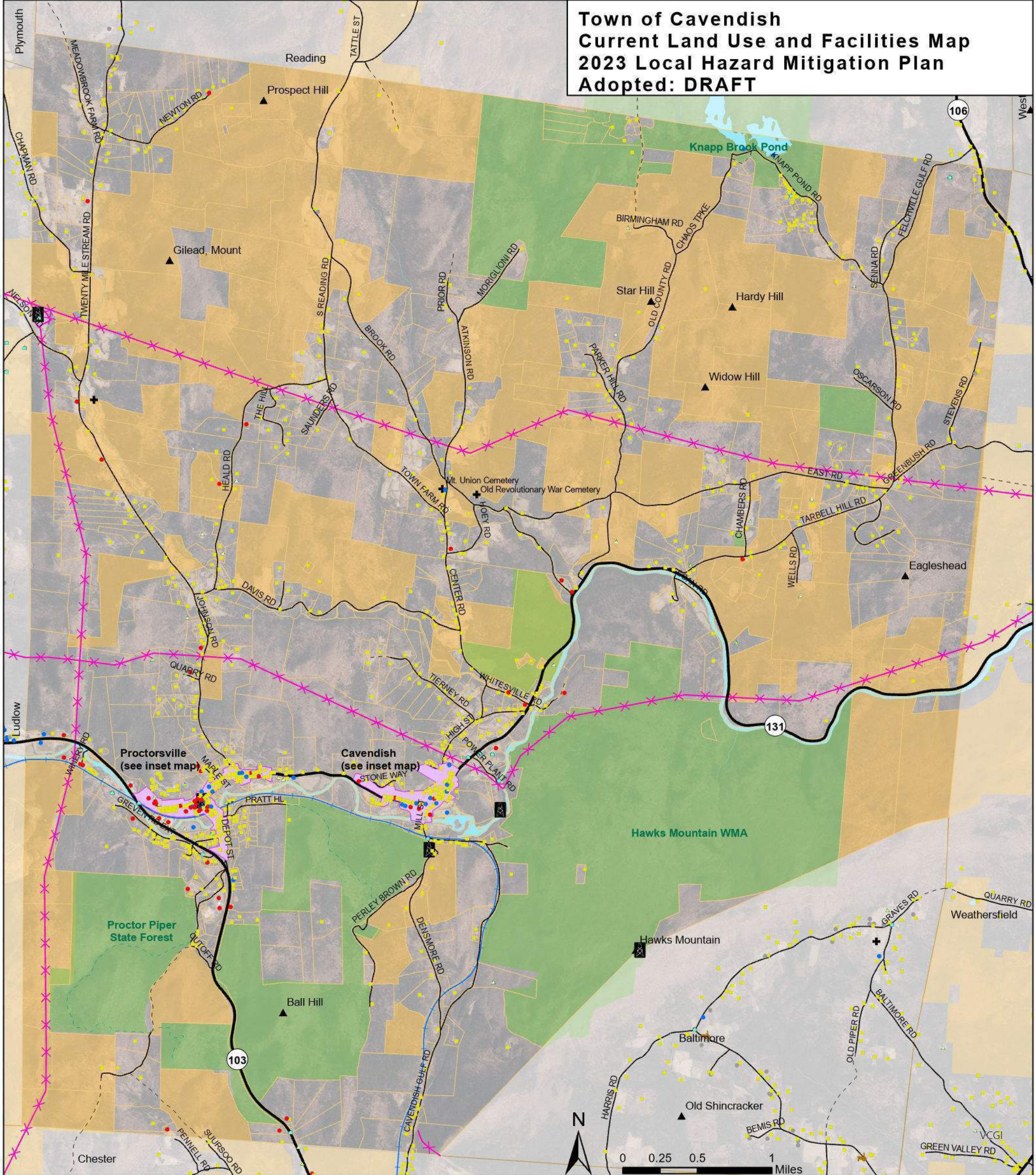


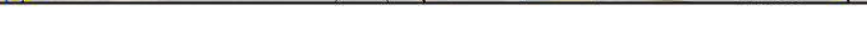
Appendix A

Maps

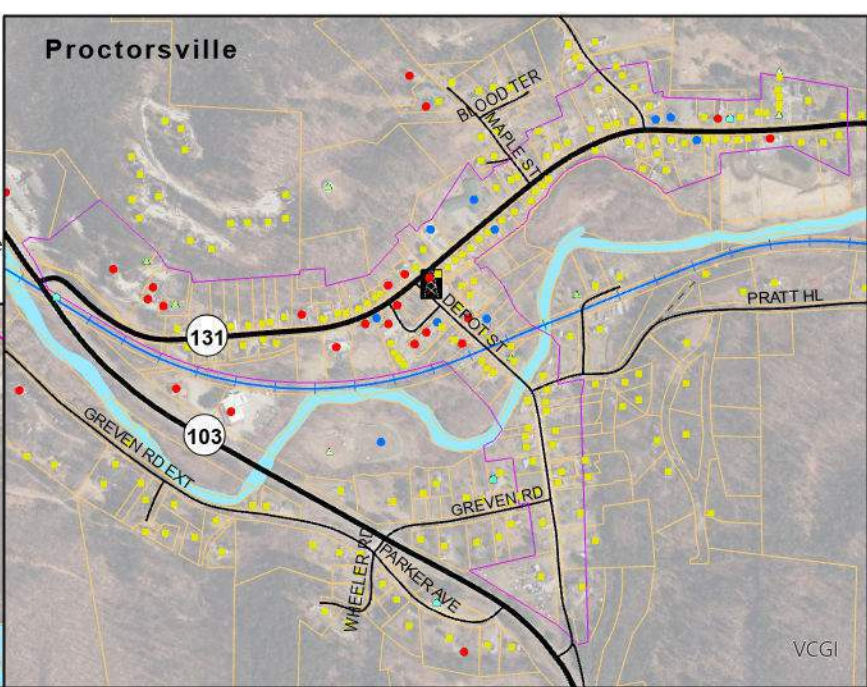
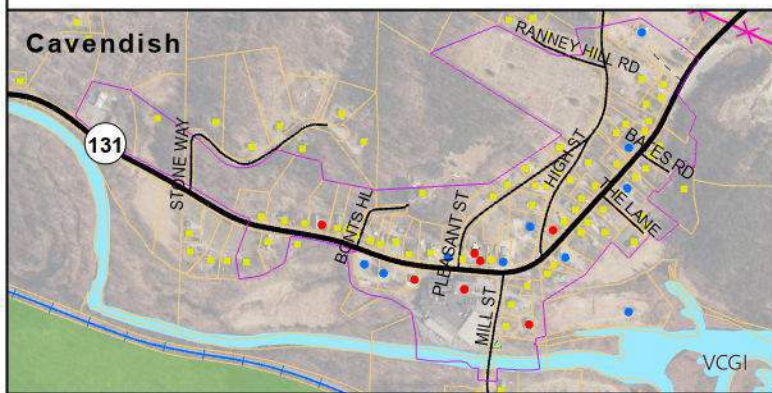
Town of Cavendish Current Land Use and Facilities Map 2023 Local Hazard Mitigation Plan Adopted: DRAFT



- | | |
|----------------------------|--------------------------------|
| Other (building) | VT State Highway |
| Government and Community | Class 1, 2 and 3 Town Highway |
| Residential | Class 4 Town Hwy & Legal Trail |
| Commercial | Private Road |
| Other (non-building) | State Forest Road |
| Accessory | Transmission Line |
| Farm | Railroads |
| Industrial | Parcels (2023) |
| Cemetery | Lakes and Ponds |
| Telecommunications Tower | Rivers and Streams |
| Village Center Designation | Conserved Lands |
| Hill/ Mountain Summit | Land Enrolled in Current Use |



Data Sources:
Buildings (E911 2023), Cemeteries (VTrans 2001), Transmission Lines (VCGI 2003 and RPC 2013), Telecommunications Towers (Natural Resources Board 2007 and RPC 2013), Railroads (VTrans 2020), Conserved Lands (VCGI 2019), Current Use Lands (ANR 2016), Waterbodies (VHD 2019), Hill/Mountain Summit (Unknown source), Road centerline (VTrans 2023), Village Center Designation Boundary (RPC 2019), Town Boundary (VCGI 2016), Aerial Imagery (VCGI 2022), Parcels (VCGI 2023).



VT State Plane, Meters, NAD 83
Data depicted on this map are for planning purposes only and are based on best available information. Some of the data do not line up.



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802-674-9201 www.marvcvt.org

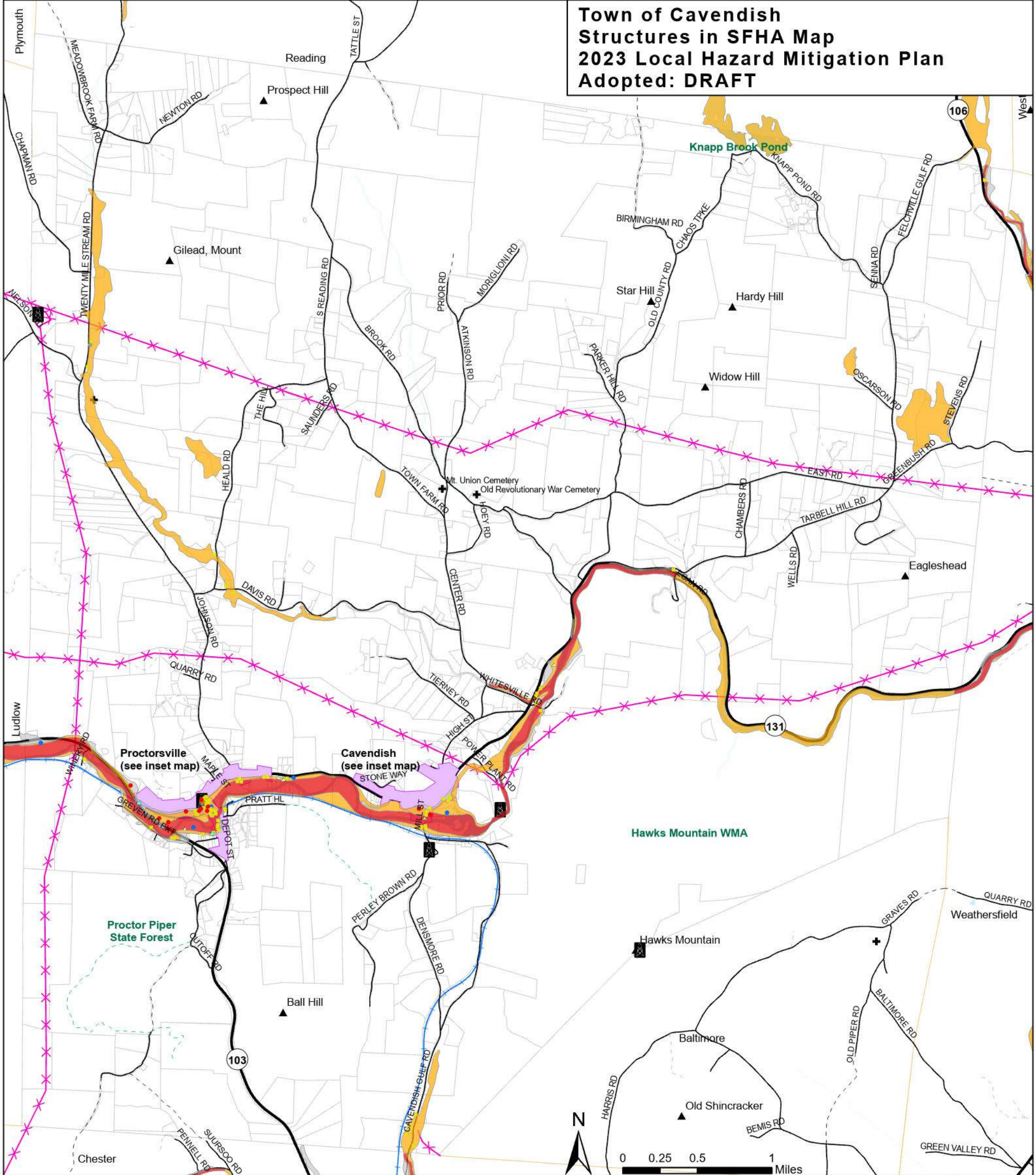
For planning purposes only
Not for regulatory interpretation

DRAFT Drawn: Aug 02, 2023

Town of Cavendish Structures in SFHA Map

2023 Local Hazard Mitigation Plan

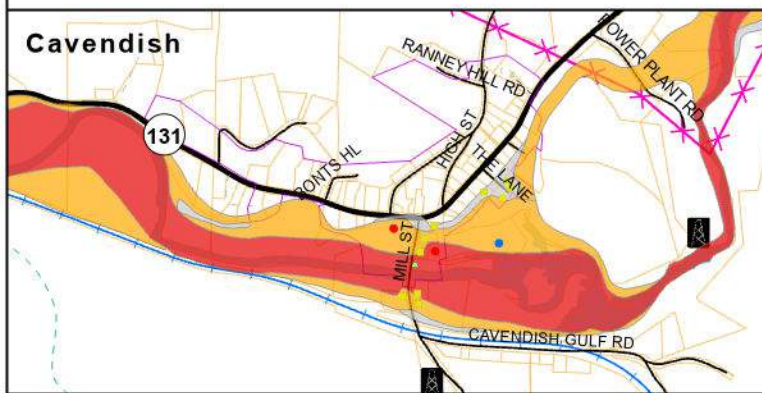
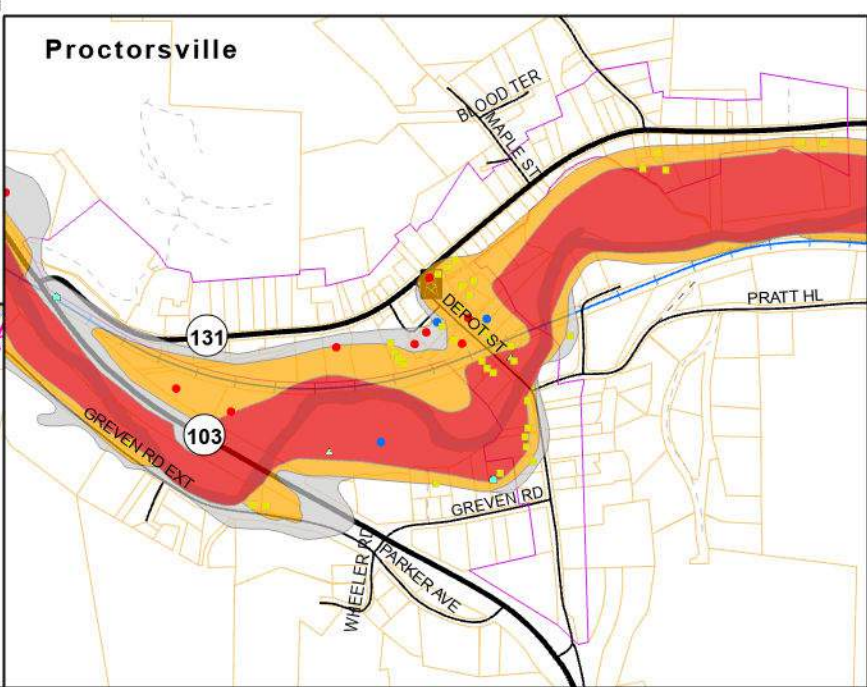
Adopted: DRAFT



- Cemetery
- Telecommunications Tower
- Village Center Designation
- Hill/ Mountain Summit
- VT State Highway
- Class 1, 2 and 3 Town Highway
- Class 4 Town Hwy & Legal Trail
- Private Road
- State Forest Road
- Transmission Line
- Railroads
- Parcels (2023)
- Lakes and Ponds
- Rivers and Streams

FEMA Special Flood Hazard Areas

- Floodway
- Zones A and AE
- 0.2% Annual chance of flood hazard
- Other (building)
- Government and Community
- Residential
- Commercial
- Other (non-building)
- Accessory
- Farm
- Industrial



Data Sources:
 Buildings (E911 2023), Cemeteries (VTrans 2001), Floodplain and Floodway (Special Flood Hazard Areas) (FEMA 2015), Transmission Lines (VCGI 2003 and RPC 2013), Telecommunications Towers (Natural Resources Board 2007 and RPC 2013), Railroads (VTrans 2020), Waterbodies (VHD 2019), Hill/Mountain Summit (Unknown source), Road centerline (VTrans 2023), Village Center Designation Boundary (RPC 2019), Town Boundary (VCGI 2016).

VT State Plane, Meters, NAD 83
 Data depicted on this map are for planning purposes only and are based on best available information. Some of the data do not line up.

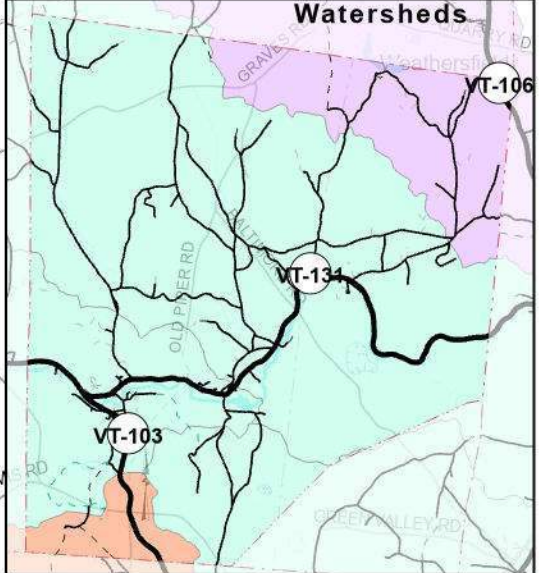
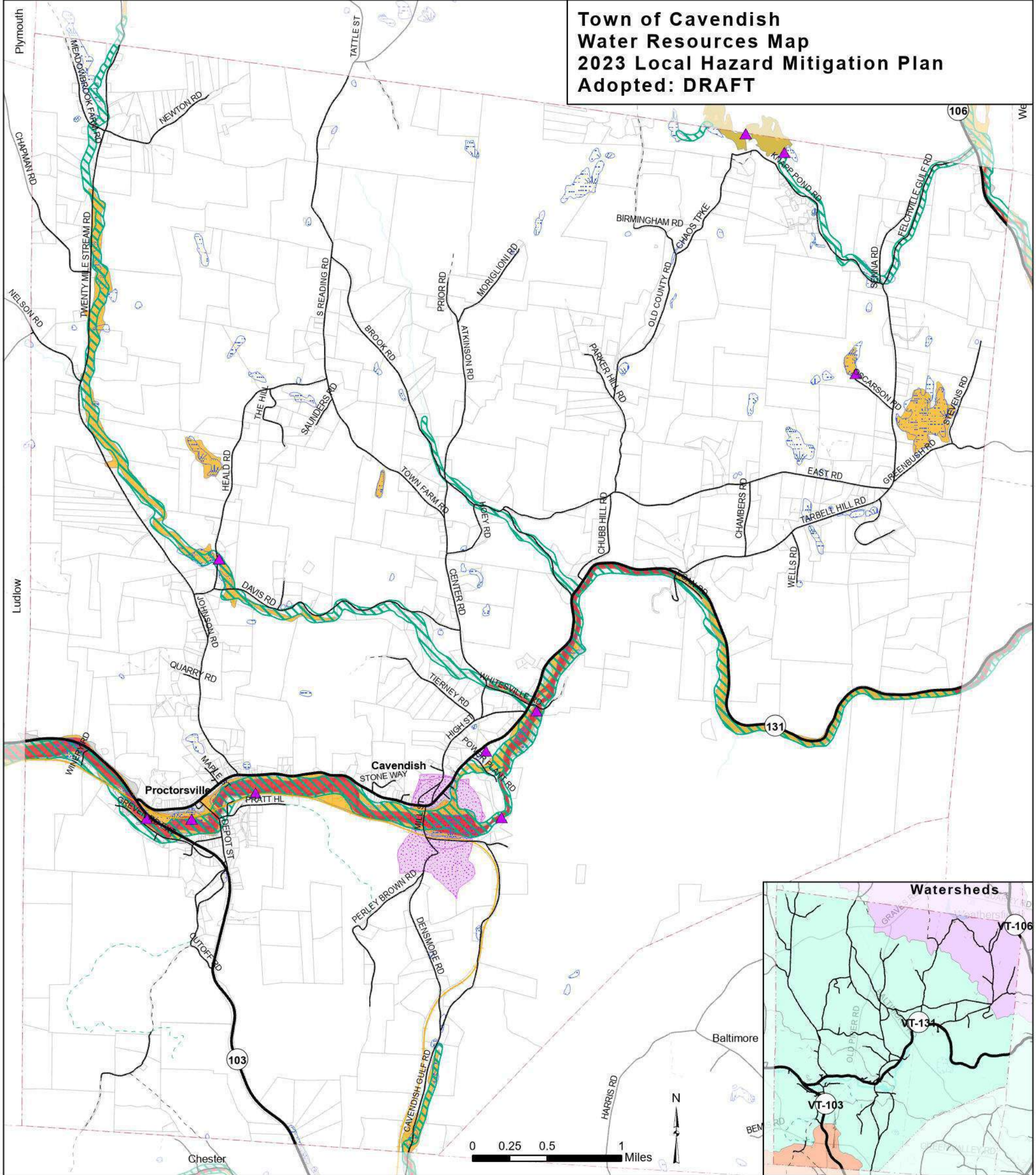


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Town of Cavendish Water Resources Map 2023 Local Hazard Mitigation Plan Adopted: DRAFT



- Dam
- VT State Highway
- Class 1, 2 and 3 Town Highway
- Class 4 Town Hwy & Legal Trail
- Private Road
- State Forest Road
- Railroads
- River Corridor Protection area
- Wetland
- Groundwater Protection Area
- Lakes and Ponds
- Rivers and Streams
- FEMA Special Flood Hazard Areas**
 - Floodway
 - Zones A and AE
 - 0.2% Annual chance of flood hazard
 - Parcels
- Major Watersheds (in small map only)**
 - Black River
 - North Branch Black River
 - Williams River

There are no surface water protection areas within the town.

Data Sources: Dams (ANR 2016), Floodplain and Floodway (Special Flood Hazard Areas) (FEMA 2015), River Corridor Protection Area (ANR 2019), Wetlands (ANR 2016), Groundwater Protection Area (ANR 2016), Surface Water Protection Area (ANR 2016), Railroads (VTrans 2020), Road centerline (VTrans 2023), Waterbodies (VHD 2019), Town Boundary (VCGI 2016), Parcels (VCGI 2023).



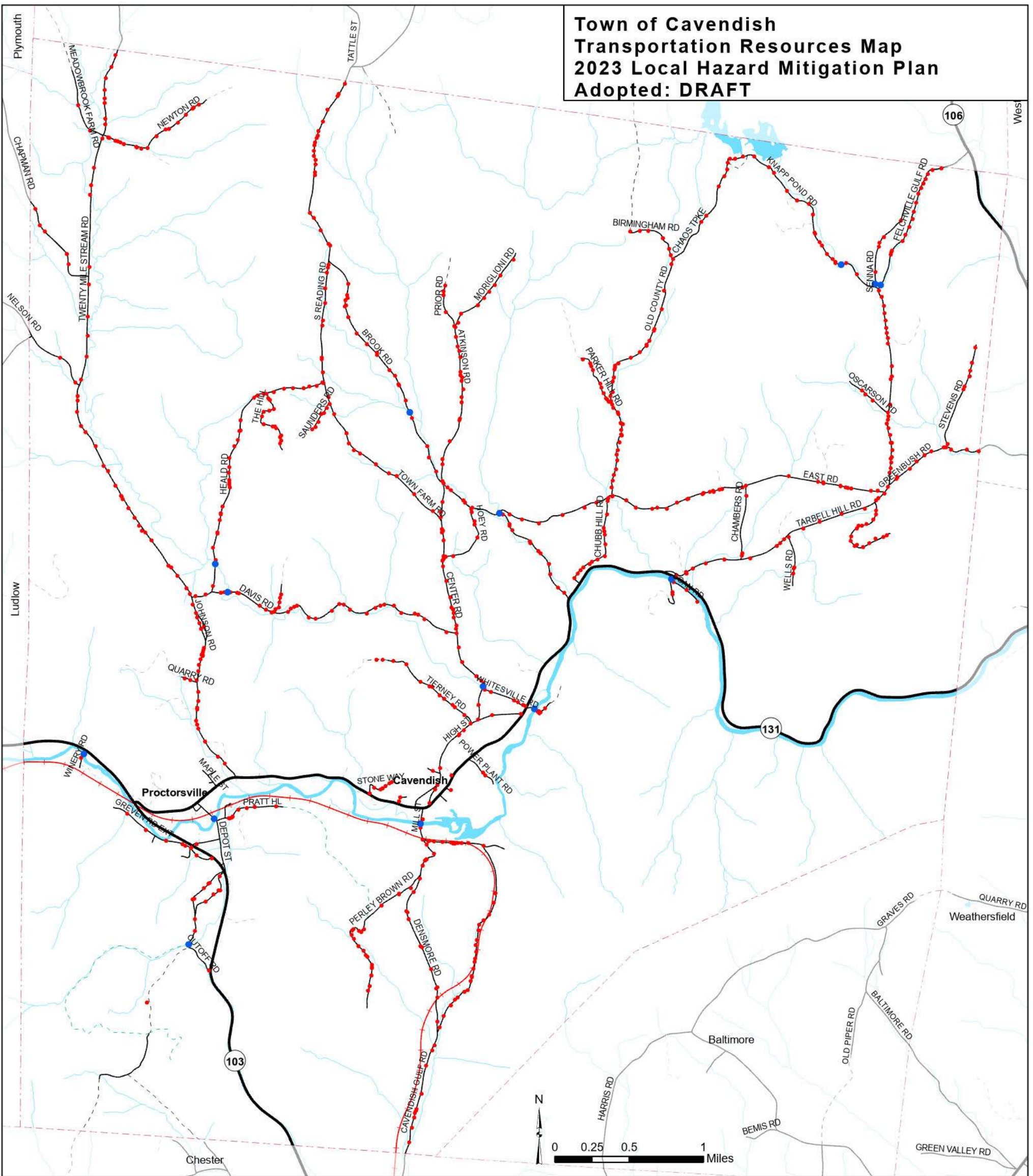
VT State Plane, Meters, NAD 83
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DRAFT Drawn: Aug 02, 2023

**Town of Cavendish
 Transportation Resources Map
 2023 Local Hazard Mitigation Plan
 Adopted: DRAFT**



- Legend**
- Culverts
 - Bridges
 - ~ VT State Highway
 - ~ Class 1, 2 and 3 Town Highway
 - ~ Class 4 Town Hwy & Legal Trail
 - ~ Private Road
 - ~ State Forest Road
 - Railroad
 - Lakes and Ponds
 - ~ Rivers and Streams
 - Town boundary

There are no airports in Town.

Data Sources: Airports (VTrans 2016), Bridges and Culverts (VT Culverts 2023), Roads (VTrans 2023), Railroad (VTrans 2020), Water (VDH 2019), Town Boundary (RPC 2016).

*VT State Plane, Meters, NAD 83
 Data depicted on this map are for planning purposes only and are based on best available information. Some of the data do not line up.*

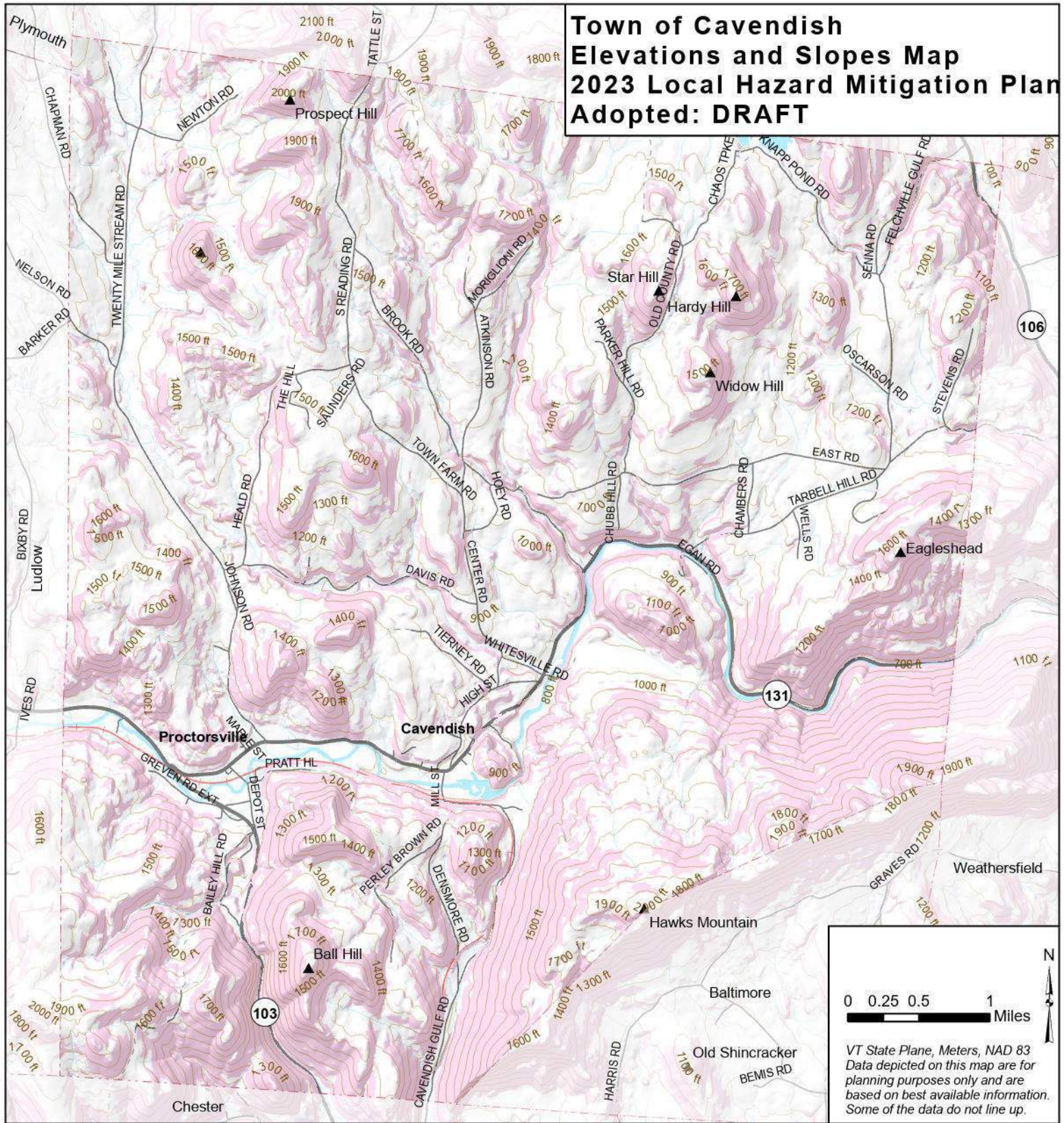


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DRAFT Drawn: Aug 02, 2023

Town of Cavendish Elevations and Slopes Map 2023 Local Hazard Mitigation Plan Adopted: DRAFT



0 0.25 0.5 1 Miles

VT State Plane, Meters, NAD 83
Data depicted on this map are for planning purposes only and are based on best available information. Some of the data do not line up.

- VT State Highway
- Class 1, 2 and 3 Town Highway
- Class 4 Town Hwy & Legal Trail
- Private Road
- State Forest Road
- Hill/ Mountain Summit
- 100ft Contour Line
- Steep slope of 24% or above
- Railroads
- Town boundary
- Lakes and Ponds
- Rivers and Streams

Data Sources: Contours, steep slopes and hillshade (derived from 10m Digital Elevation Model, US Geological Survey/ VT Center for Geographic Information 2012), Hill/Mountain Summit (Unknown Source), Roads (VTrans 2023), Railroad (VTrans 2020), Rivers and waterbodies (VDH 2019), Town Boundary (VCGI 2016).



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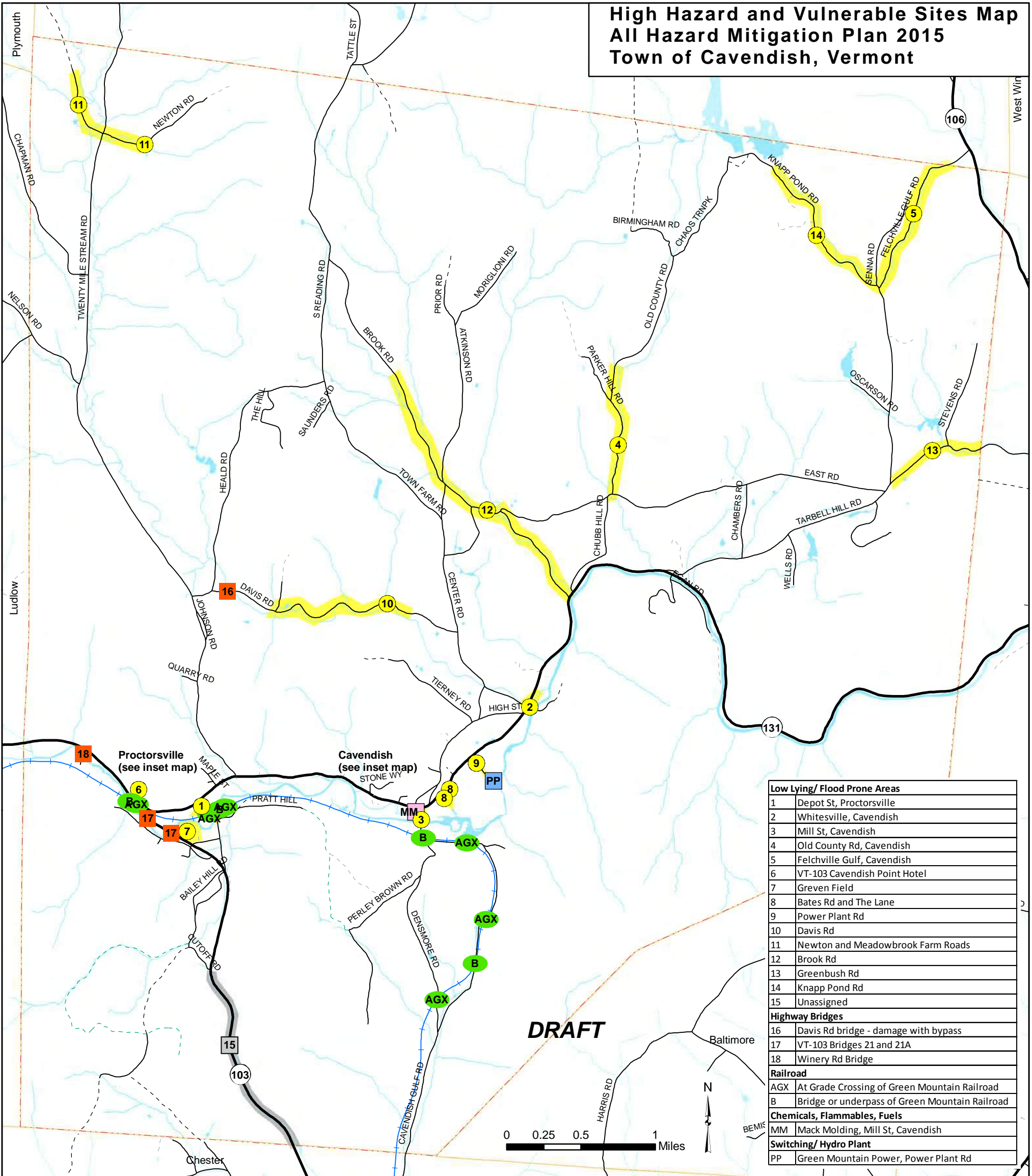
For planning purposes only
Not for regulatory interpretation

DRAFT Drawn: Aug 02, 2023

High Hazard and Vulnerable Sites Map

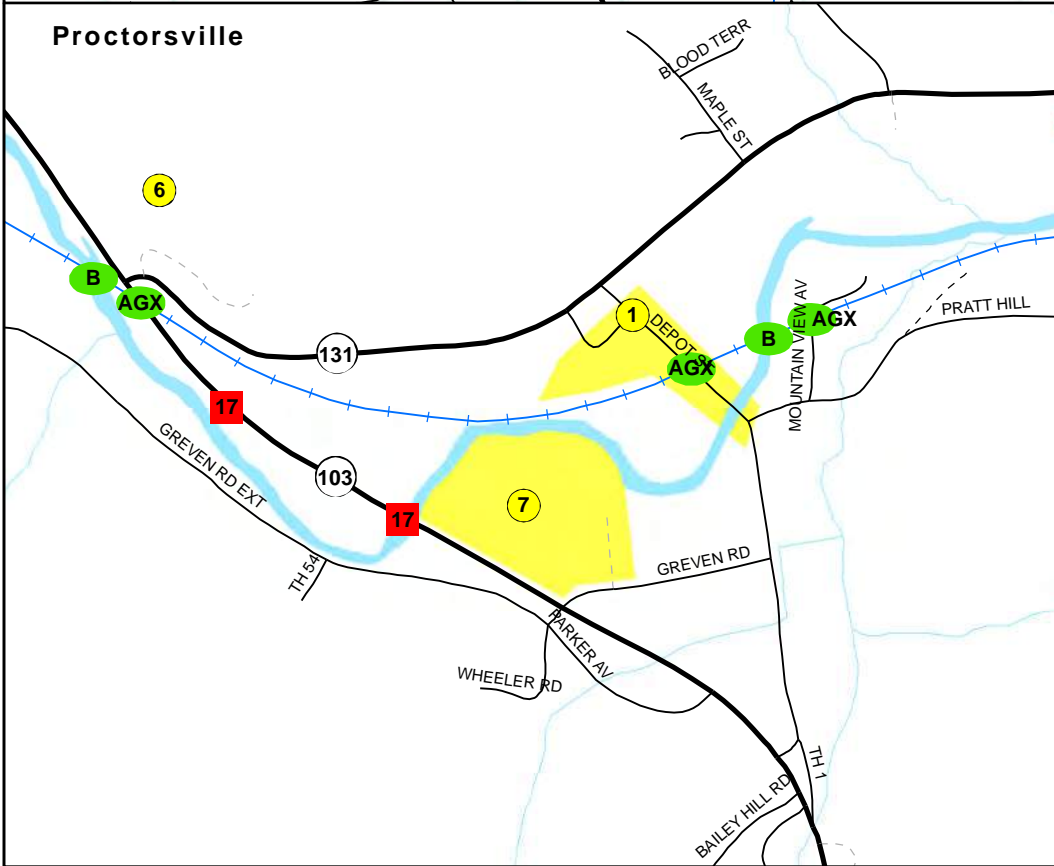
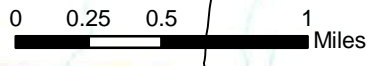
All Hazard Mitigation Plan 2015

Town of Cavendish, Vermont



Low Lying/ Flood Prone Areas	
1	Depot St, Proctorsville
2	Whitesville, Cavendish
3	Mill St, Cavendish
4	Old County Rd, Cavendish
5	Felchville Gulf, Cavendish
6	VT-103 Cavendish Point Hotel
7	Greven Field
8	Bates Rd and The Lane
9	Power Plant Rd
10	Davis Rd
11	Newton and Meadowbrook Farm Roads
12	Brook Rd
13	Greenbush Rd
14	Knapp Pond Rd
15	Unassigned
Highway Bridges	
16	Davis Rd bridge - damage with bypass
17	VT-103 Bridges 21 and 21A
18	Winery Rd Bridge
Railroad	
AGX	At Grade Crossing of Green Mountain Railroad
B	Bridge or underpass of Green Mountain Railroad
Chemicals, Flammables, Fuels	
MM	Mack Molding, Mill St, Cavendish
Switching/ Hydro Plant	
PP	Green Mountain Power, Power Plant Rd

DRAFT



- Low lying/ flood prone areas
- Ice and Falling Rock Zone
- Bridges
- Railroad bridge or crossing
- Chemicals, Flammables, Fuels
- Switching/ Hydro Plant
- Railroads
- VT State Highway
- Class 2 and 3 Town Highway
- Class 4 Town Hwy & Legal Trail
- Private Road
- State Forest Road
- Rivers and Streams
- Lakes and Ponds
- Cavendish Town Boundary
- Other Town Boundary

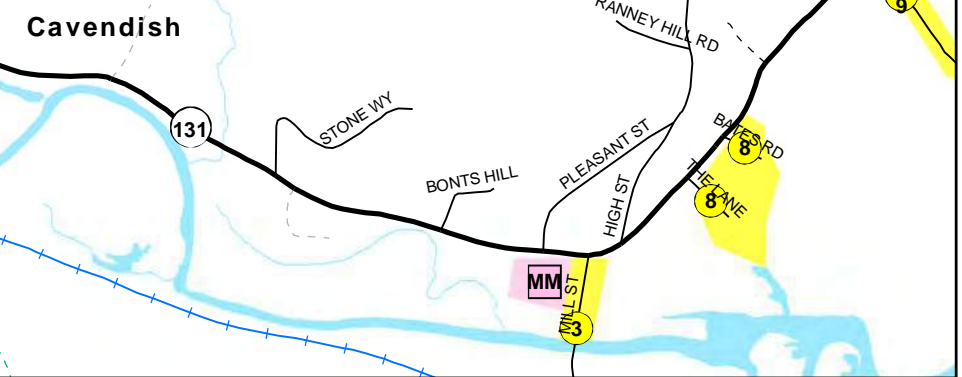
Map originally drawn for 2014 Local Emergency Operation Plan.

Data Sources: Major High Hazard and Vulnerable Sites (Town/ RPC 2014), Railroads (VTrans 2003), Road centerline (VTrans 2013), Waterbodies (VHD 2008), Town Boundary (RPC 2012 using Parcels 2012).

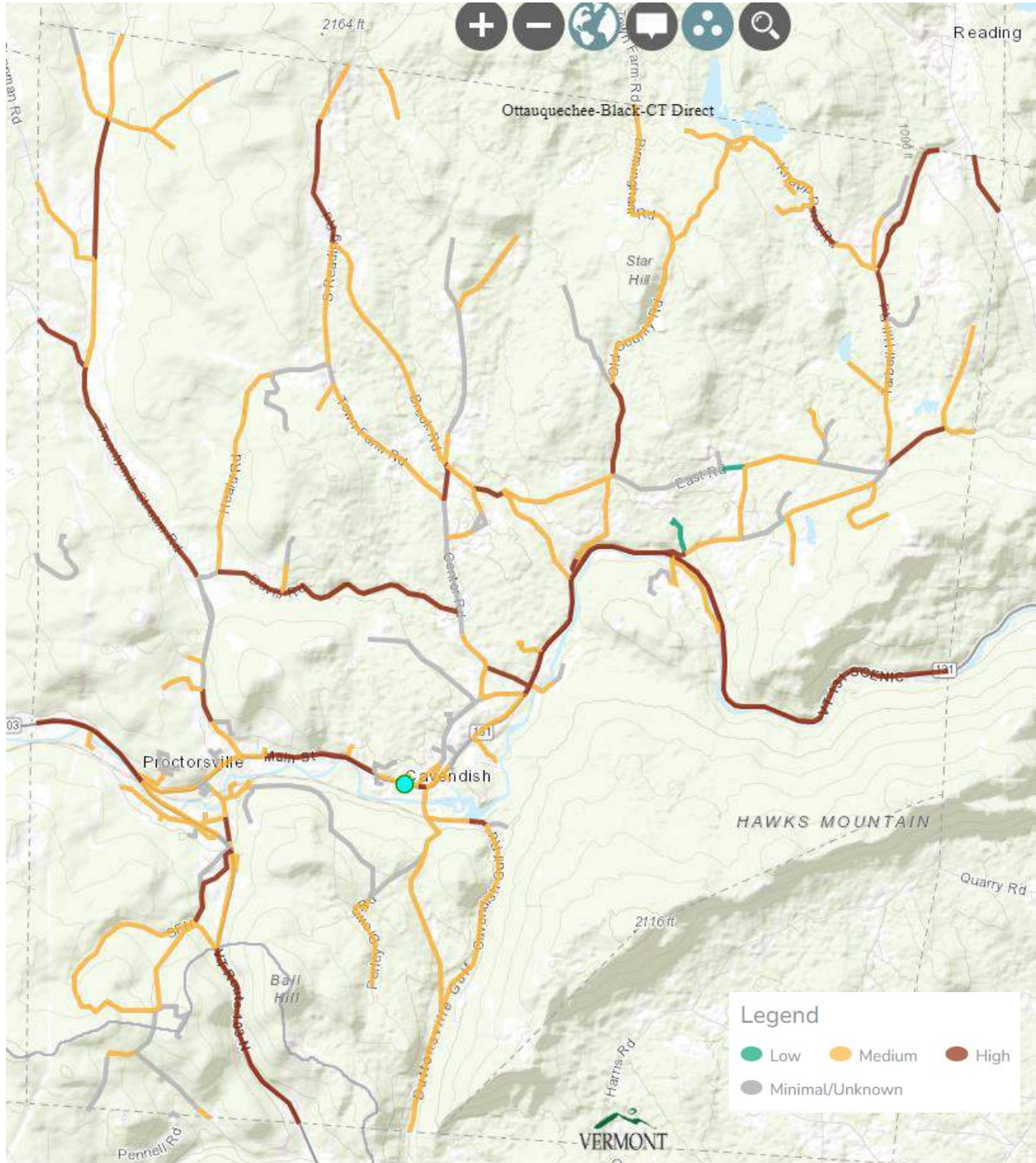
VT State Plane, Meters, NAD83
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Town of Cavendish
Vermont Transportation Resilience Planning Tool (TRPT)
8-2-2023



Appendix B

Public Involvement Documents

**Town of Cavendish
Notice of Public Information Meeting**

**LOCAL HAZARD MITIGATION PLAN UPDATE
Cavendish Town Office
Monday, July 31, 2023
6:00pm to 8:00pm**

**Concerned about the impact of Climate Change and Natural Disasters in Cavendish?
Voice your concerns during the Local Hazard Mitigation Plan update.**

The Town of Cavendish is updating its Local Hazard Mitigation Plan. The purpose of this planning effort is to protect life, property, economy, quality of life, and environment of the Cavendish Community from naturally occurring hazards and disasters. We are requesting input from the local community regarding experiences and concerns about weather related events and the potential risks and vulnerabilities to hazards, such as flooding, erosion, extreme temperatures, winter storms and drought.

The Town will be holding a public meeting at the Cavendish Town Office at 37 High Street, Cavendish, VT, on Monday, July 31, 2023, from 6:00pm to 8:00pm. The meeting will be conducted by the Mount Ascutney Regional Commission (MARC). The public is encouraged to attend and share their thoughts.

If you are interested but unable to attend you can participate and provide input in other ways::

- You can participate via a virtual ZOOM link below:

<https://us02web.zoom.us/j/84990683762>

- You can find meeting agenda; planning materials and fillable templates [HERE](#)
- You can complete this brief [Climate Change in Cavendish survey](#)
- You can always provide your concerns, comments, and questions regarding this planning effort via email to Cindy Ingersoll at cingersoll@marcvt.org.

**Town of Cavendish
LOCAL HAZARD MITIGATION PLAN UPDATE
Public Meeting**

**Cavendish Town Office
37 High St., Cavendish, VT
Monday, July 31st, 2023
6:00pm to 8:00pm**

A hybrid option is available via Zoom: <https://us02web.zoom.us/j/84990683762>

AGENDA

1. Introductions
2. Presentation from MARC
3. Assess Impact of Natural Hazards and Prioritize
4. Status of 2016 Hazard Mitigation Plan Strategies
5. Discuss Existing Capabilities
6. Identify Vulnerable Areas and Populations
7. Identify Potential New 2023-2028 Mitigation Actions and Strategies
8. Adjournment

**Town of Cavendish
Notice of Public Information Meeting**

**2023-2028 LOCAL HAZARD MITIGATION PLAN UPDATE
Review of Plan Draft
At Cavendish Selectboard Meeting**

**Cavendish Town Office
Date: February 12, 2024
Time: 6:30 PM**

The Town of Cavendish is updating its Local Hazard Mitigation Plan. The purpose of this planning effort is to protect life, property, economy, quality of life, and environment of the Cavendish Community from naturally occurring hazards and disasters.

The Town will be holding a public meeting to present and seek comment from the local and regional communities on the Town of Cavendish 2023-2028 Local Hazard Mitigation Plan Draft as part of their Selectboard Meeting agenda.

The Plan identifies natural hazards that are most impactful to the Cavendish community and includes Strategies and Actions to reduce vulnerabilities and potential risks to hazards such as flooding, erosion, extreme temperatures and winter storms. The public is encouraged to attend and share their thoughts as the effectiveness of this planning effort relies on local engagement.

The Mount Ascutney Regional Commission (MARC), will be presenting the draft plan and taking comments and questions. A copy of the *Town of Cavendish 2023-2028 Local Hazard Mitigation Plan* can be found [HERE](#), and on the Town website. Hard copies can be found at the Cavendish Fletcher Community Library and Town Office.

If you are interested but unable to attend you can provide your input, concerns, comments, and questions regarding this draft Plan via email to Cindy Ingersoll at cingersoll@marcvt.org or to Rick Chambers at cavtm@cavendishvt.org.

**TOWN OF CAVENDISH
LOCAL HAZARD MITIGATION PLANNING PROCESS
STAKEHOLDER ENGAGEMENT**

List of Stakeholders

Municipal representatives / Hazard Mitigation Planning Team Participants

Selectboard, member
Planning Commission, member
Emergency Management, Director
Highway Department, Foreman
Fire & Rescue, volunteer Fire Chief
Town Manager & Floodplain Administer

Other local Stakeholders engaged in the process:

Cavendish Baptist Church (local shelter), Pastor
Cavendish Historical Society
Mount Ascutney Regional Commission, Community Development Specialist

Distribution of Plan Draft and Invitation to Participate In Draft Plan Review:

Cavendish Elementary School, Principal
Health & Safety, Administrator
Cavendish Fletcher Community Library, Director
Okemo Valley Chamber of Commerce, Managing Editor

Neighboring Towns:

Town of Ludlow

Town Clerk for posting
Town Manager
Selectboard, Chair
Planning Commission, Chair
Director of Planning and Development
Development Review Board, Chair
Emergency Management, Director
Zoning Administrator

Town of Chester

Town Clerk for posting
Town Manager
Selectboard, Chair

Planning Commission, Chair
Development Review Board, Chair
Emergency Management, Director
Zoning Administrator

Town of West Windsor

Town Clerk for posting
Town Manager
Selectboard, Chair
Planning Commission, Chair
Development Review Board, Chair
Emergency Management, Director
Conservation Commission, Chair

Town of Reading

Town Clerk for posting
Town Administrator
Selectboard, Chair
Planning Commission, Chair
Emergency Management, Director

Town of Weathersfield

Town Clerk for posting
Town Manager
Selectboard, Chair
Planning Commission, Chair
Zoning Board, Chair
Development Review Board, Chair
Emergency Management, Director
Conservation Commission, Chair
Village Trustees, Chair

Town of Plymouth

Town Clerk for posting
Town Manager
Selectboard, Chair
Planning Commission, Chair
Emergency Management, Director

*Cavendish does not have a Zoning Board, Building Inspector or Development Review Board

**LEMP identified community-based organizations below can be reached through regular channels of notification and town and community site postings including municipal website, community Facebook, and Cavendish Connects.

- Freeman House – Affordable Housing for Family, Seniors/Elderly
- Beekman House – Therapeutic Community Residence
- Day Care at Farrar’s.
- Stepping Stones Preschool
- Mobil Home Park

Distribution of Draft Plan

- An electronic copy posted on the Town and MARC websites, Cavendish Connects and community Facebook Page and at the local community library.
- A copy was circulated to individual members of the Board of Selectmen and Planning Commission, Highway Department, Fire & Rescue, Emergency Management, requesting comments from the local boards and community.
- An electronic distribution made to adjacent towns (Baltimore, Chester, Ludlow, Plymouth, Weathersfield, and West Windsor) via email to respective Board and Commission Chairs as listed in Appendix B: Stakeholder Engagement with a request to the Town Clerk to post the draft on their websites.
- All distributions included the following:

"The Town of Cavendish is seeking comment on its 2023-2028 Local Hazard Mitigation Plan draft. The purpose of this planning effort is to improve Cavendish's resiliency to natural hazards through hazard assessment, recognition of vulnerable assets, and identification of mitigating actions and strategies to reduce the impact of these hazards on the community.

*You are also invited to attend the Cavendish Selectboard meeting of February 12, 2024 at 6:30PM for a review of the draft plan. The meeting will also be held virtually as posted on the [Cavendish Website](#) Please feel free to forward any questions or comments to Rick Chambers, Town Manager at cavtm@cavendishvt.org by **February 15, 2024**. We welcome all input."*

Survey Posting Narrative

For all Cavendish Residents and Business Owners,

The Town would greatly appreciate your participation in this brief survey to get your perspective on how the changing climate has impacted our community and your primary concerns about natural hazards such as flooding, erosion, and extreme temperatures. Your responses will also provide the needed input for a mitigation plan that will improve the Town's resiliency to these hazards and maximize state reimbursement funding for this and future disasters.

Town of Cavendish
LOCAL HAZARD MITIGATION PLAN UPDATE

If You Live in Cavendish
We Need Your Thoughts

Cavendish is updating its Local Hazard Mitigation Plan to improve our resiliency to climate change. This Plan is intended to assist the Town in reducing the impact of natural hazard events to our public infrastructure, private properties, and quality of life.

The Town recognizes that our community feels the impact of climate change differently and would like to know how it has affected you. Please take a moment to complete this survey which will be used to help identify the most impactful hazards to our residents and develop an action plan to reduce future risk and losses to our community.

[Cavendish Climate Impact Survey](#)

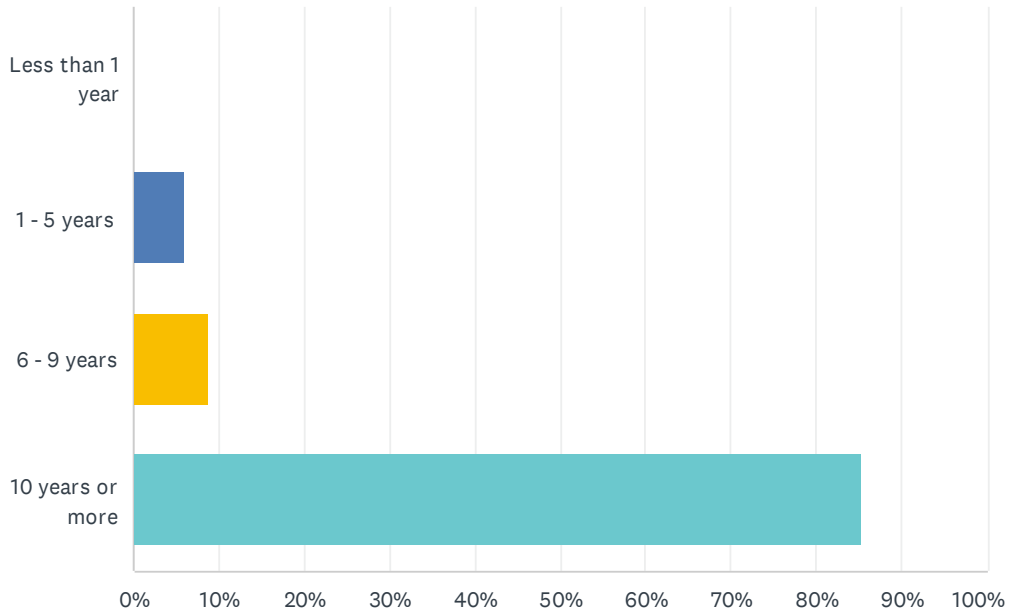
There have been 7 FEMA disaster declarations for Windsor County over the past 10 years, more than in any prior 10-year period, and have been costly to recover from. This planning effort will enable the Town to pursue funding for hazard mitigation projects and increase the level of FEMA assistance provided for recovery from future declared events.

Thank you.

You can track meeting dates and materials at [marctvt.org/Towns/Cavendish/Local Hazard Mitigation Plan Update](http://marctvt.org/Towns/Cavendish/LocalHazardMitigationPlanUpdate)

Q1 How long have you lived in the Town of Cavendish?

Answered: 34 Skipped: 1



ANSWER CHOICES	RESPONSES
Less than 1 year	0.00% 0
1 - 5 years	5.88% 2
6 - 9 years	8.82% 3
10 years or more	85.29% 29
TOTAL	34

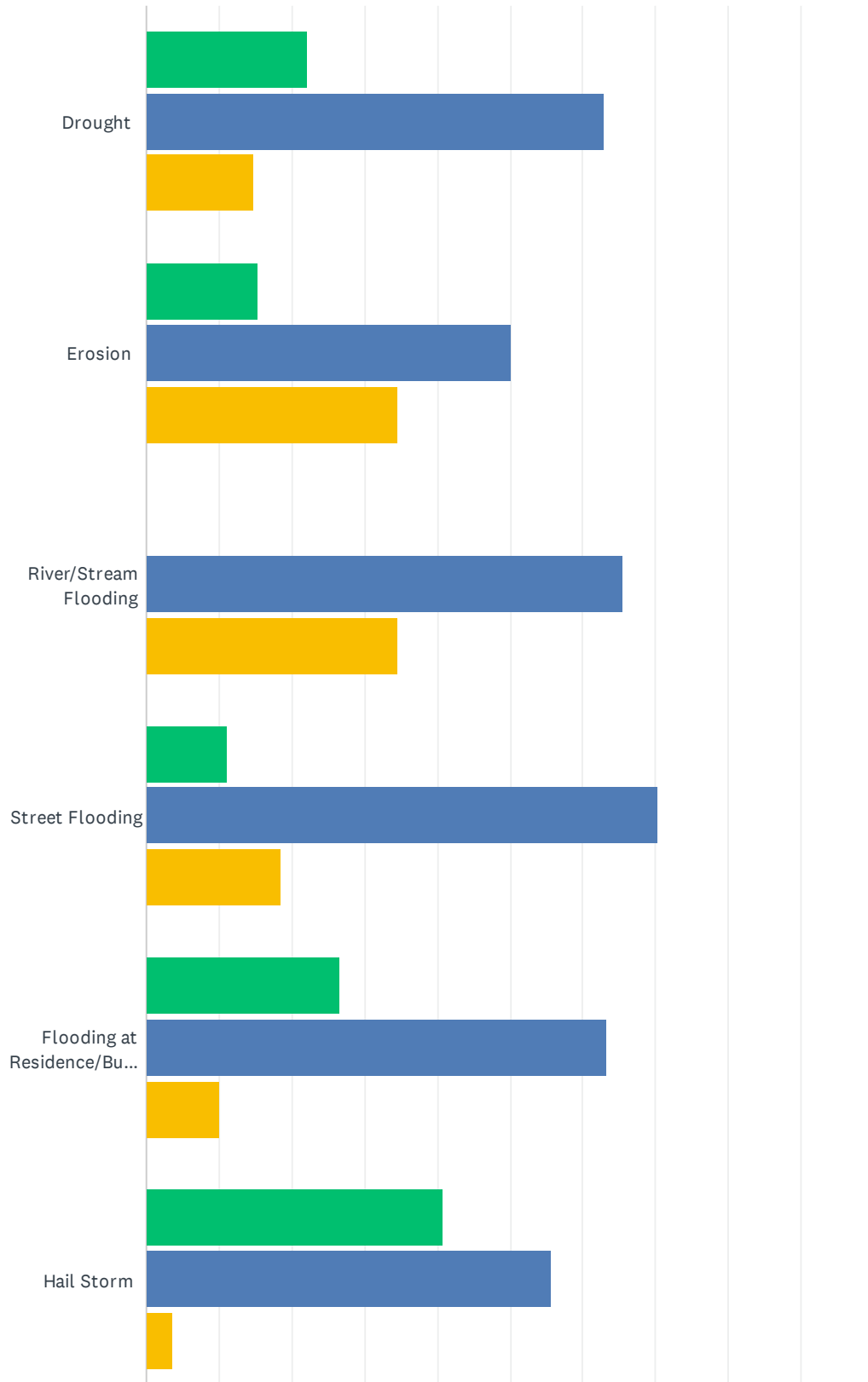
Q2 What is the street address of your residence or business? (optional)

Answered: 21 Skipped: 14

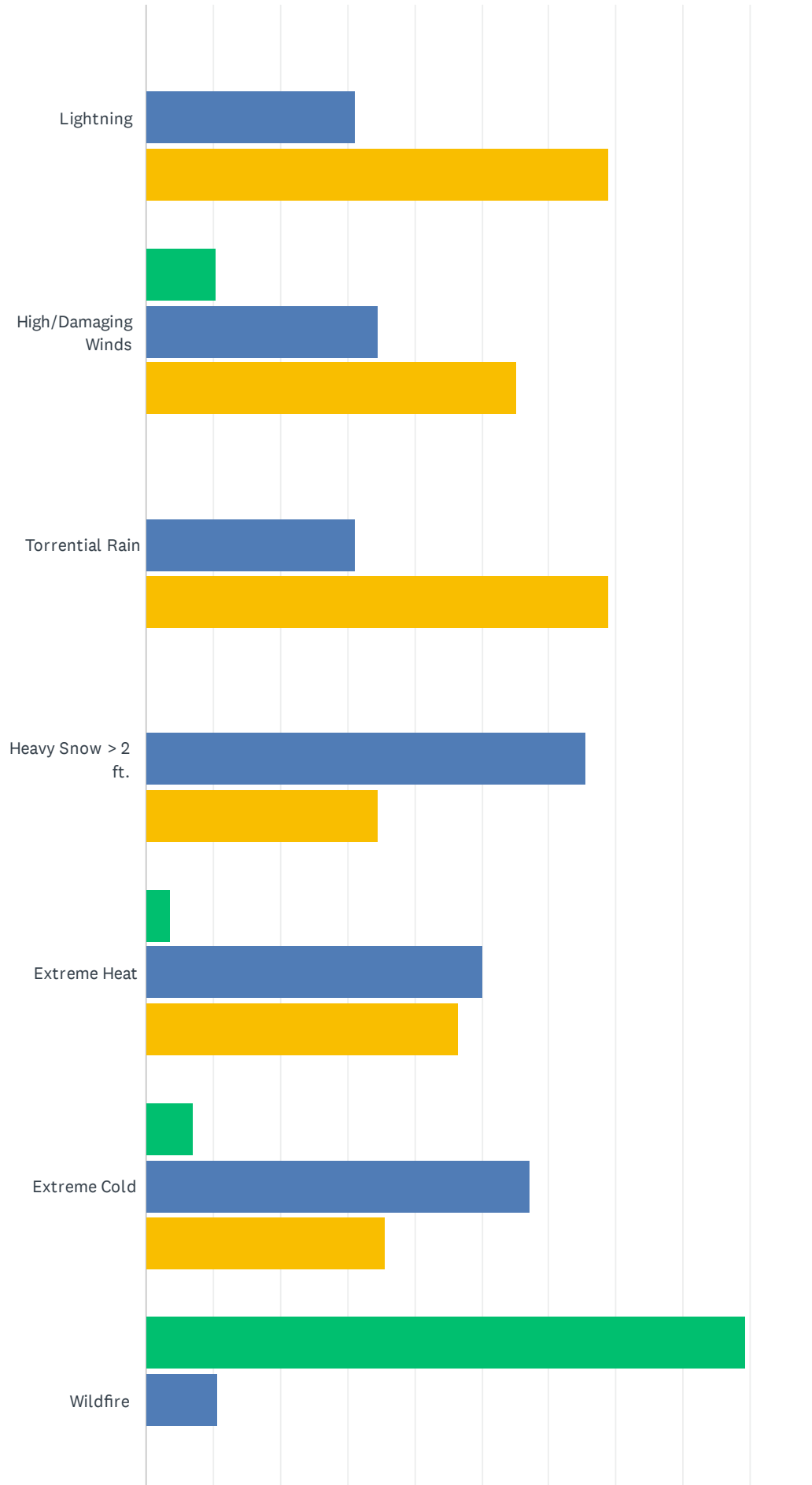
#	RESPONSES	DATE
1	244 Densmore Rd	8/12/2023 6:04 PM
2	119 Prior Road	7/29/2023 9:25 PM
3	79 Mtn View Rd	7/29/2023 2:28 PM
4	93 Densmore Rd	7/29/2023 11:36 AM
5	206 Stone Way	7/29/2023 9:27 AM
6	731 Stevens Rd	7/29/2023 8:22 AM
7	180 Hardscrabble Road	7/29/2023 7:19 AM
8	25 Wiley Hill Road	7/28/2023 11:32 PM
9	Main St	7/28/2023 7:26 PM
10	Brook Road	7/28/2023 6:03 PM
11	Tarbell Hill Road	7/28/2023 3:34 PM
12	1421 Twenty Mile Stream Road	7/28/2023 10:41 AM
13	High st.	7/28/2023 9:43 AM
14	Atkinson Rd.	7/28/2023 9:37 AM
15	Twenty Mile Stream Rd	7/28/2023 8:36 AM
16	Norrie Davies Rd	7/28/2023 7:54 AM
17	463 Main Street Proctorsville	7/28/2023 6:54 AM
18	Main Street	7/28/2023 6:49 AM
19	Main St	7/28/2023 5:29 AM
20	Rte 131	7/28/2023 1:15 AM
21	796 Center Rd	7/24/2023 2:30 PM

Q3 Within the past 5 years, have you experienced or observed any of these natural hazards in Cavendish? (Check all that apply)

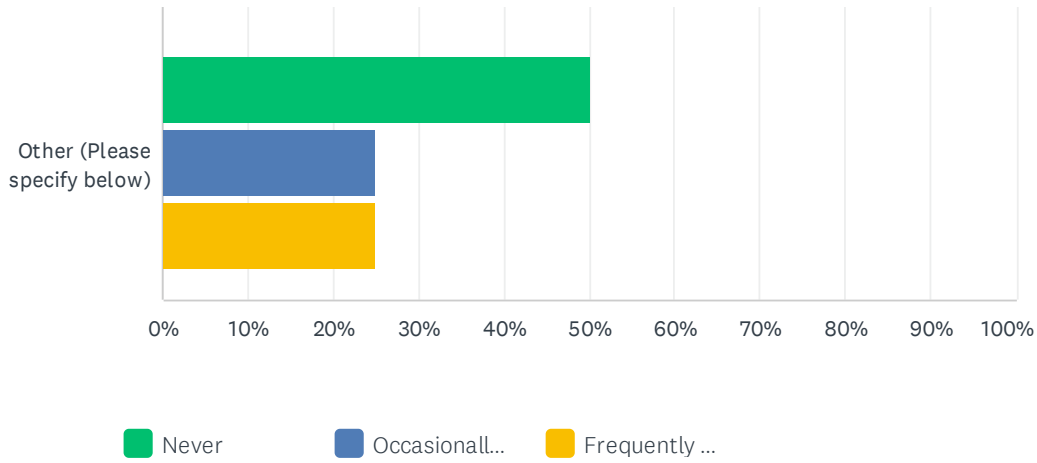
Answered: 30 Skipped: 5



Cavendish Climate Impact Survey



Cavendish Climate Impact Survey



	NEVER	OCCASIONALLY (LESS THAN ONCE PER YEAR)	FREQUENTLY (MULTIPLE TIMES PER YEAR)	TOTAL
Drought	22.22% 6	62.96% 17	14.81% 4	27
Erosion	15.38% 4	50.00% 13	34.62% 9	26
River/Stream Flooding	0.00% 0	65.52% 19	34.48% 10	29
Street Flooding	11.11% 3	70.37% 19	18.52% 5	27
Flooding at Residence/Business	26.67% 8	63.33% 19	10.00% 3	30
Hail Storm	40.74% 11	55.56% 15	3.70% 1	27
Lightning	0.00% 0	31.03% 9	68.97% 20	29
High/Damaging Winds	10.34% 3	34.48% 10	55.17% 16	29
Torrential Rain	0.00% 0	31.03% 9	68.97% 20	29
Heavy Snow > 2 ft.	0.00% 0	65.52% 19	34.48% 10	29
Extreme Heat	3.57% 1	50.00% 14	46.43% 13	28
Extreme Cold	7.14% 2	57.14% 16	35.71% 10	28
Wildfire	89.29% 25	10.71% 3	0.00% 0	28
Other (Please specify below)	50.00% 4	25.00% 2	25.00% 2	8

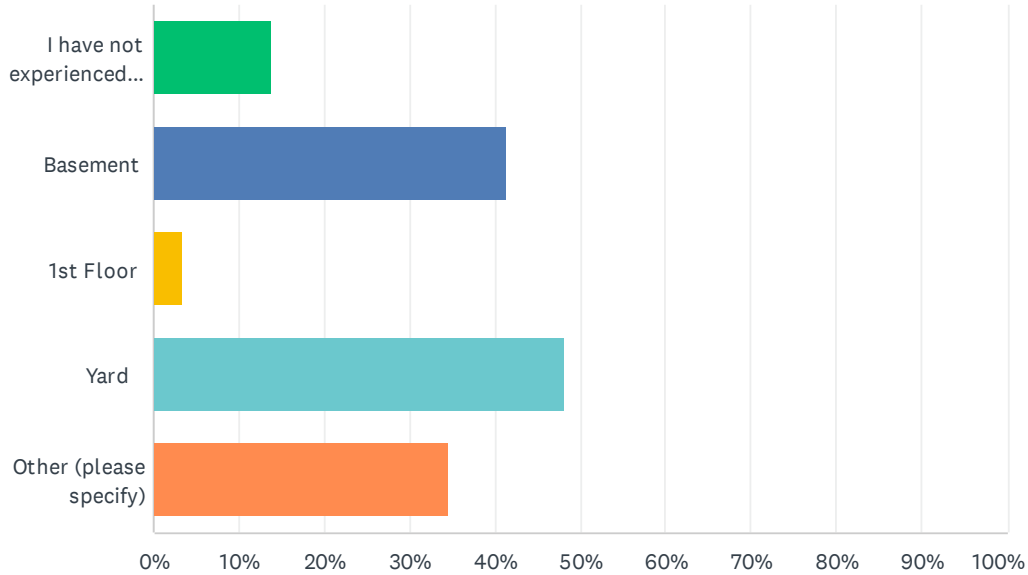
#	OTHER (PLEASE SPECIFY)	DATE
1	Extreme mud - occasionally but can be mitigated with more gravel and culvert maintenance	7/29/2023 8:36 AM
2	Wildfires outside of Cavendish that impact air quality	7/29/2023 8:20 AM

Cavendish Climate Impact Survey

3	Man made climate change is caused by climate manipulation perpetrated by the World Economic Forum.	7/28/2023 6:38 PM
4	Flooding due to an illegal sand pit above my property.	7/28/2023 9:48 AM
5	Deep frost in May, at least twice between 2018-2023	7/28/2023 9:42 AM
6	Late killing frost	7/28/2023 6:07 AM
7	Mountain rain runoff erosion	7/28/2023 5:32 AM

Q4 If you have experienced flooding, what areas did you experience flooding?(Check any that apply)

Answered: 29 Skipped: 6



ANSWER CHOICES	RESPONSES
I have not experienced flooding.	13.79% 4
Basement	41.38% 12
1st Floor	3.45% 1
Yard	48.28% 14
Other (please specify)	34.48% 10
Total Respondents: 29	

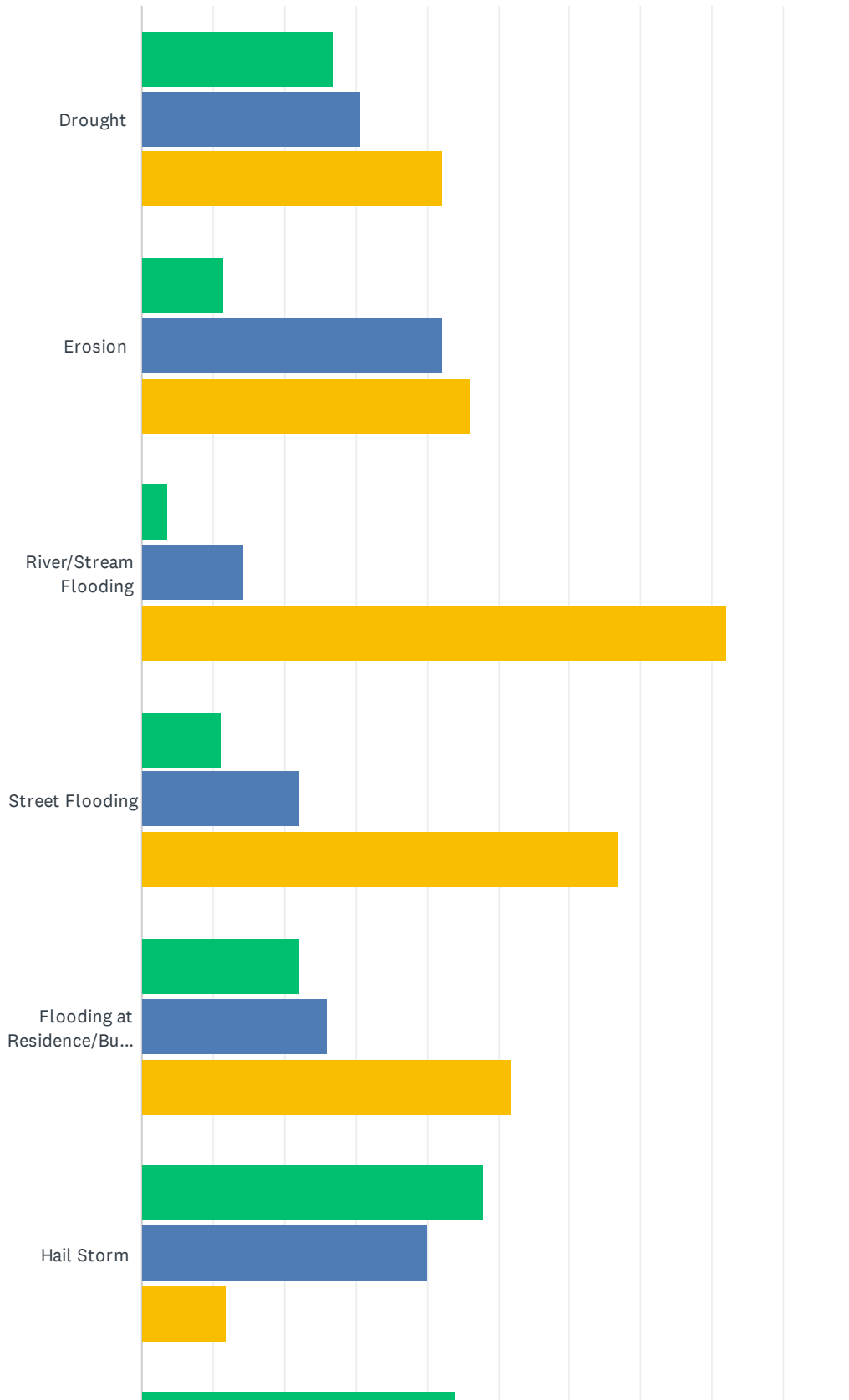
#	OTHER (PLEASE SPECIFY)	DATE
1	Driveway	8/12/2023 6:06 PM
2	driveway	7/29/2023 11:44 AM
3	Roads washed out	7/29/2023 8:36 AM
4	The Twenty Mile Stream floods a small portion of property seasonally. It now alternates regularly between the "old" and "new" riverbed. On our section, it is getting closer to the Davis Road, with potential to undermine the road.	7/29/2023 8:14 AM
5	Culvert backs up. It's a state culvert but we're finding it best to maintain ourselves. Still it caused flooding and property damage multiple times in July.	7/29/2023 7:00 AM
6	driveway washout	7/28/2023 10:46 AM
7	Fields	7/28/2023 9:58 AM
8	Just from rain & standing water	7/28/2023 9:42 AM

Cavendish Climate Impact Survey

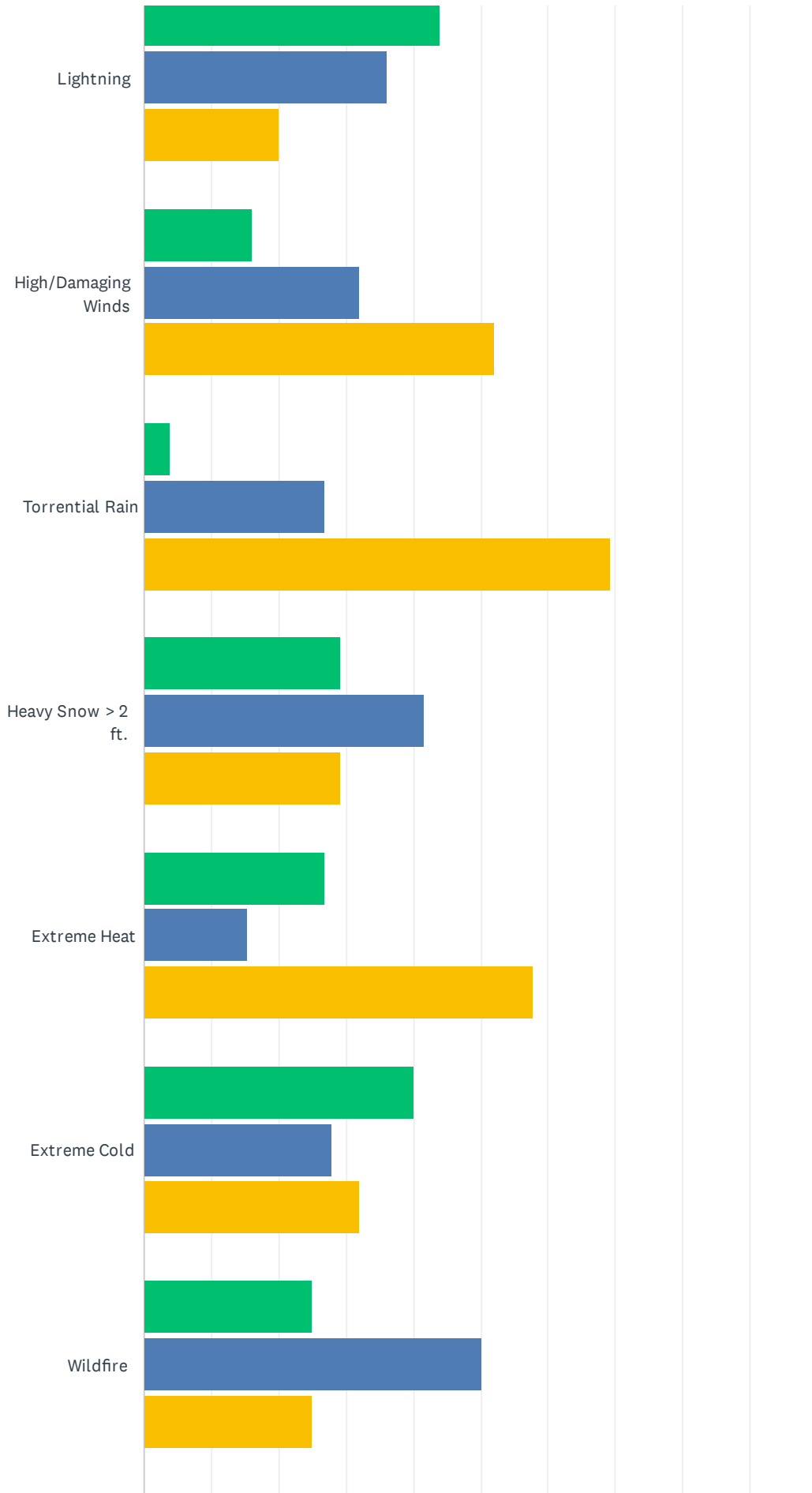
9	Studio space- in slab	7/28/2023 7:07 AM
10	Driveway	7/28/2023 5:32 AM

Q5 How concerned are you about the following natural hazards?

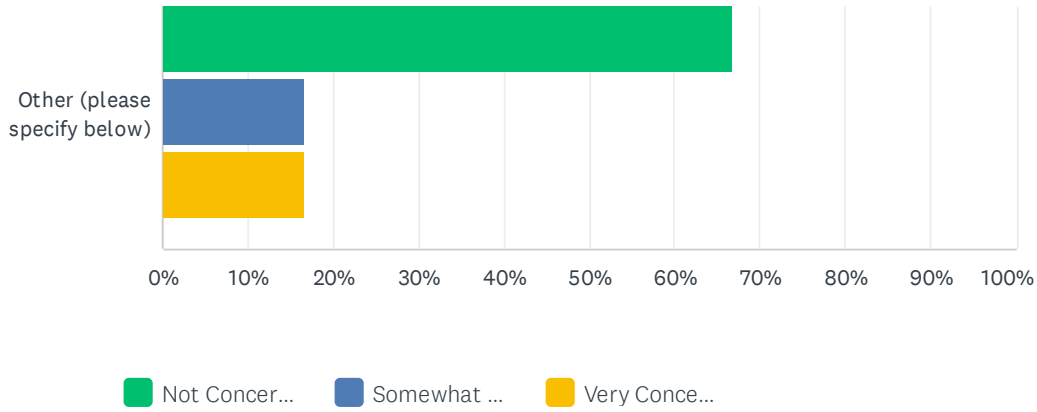
Answered: 29 Skipped: 6



Cavendish Climate Impact Survey



Cavendish Climate Impact Survey



	NOT CONCERNED	SOMEWHAT CONCERNED	VERY CONCERNED	TOTAL
Drought	26.92% 7	30.77% 8	42.31% 11	26
Erosion	11.54% 3	42.31% 11	46.15% 12	26
River/Stream Flooding	3.57% 1	14.29% 4	82.14% 23	28
Street Flooding	11.11% 3	22.22% 6	66.67% 18	27
Flooding at Residence/Business	22.22% 6	25.93% 7	51.85% 14	27
Hail Storm	48.00% 12	40.00% 10	12.00% 3	25
Lightning	44.00% 11	36.00% 9	20.00% 5	25
High/Damaging Winds	16.00% 4	32.00% 8	52.00% 13	25
Torrential Rain	3.85% 1	26.92% 7	69.23% 18	26
Heavy Snow > 2 ft.	29.17% 7	41.67% 10	29.17% 7	24
Extreme Heat	26.92% 7	15.38% 4	57.69% 15	26
Extreme Cold	40.00% 10	28.00% 7	32.00% 8	25
Wildfire	25.00% 6	50.00% 12	25.00% 6	24
Other (please specify below)	66.67% 4	16.67% 1	16.67% 1	6

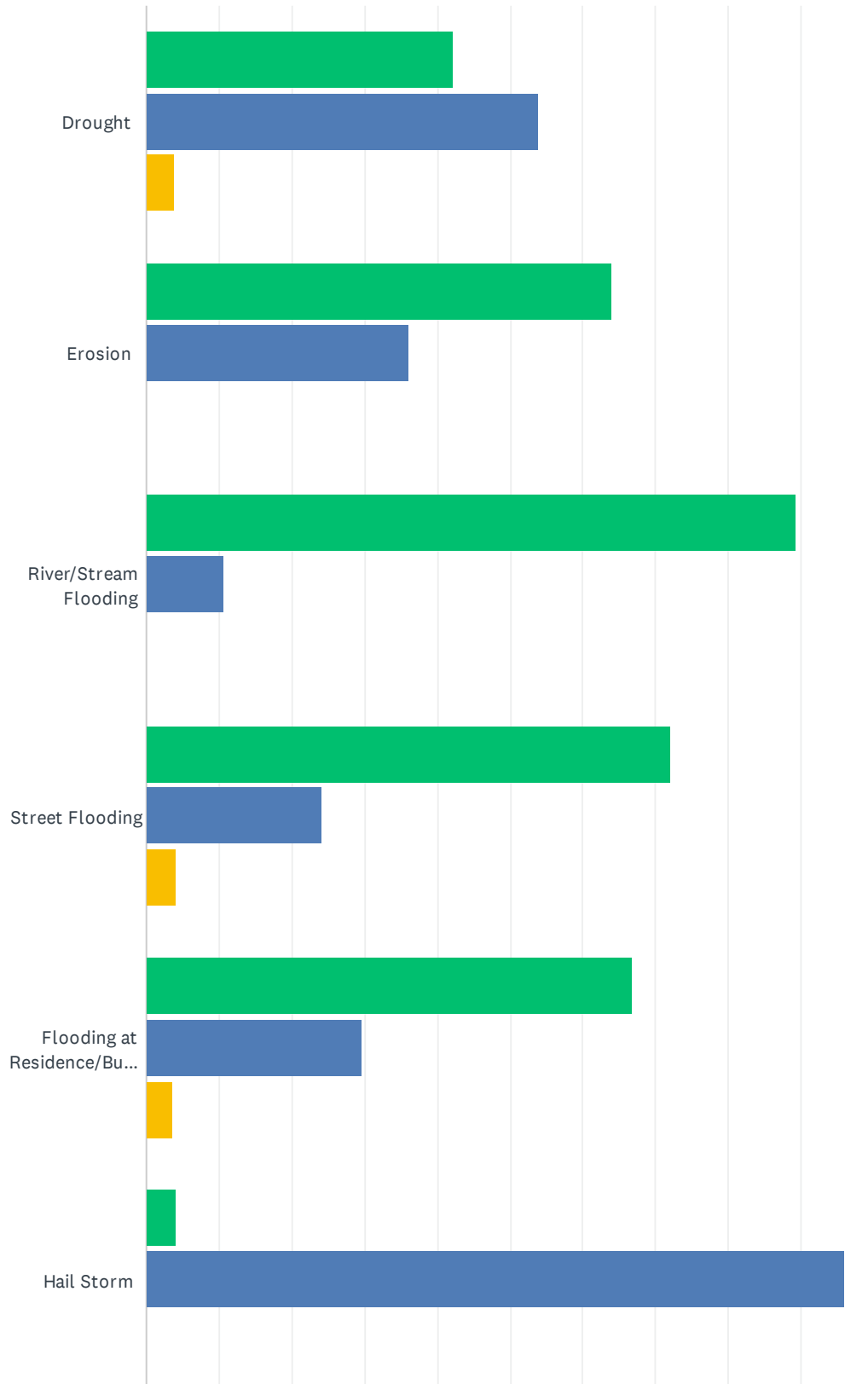
#	OTHER (PLEASE SPECIFY)	DATE
1	invasive plants, increasing pests to trees (ie emerald ash borer), increasing population of ticks	7/29/2023 11:44 AM
2	Driveway construction which causes regular road washouts.	7/29/2023 8:14 AM
3	The planet earth is billions of years old and our climate has been and always will be harsh for human beings	7/28/2023 6:38 PM

Cavendish Climate Impact Survey

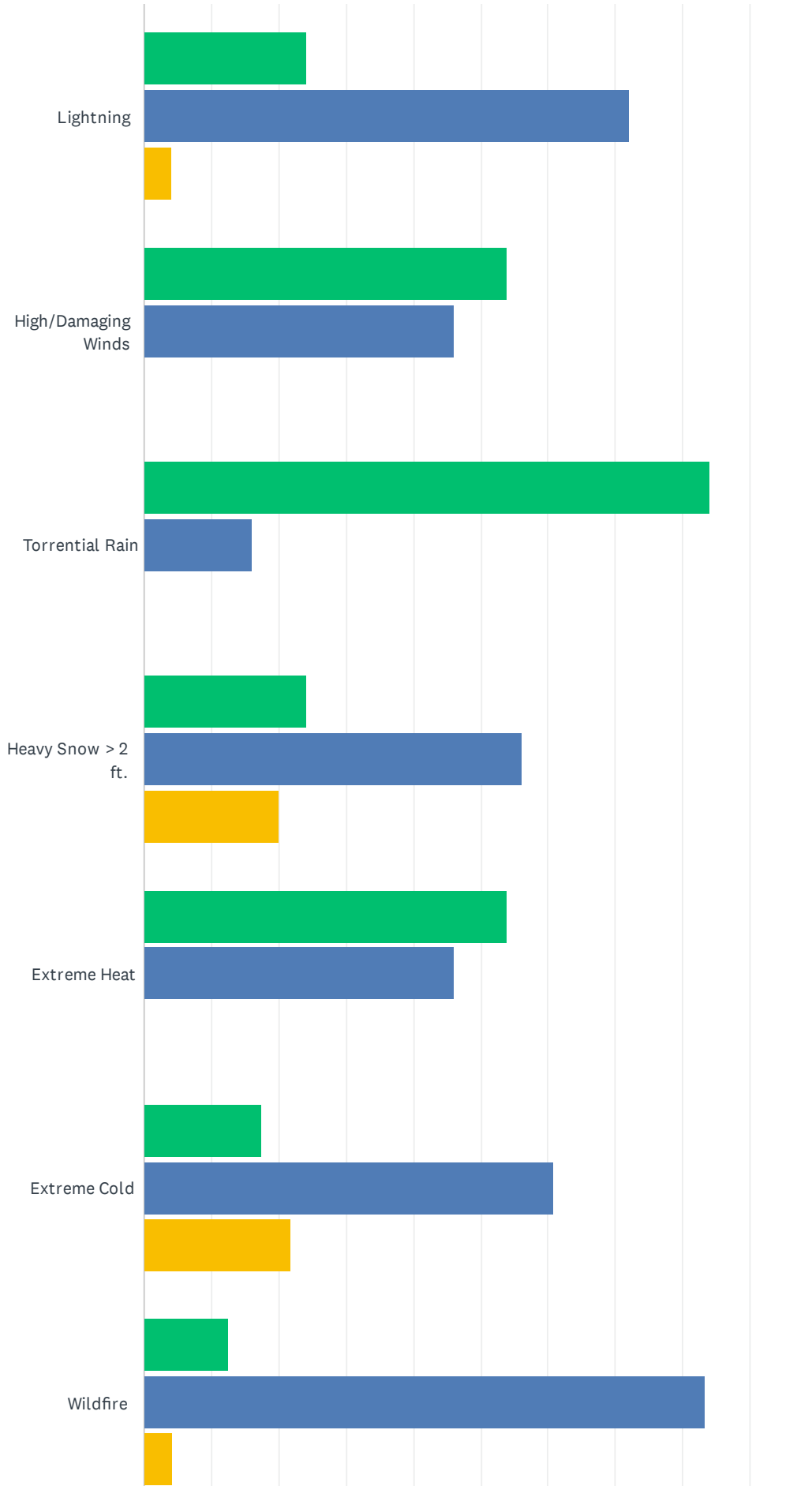
4	Disruption of the climate, changes in flora and fauna, unpredictability of seasons	7/28/2023 9:42 AM
5	Late killing Frost	7/28/2023 6:07 AM

Q6 Over the last 10 years, have you noticed an increase or decrease in the occurrences or intensity of any of the following hazards?

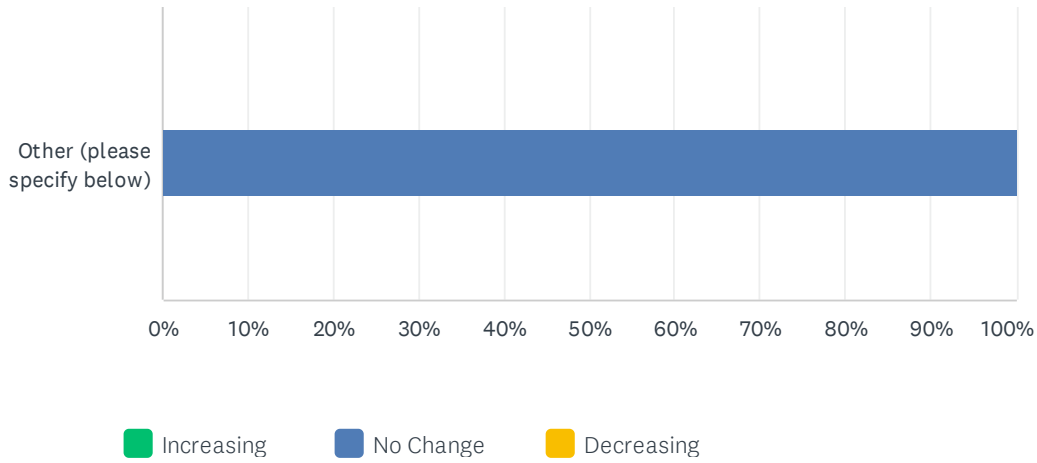
Answered: 28 Skipped: 7



Cavendish Climate Impact Survey



Cavendish Climate Impact Survey



	INCREASING	NO CHANGE	DECREASING	TOTAL
Drought	42.31% 11	53.85% 14	3.85% 1	26
Erosion	64.00% 16	36.00% 9	0.00% 0	25
River/Stream Flooding	89.29% 25	10.71% 3	0.00% 0	28
Street Flooding	72.00% 18	24.00% 6	4.00% 1	25
Flooding at Residence/Business	66.67% 18	29.63% 8	3.70% 1	27
Hail Storm	4.00% 1	96.00% 24	0.00% 0	25
Lightning	24.00% 6	72.00% 18	4.00% 1	25
High/Damaging Winds	53.85% 14	46.15% 12	0.00% 0	26
Torrential Rain	84.00% 21	16.00% 4	0.00% 0	25
Heavy Snow > 2 ft.	24.00% 6	56.00% 14	20.00% 5	25
Extreme Heat	53.85% 14	46.15% 12	0.00% 0	26
Extreme Cold	17.39% 4	60.87% 14	21.74% 5	23
Wildfire	12.50% 3	83.33% 20	4.17% 1	24
Other (please specify below)	0.00% 0	100.00% 2	0.00% 0	2

#	OTHER (PLEASE SPECIFY)	DATE
1	Increases in insects and insect damage	7/29/2023 8:14 AM
2	The carbon the globalists want to reduce is you.	7/28/2023 6:38 PM

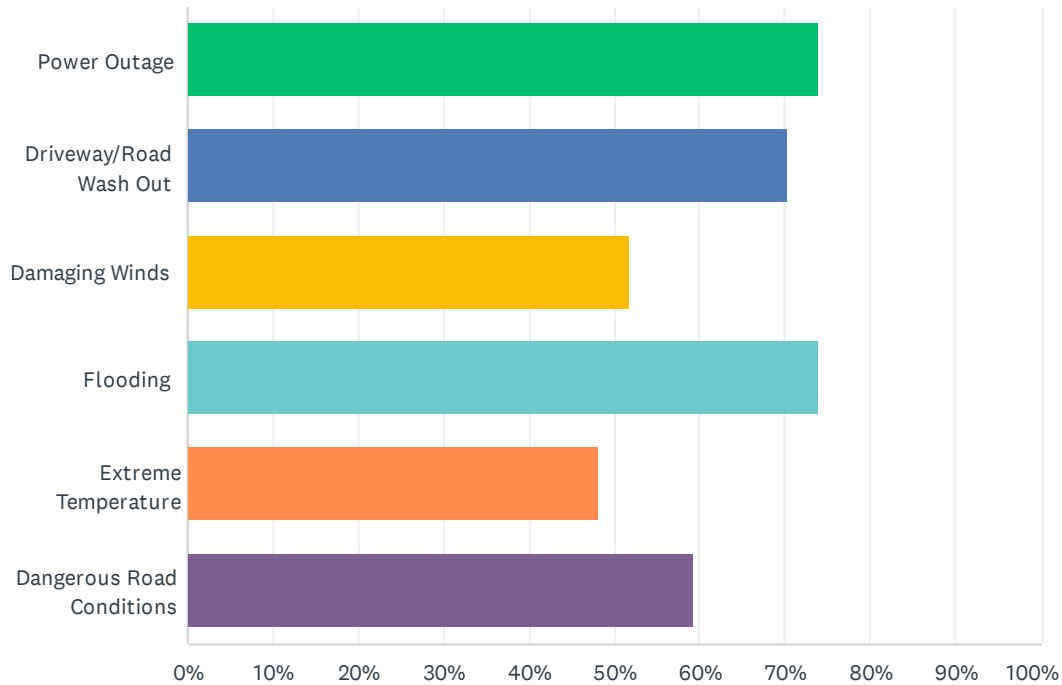
Q7 To what do you think the change(s) (if applicable) can be attributed?

Answered: 23 Skipped: 12

#	RESPONSES	DATE
1	Climate change	7/29/2023 2:30 PM
2	Climate change and land use management	7/29/2023 11:44 AM
3	Lack of dredging of brooks and Black River	7/29/2023 11:05 AM
4	Climate change Not being able to dredge rivers or strea, to make water flow more efficient	7/29/2023 9:37 AM
5	Changing weather patterns	7/29/2023 8:36 AM
6	Global climate change, the impact of huge corporations destroying the planet for greed and leaving our children and their with a planet that is inhabitable. My youngest child has lived over half of their life in a state of emergency.	7/29/2023 8:20 AM
7	Worldwide industrial expansion, massive forest fires and drought. Greed.	7/29/2023 8:14 AM
8	Shifting weather patterns due to climate change. Changes in river patterns	7/29/2023 7:00 AM
9	Climate change	7/29/2023 4:57 AM
10	Cloud seeding, global dimming, Haarp. If you dont believe it you are a moron and deserve whats coming.	7/28/2023 6:38 PM
11	Climate change	7/28/2023 5:32 PM
12	Climate change	7/28/2023 10:46 AM
13	Natural	7/28/2023 9:58 AM
14	Global warming and illegal activities.	7/28/2023 9:48 AM
15	global warming	7/28/2023 9:42 AM
16	Extreme changes in temperature. Sudden and persistent weather patterns.	7/28/2023 8:39 AM
17	Climate Change	7/28/2023 8:28 AM
18	Human consumption of fossil fuels - and general disregard of our ecosystems	7/28/2023 7:07 AM
19	Global warming	7/28/2023 6:26 AM
20	Green mountain power not keeping up with line maintenance/relocation	7/28/2023 6:07 AM
21	These changes are a result of climate change.	7/28/2023 5:32 AM
22	Since Irene, 20 mile stream became very shallow. Ice James in winter	7/28/2023 1:20 AM
23	more variable temperature and weather patterns due to climate change	7/24/2023 2:32 PM

Q8 Have any of the following events impacted you?

Answered: 27 Skipped: 8



ANSWER CHOICES	RESPONSES
Power Outage	74.07% 20
Driveway/Road Wash Out	70.37% 19
Damaging Winds	51.85% 14
Flooding	74.07% 20
Extreme Temperature	48.15% 13
Dangerous Road Conditions	59.26% 16
Total Respondents: 27	

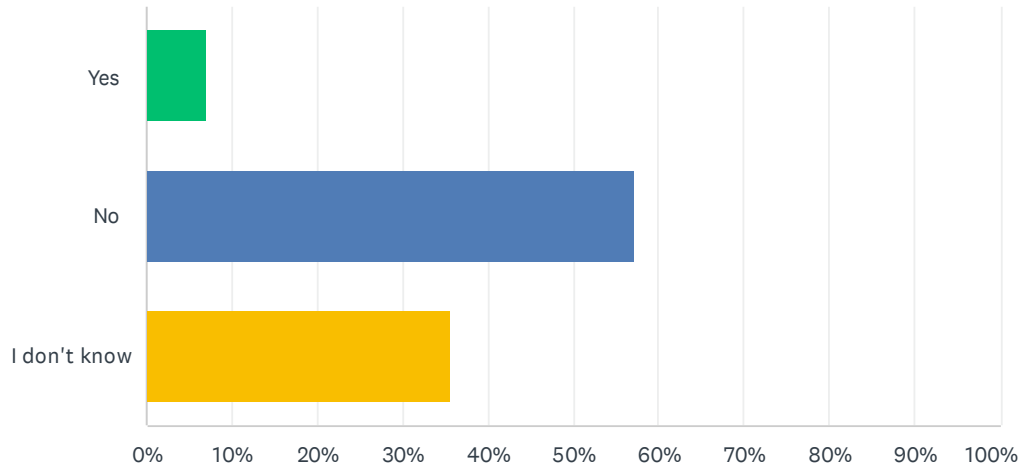
#	PLEASE PROVIDE A BRIEF EXPLANATION OF HOW THE EVENT(S) IMPACTED YOU:	DATE
1	My home was not accessible by vehicle and I could not get across the driveway washout. The road was very difficult to navigate one way and completely impassable in the other direction. Flooding in my basement destroyed my freezer and damaged my furnace.	8/12/2023 6:10 PM
2	The road repairs currently underway are superlative. Enlarging culverts to accommodate above average flow seems to be helping. Falling trees from saturated, destabilized ground lead to power outages, increasing temperature fluctuations make it ever more challenging to grow food, and intense storms demand costly repairs.	7/29/2023 5:13 PM
3	Unable to get to work or any other places	7/29/2023 2:31 PM
4	Have had to use generator more frequently	7/29/2023 9:38 AM
5	Limited travel, ability to work and kids get to school, property damage and stress	7/29/2023 8:40 AM

Cavendish Climate Impact Survey

6	Home and yard flooded in 2023, my parents and in laws have been without power for days on end. Roads have washed away. In addition, the global pandemic had all of the known effects and is likely also associated with climate change and/or humans living in close proximity to wildlife.	7/29/2023 8:22 AM
7	In brief, we have experienced all of these situations at various times. The impact has generally led us to be prepared well in advance of the event and to do what we are able to minimize our impact on the environment and community.	7/29/2023 8:20 AM
8	This year we had major tree damage from the March storm and flooding of driveway and property due to July storms. Not bothering with property damage until after Hurricane season.	7/29/2023 7:01 AM
9	High water up to cellar	7/29/2023 4:59 AM
10	Adapt and overcome. Be prepared. Its Vermont. Samuel de Champlain 500 years ago wrote about the extreme weather in Vermont.	7/28/2023 6:39 PM
11	Being trapped at the house with all roads out impassible is really tough. Loosing power from wind damage for 4 days or more is almost as bad. Drainage is getting worse and worse from silt build up and creates a lake in my yard, basement floods, etc.	7/28/2023 5:36 PM
12	Every winter when there is an icing-type storm, our power will go out. This has been going on for a number of years. We've been without power quite a few times for days. When the power is out, it affects the TDS internet. If TDS doesn't put their generator on, the phone lines & internet are down. Thus is concerning for the older people living up here. The cell service is not good, so quite a few still rely on their landlines. Thankfully we invested in a generator many years ago. Our house is built on ledge and we encounter "flooding" anytime it rains hard outside. Our "flooding" gas at times been up to 2 inches if the power goes out & we are at work. We had to put a small trench in the cellar and have a sump pump that basically has run non-stop for 2023. Our road didn't wash out, but the side trench did wash out in some spots this year (after having been resurfaced this past November). A huge concern is how well is the Greenbush portion of Tarbell Hill & Knapp Pond Brook going to hold up if another storm hits.	7/28/2023 3:51 PM
13	Trees down, driveway repair	7/28/2023 10:48 AM
14	Culverts not doing the job.	7/28/2023 9:49 AM
15	No running water or electricity during outage; limited car mobility on roads; fallen trees and branches; difficulty working outdoors in heat	7/28/2023 9:43 AM
16	Road Conditions: Our road is open and highly traveled however there are several weak or unstable spots susceptible to future rain storms. Flooding: Our house sits on a hill side and has always had minor issues with run off in the spring. We now have had several years where our normal mitigation systems have not been sufficient to manage the intensity and frequency of these storms.	7/28/2023 8:43 AM
17	Wash outs and flooding have created temporary isolation and prevented access to my home.	7/28/2023 7:57 AM
18	My yard becomes a catchment area for rainwater coming off the fields and the road. Water in basement was serious problem; vegetable gardens were also impacted. Erosion of road bed causes driveway and yard to become silted with gravel and sand. Water flowed through my studio causing extensive damage. Four room sized rugs were damaged as well as two wooden cabinets. Cost of repair work and replacement will run around \$3000	7/28/2023 7:19 AM
19	The winter road conditions have been horrendous like six months of mud season as they now thaw frequently	7/28/2023 6:09 AM
20	I currently have over \$25000 worth of damage to my property. Some damage was made worse my trespassing ATV riders who tore up water berms and filled in channels, both purposely with a shovel and as a result of wreckless and damaging riding.	7/28/2023 5:36 AM

Q9 Do you know if your property is located in a "Special Flood Hazard Area" (Zone A, AE, VE)

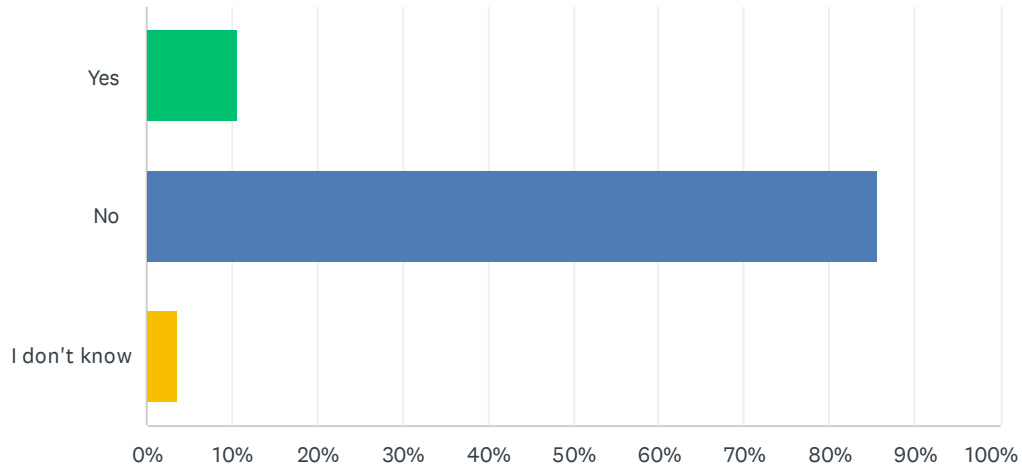
Answered: 28 Skipped: 7



ANSWER CHOICES	RESPONSES	
Yes	7.14%	2
No	57.14%	16
I don't know	35.71%	10
TOTAL		28

Q10 Do you have flood insurance through the National Flood Insurance Program?

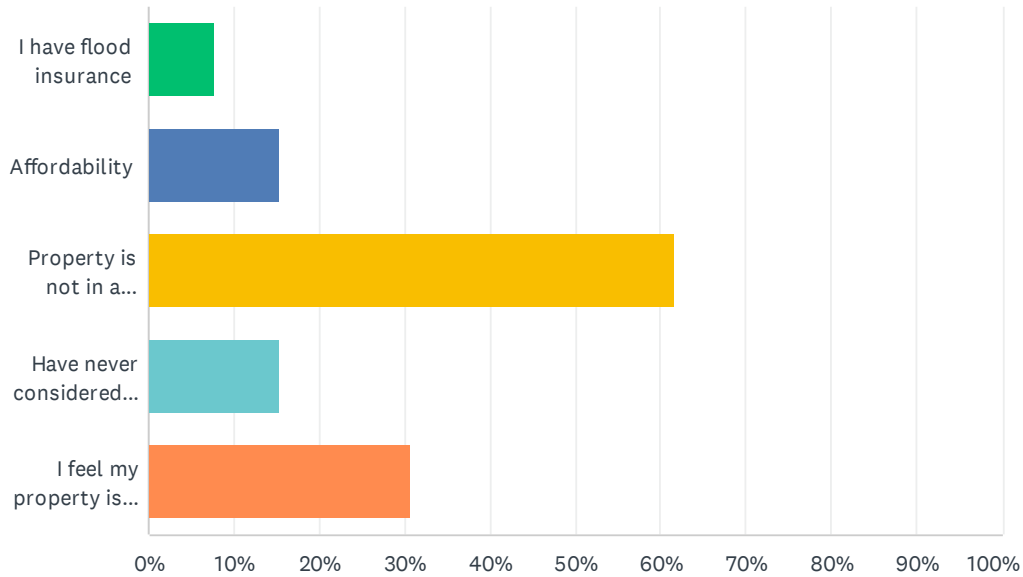
Answered: 28 Skipped: 7



ANSWER CHOICES	RESPONSES	
Yes	10.71%	3
No	85.71%	24
I don't know	3.57%	1
TOTAL		28

Q11 If you do not have flood insurance, please select the reasons that may apply:

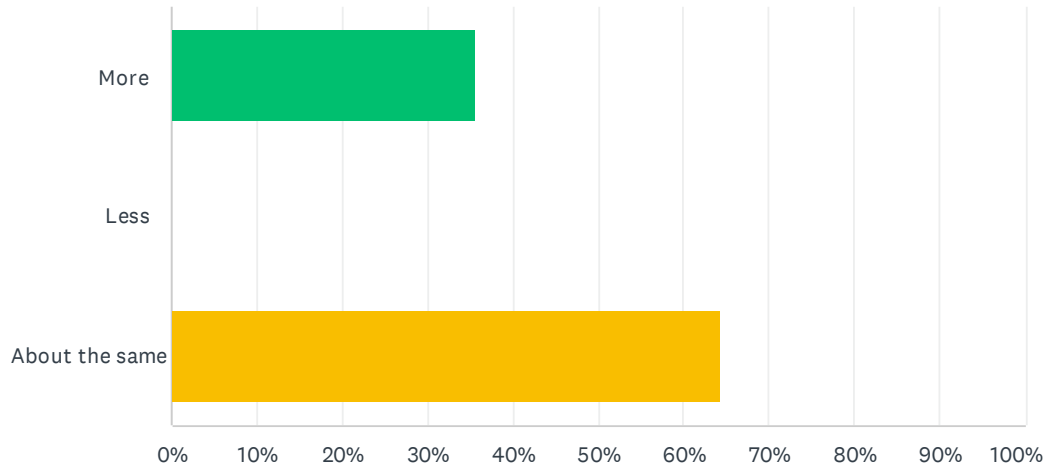
Answered: 26 Skipped: 9



ANSWER CHOICES	RESPONSES	
I have flood insurance	7.69%	2
Affordability	15.38%	4
Property is not in a special flood hazard area	61.54%	16
Have never considered carrying flood insurance	15.38%	4
I feel my property is "High and Dry"	30.77%	8
Total Respondents: 26		

Q12 Is your property about the same, less, or more prone to flooding now than it was 5 years ago?

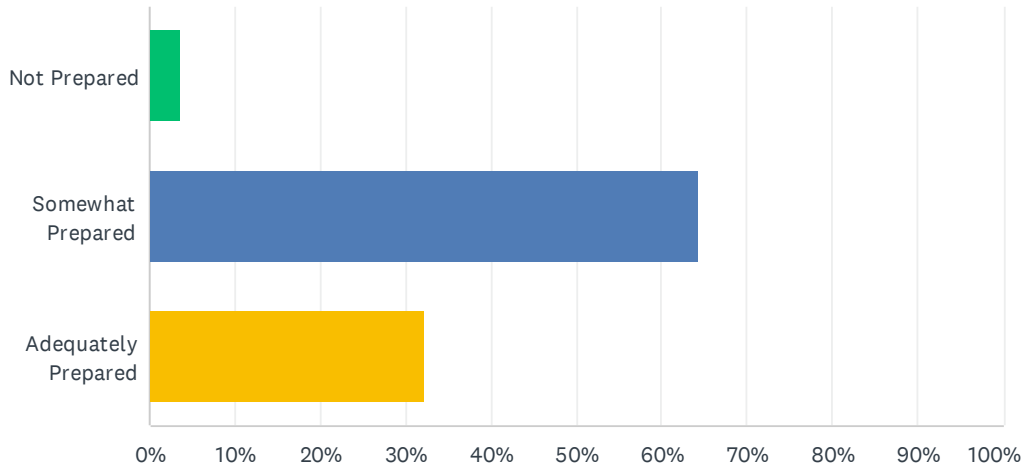
Answered: 28 Skipped: 7



ANSWER CHOICES	RESPONSES	
More	35.71%	10
Less	0.00%	0
About the same	64.29%	18
TOTAL		28

Q13 How prepared do you feel the Town of Cavendish is for impacts of natural hazard events?

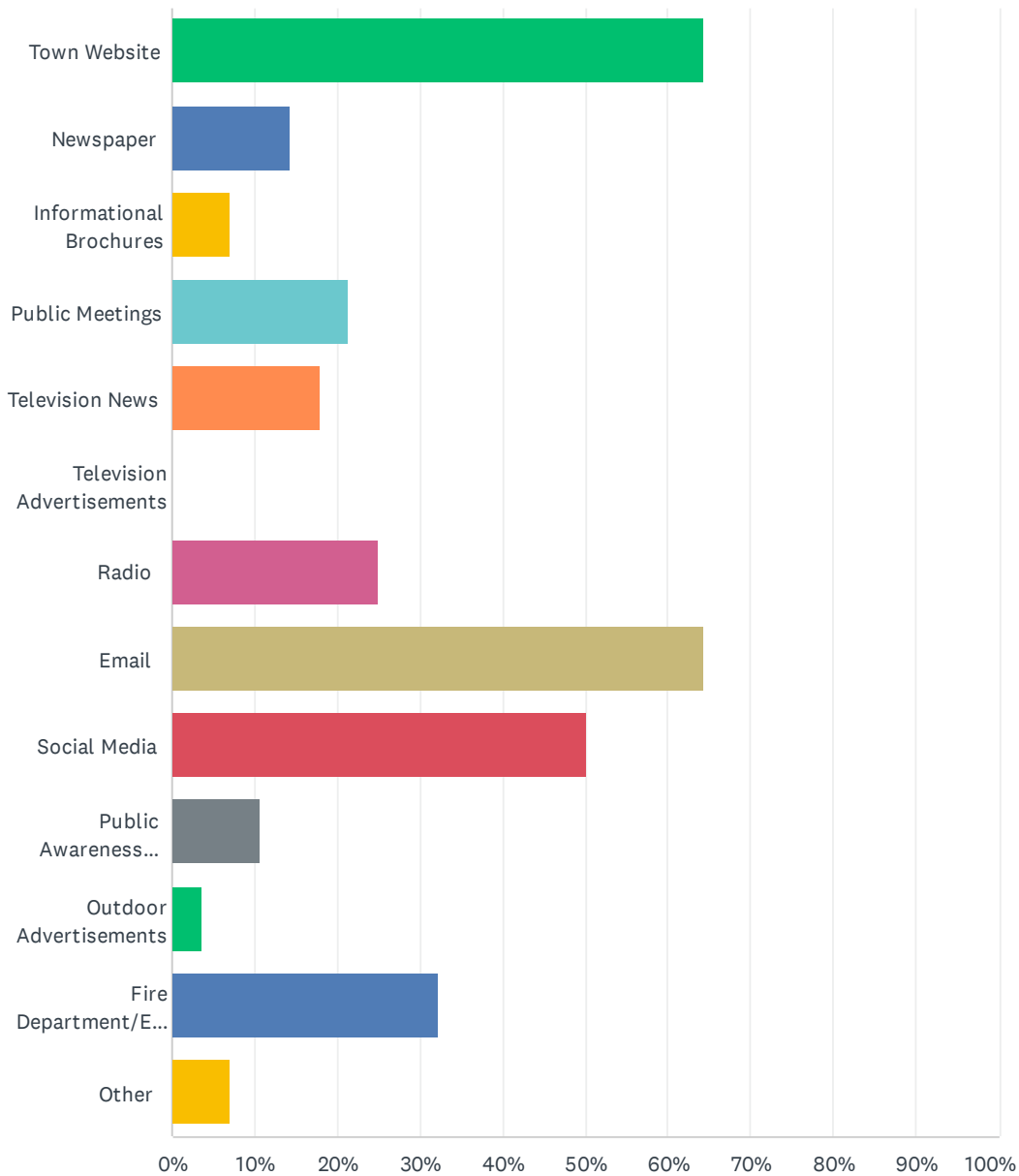
Answered: 28 Skipped: 7



ANSWER CHOICES	RESPONSES
Not Prepared	3.57% 1
Somewhat Prepared	64.29% 18
Adequately Prepared	32.14% 9
TOTAL	28

Q14 Information about natural disaster impacts and natural disaster preparedness can be communicated to the public in various ways. Of the communication methods listed below, identify the top three (3) methods that would be most effective in helping you prepare your home to withstand natural hazards.

Answered: 28 Skipped: 7



Cavendish Climate Impact Survey

ANSWER CHOICES	RESPONSES	
Town Website	64.29%	18
Newspaper	14.29%	4
Informational Brochures	7.14%	2
Public Meetings	21.43%	6
Television News	17.86%	5
Television Advertisements	0.00%	0
Radio	25.00%	7
Email	64.29%	18
Social Media	50.00%	14
Public Awareness Timeframe (i.e. Flood Awareness Week)	10.71%	3
Outdoor Advertisements	3.57%	1
Fire Department/EMS Agency	32.14%	9
Other	7.14%	2
Total Respondents: 28		

#	IF OTHER, PLEASE SPECIFY:	DATE
1	Zoom access to all town board meetings. An up to date digital map of current LOCAL road conditions.	7/30/2023 7:28 AM
2	Town facilitated social media, beyond facebook	7/29/2023 8:26 AM
3	Ham Radio	7/28/2023 6:42 PM

Q15 In your opinion, what are some steps your local government could take to reduce or eliminate the risk of future hazard damages in your neighborhood?

Answered: 21 Skipped: 14

#	RESPONSES	DATE
1	increase culvert size, install and keep culvert silt traps cleared. Hydro-seed ditches and exposed dirt drainages to minimize erosion	8/12/2023 6:17 PM
2	Replacing culverts less than 2'. Advocating the state reconfigure sections of 131 that have repeatedly washed out. Adding willows or another appropriate species (not pine) to river edges. Finish seeding culverts that were dug out a couple of years ago (if that is still an appropriate management technique). Upgrade building permit requirements in terms of flood risk. Build village centric , energy conserving housing for seniors and juniors. Repairing sidewalks to encourage foot traffic.	7/30/2023 7:28 AM
3	Dredge the Black River & other flood prone waterways	7/29/2023 2:33 PM
4	Better drainage and larger culverts Identify where water damage has occurred previously identified and find a solution.	7/29/2023 9:42 AM
5	In our area, roads being washed out is the primary concern. Better maintenance including better road grading, ditching, hardening the ditch banks properly, regular cleaning of the culverts. West Windsor is a good example to reference. Trees coming down on power lines also a problem but power line right of way maintenance is dependent on GMP/Velcro to mitigate and maintain.	7/29/2023 9:00 AM
6	1. Enforcement of compliance with Vermont regulations regarding residential driveway construction. (Example: new construction and sites on Heald Road) https://vtrans.vermont.gov/sites/aot/files/planning/documents/permittingservices/std71a.pdf	7/29/2023 9:00 AM
7	Address climate change, regulating corporations that are most responsible. I don't know specifically how to address the flooding and erosion, but I hope we have experts doing so. I fear my house, that has been here since 1890, will not survive.	7/29/2023 8:26 AM
8	Buy out of properties in major flood zones. Following FEMA standards for playing fields in flood plains. Work with the appropriate state and regional agencies on flood remediation and hazard prevention, recognizing that what's best for the river will most likely benefit us the most.	7/29/2023 7:05 AM
9	Being able to clean some of the big rocks out of the rivers around us	7/29/2023 5:03 AM
10	Road Fabric under the town dirt roads	7/28/2023 6:42 PM
11	Shore up some of the roads and bridges to be more flood resistant. Increase size of existing culverts. Clean out roadside ditches and culverts once or twice a year.	7/28/2023 6:08 PM
12	pro active tree pruning/removal, ditch work and culvert expansions	7/28/2023 11:00 AM
13	Regular maintenance and improved runoff control	7/28/2023 10:03 AM
14	Take care of culverts ditches and illegal sand pits.	7/28/2023 9:54 AM
15	My local gov't is doing a good job	7/28/2023 9:46 AM
16	I honestly do not know enough about this topic or local systems enough to comment. I think our town does an amazing job. Providing information in a variety of formats is important to continue.	7/28/2023 8:47 AM
17	I think environmental changes are bigger than solutions any town can offer, so much of the emphasis is on preparation and response.	7/28/2023 8:02 AM

Cavendish Climate Impact Survey

18	Engineering studio of alternative pattern of runoff: eg water bars at beginning of Quarry Road that would divert water into pasture rather than down road to low spot (my driveway), larger culverts on Quarry Road	7/28/2023 7:28 AM
19	Build a dam like Springfield	7/28/2023 6:29 AM
20	Compel GMP to maintain/relocate power lines; increase the size culvert and roadside drainage ditches; widen East road between chambers and Chubb hill	7/28/2023 6:19 AM
21	removal of trees along roadways, cache of emergency supplies	7/24/2023 2:36 PM

Q16 Are there any other issues regarding the reduction of risk and loss associated with hazards or disasters in the community that you think are important?

Answered: 10 Skipped: 25

#	RESPONSES	DATE
1	Prioritize carbon reduction in every decision from vehicle purchase, to energy use (both production and conservation) to building construction. Keep up the work upgrading and protecting the sewage treatment plant. Reinforce in town water pipes (some are ancient).	7/30/2023 7:28 AM
2	Helping families who are most impacted by flooding to rebuild elsewhere in Cavendish. Increasing access to home ownership and long term rentals in Cavendish.	7/29/2023 8:26 AM
3	Dont rebuild in the flood plains.	7/28/2023 6:42 PM
4	The hydro-electric dam needs the ability to be lowered or gates installed to let more water through during increased flow periods.	7/28/2023 6:08 PM
5	no re-building in flood planes	7/28/2023 11:00 AM
6	No	7/28/2023 10:03 AM
7	Dredging of the river by Mill st, bridge.	7/28/2023 9:54 AM
8	We have one central, authorized source of information, but it competes with people trying to be helpful with their own observations, many of which are inaccurate or outdated.	7/28/2023 8:02 AM
9	Coordinate more with Ludlow on the release of water on the Black River	7/28/2023 7:28 AM
10	Houses in the flood plain should be relocated and no new approvals given	7/28/2023 6:19 AM

Q17 Other Comments:

Answered: 8 Skipped: 27

#	RESPONSES	DATE
1	The emergency coordinator should only have that one role. The emergency coordinator should not be serving as assistant fire chief and emergency coordinator at the same time. They are both full time jobs during an emergency and two different people should fill these roles.	7/31/2023 6:15 PM
2	I realize the goals are likely above our means however public leadership is the first step.	7/30/2023 7:28 AM
3	I think it's important to maintain back roads while keeping them narrow, which is a natural speed control method. With their old stone walls, they are a vital element in our town's charming character.	7/29/2023 9:00 AM
4	Thank you, Malia!	7/29/2023 9:00 AM
5	Dont be a sheep baaa. Baaa. baaa!	7/28/2023 6:42 PM
6	Catastrophic flooding happened twice in the last 20 years and it will happen again. Rebuilding and restoring should keep this in mind.	7/28/2023 11:00 AM
7	This is a small town with an impressive infrastructure. You know leadership is doing its best and the community responds in kind.	7/28/2023 8:02 AM
8	The town and all the volunteers who helped did a fantastic job. Thank you to everyone	7/28/2023 7:28 AM

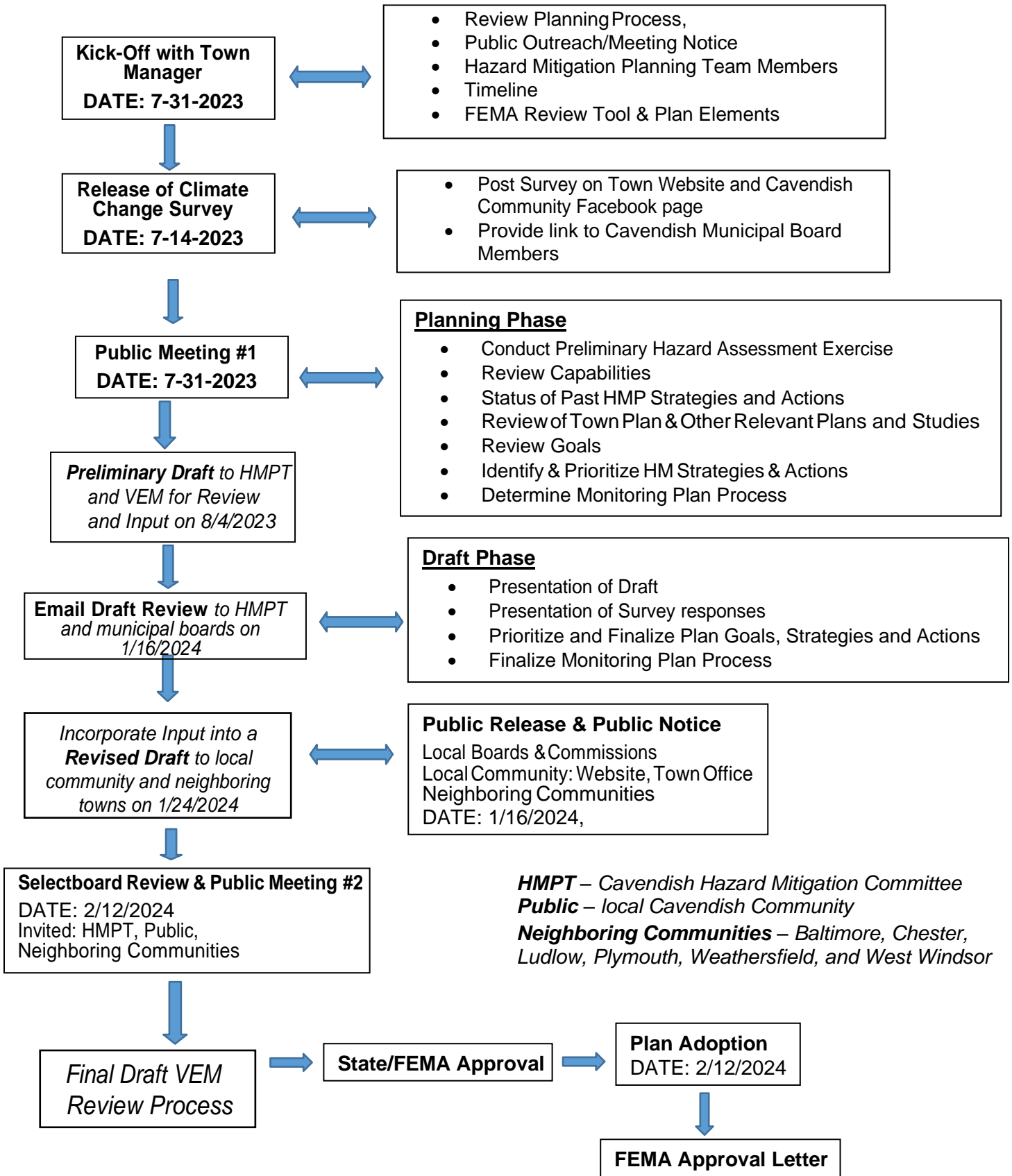
Appendix C

Process Flow Chart

APPENDIX C

Town of Cavendish

2023-2028 Local Hazard Mitigation Plan



Appendix D

Town Plan Review

Cavendish 2020 Town Plan Review

Identified Goals and Recommendations Related to Hazard Mitigation

Chapter 10: Flood Resilience: The purpose of this Chapter is to identify areas that are prone to flooding and erosion hazards, designate areas to be protected, and create policies and strategies that promote community flood resiliency.

1. **Special Flood Hazard Areas:** These are comprised of floodway and floodplain areas, based on FEMA flood insurance rate mapping (D-FIRM) information. Floodplains represent inundation flooding hazards. These floodplains lie mainly along the Black River and Twenty-Mile Stream. There is a total of 65 existing structures located within these flood hazard areas, most of which are within the villages of Proctorsville and Cavendish, and in the Whitesville area.
2. **River Corridors:** River corridors, as mapped by the Agency of Natural Resources, represent portions of town that are particularly at risk of river-related erosion hazards. The mapped river corridors are along the Black River, Twenty Mile Stream, North Branch of the Black River, and some of the larger tributaries.
3. **Lands Adjacent to Smaller Streams:** Other areas may also be at risk from flooding and/or erosion hazards, including land areas along the shoreline of the other streams and surface water bodies in town. The map depicts streams in Cavendish, but – at this time – good data on perennial streams is not available.

The Town Plan Identified the following areas for their role in promoting flood resilience in Cavendish:

1. **Special Flood Hazard Areas:** Generally, new development is discouraged within these flood hazard zones. Any development in these flood hazard areas require local permits and must meet the applicable standards to mitigate against inundation flooding.
2. **River Corridors:** A significant portion of the damages sustained during Tropical Storm Irene were related to river erosion hazards. The Town amended the Flood Hazard Area Regulations that regulates development within river corridors as mapped by the Vermont Agency of Natural Resources.
3. **Stream Setbacks:** Since the mapped special flood hazard areas and river corridors do not include all areas that may be at risk from flooding and erosion hazards, development along the other perennial streams in Town is also at risk. It is recommended that new development be avoided within a minimum area of 50 feet from the stream, measured from the top of the stream bank or slope. (The Planning Commission is also considering including provisions to regulate development along these smaller perennial streams, as recommended in the State flood regulations.)
4. **Wetlands:** Along with their other benefits, wetlands serve an important function to help mitigate flood damages. Wetlands are generally regulated by the State Wetland Rules and Act 250. The Town should coordinate with the Black River Action Team, ANR's Watershed Coordinator, MARC and others to seek grants to protect or improve wetlands for the purpose of flood water retention.
5. **Upland Areas:** Natural vegetation in upland areas and areas of steep slopes contributes to flood resiliency by maximizing on-site infiltration of storm water, which reduces the impacts upon downhill properties. The Town encourages residents in these types of areas to consider taking steps, such as limiting tree cutting, minimizing site disturbances, and using special design techniques to manage stormwater on site.

Flood Resilience Policies and Strategies:

1. Development plans for lands subject to periodic flooding must comply with local, state and federal flood hazard regulations in order to protect the health, safety and welfare of the public.

2. Any development within the river corridor areas must meet the following standards. For the purposes of this standard, "development" includes any human-made change to structures or land, including but not limited to new structures, improvements of or additions to existing structures, mining, dredging, filling, grading, paving excavating, drilling, or the storage of equipment or materials.

- a) Improvement of existing structures, and any associated fill as needed to comply with elevation requirements in the Special Flood Hazard Area shall not decrease the distance between the existing primary building and the top of bank;
- b) Locate accessory structures within 50 feet of the existing primary building provided that the location does not decrease the distance between the existing primary structure and the top of bank;
- c) Development shall not increase the susceptibility of that or other properties to fluvial erosion damage;
- d) Development shall not increase the potential of materials being swept onto other lands or into the stream and causing damage to other properties from fluvial erosion;
- e) Development shall not cause an undue burden on public services and facilities including roads, bridges, culverts, and emergency service providers during and after fluvial erosion events;
- f) Bridge and culvert projects must have a Stream Alteration Permit; and Cavendish Town Plan Town Vote March 2020;
- g) Channel management activities must be authorized by the Agency of Natural Resources.

3. Holding meetings or providing materials to inform property owners about these flood hazard risks and steps they can take to mitigate their risks (e.g. flood insurance, retrofit projects, property buy-outs, avoid new encroachments in harms-way).

4. Seek grant applications for flood mitigation projects, in coordination with partners, as identified in the Phase 2 stream geomorphic assessment or Basin 10 Plan.

5. Encourage property owners in upland areas to utilize techniques that help to maximize on-site storm water infiltration and minimize off-site storm water flows (e.g. best management practices, green infrastructure or low impact development techniques).

Flood Resilience Recommendations:

1. Provide information to property owners within the identified flood and erosion hazard zones on what these risks involve and how to lessen future damages.

2. Implement strategies in the All-Hazard Mitigation Plan, including:

- a) Replace undersized culverts.
- b) Purchase land along Winery Road for flood storage.
- c) Encourage property owners to tie down all non-anchored structures.
- d) Identify repeat flood damage properties and develop a system to prevent and/or eliminate the potential for future damage.
- e) Maintain current NFIP status.

From Natural Resources Section

- The Black River is valued as both a scenic and recreational resource; in order to protect that resource, development is prohibited along the Black River corridor when such values will be negatively impacted.
- Naturally vegetated buffer strips of at least 50-100 feet shall be left next to all rivers, lakes, and ponds, and at least 50 feet next to streams and wetlands, so as to filter pollution, prevent erosion, and protect fisheries and wildlife habitat.

Appendix E

Vermont Historic Floods

Vermont Historical Flood Events

Event	Date	Description	Impact or Extent of Damage
Great Flood of 1927	November 3, 1927	After a wet October, rivers were swollen and the ground was saturated. Nine inches of rain fell in a 36-hour period triggering disastrous flooding. The month of October saw 150% greater rainfall than normal and lack of vegetation due to de-forestation may have reduced the ground's ability to absorb water. Though all of New England was affected, Vermont was devastated. The state flooded from Newport to Bennington, with the Winooski River Valley the hardest hit. Deadliest disaster in Vermont history.	<ul style="list-style-type: none"> ➤ 84 people perished ➤ 9,000 left homeless ➤ Many roads, countless homes and over 1,200 bridges washed away ➤ Over \$28 MM in damages (\$404 million in current \$s)
The Great New England Hurricane of 1938	September 21, 1938	One of the most powerful and destructive hurricanes to hit southern New England and the region of Southeast Vermont with winds over 100 mph. Authorities were unaware of the magnitude so no evacuation procedures were instituted and very few precautions were taken. The only tropical cyclone to make a direct hit on Vermont in recorded history. Hurricane-force winds caused extensive damage to trees, buildings, and power lines.	<ul style="list-style-type: none"> ➤ 600 people perished in southern New England, only 5 in Vermont ➤ Over 2,000 miles of roads were blocked taking months to reopen ➤ Vermont maple and sugar groves were damaged ➤ Over \$300 MM in damages (\$5 Billion in current \$'s)
Tropical Storm Irene	September 1, 2011	Tropical Storm Irene tracked north northeast across eastern New York and western New England producing widespread flooding, and damaging winds across the region. The greatest impact across central and southern Vermont was due to catastrophic flash flooding as a result of 4 to 7+ inches of rainfall which occurred across all of Windham and Windsor County, especially in the foothills of the Green Mountains. Several dozen roads (state and local), including Routes 4, 12, 12A, 100, 103, 107 and 131, as well as several bridges were washed out or suffered severe damage. Several communities within Windsor County were isolated due to loss infrastructure. Dozens of homes and businesses experienced severe flooding as well as major losses to farms and livestock.	<ul style="list-style-type: none"> ➤ Frequent wind gusts of 55-60 mph, peak gusts at 85 mph. ➤ 18,000 customers in Windham County lost power. ➤ Greatest single-day rainfall in Vermont's recorded history. ➤ Rainfall averaged 4 to 8 inches, and up to 11 inches in some areas over a 12-hour period. ➤ There were nearly 2400 roads, 800 homes/businesses, 300 bridges and a half dozen railroad tracks destroyed or damaged from the flooding caused by Irene. ➤ \$18.7M estimated in Public and Individual FEMA Assistance.

Appendix F

July 2023 Flood Damage

Town of Cavendish

Flood Damage of July 2023

As reported by the community 7-31-2023

Businesses Impacted

- Smokin Bowls (Route 103) Not opened
- Black River (Route 103) Not opened
- Murdocks (P Green) Opened
- Outer Limits (P Green) Not opened
- Former Crows Bakery (Depot St) Not opened
- DG Body Works, Post Office (part of Pollard Black Stewart Property Management on Depot St):
Opened but sustained damage
- Red Vault Productions (Depot) heavy damage not opened. Home and studio combination
- Singletons (131) damaged but open, closed one day
- Happy Hound (Greven Rd X): Closed-dog grooming business
- Day Care at Farrar's on 131 in flood plain. Closed
- Mack Molding on 131, closed one day
- Proctorsville Fire Dept flooded basement but open
- Paw's Lodge (off Winery Rd) recently re opened
- Gethsemane Church: primarily property damage (Depot)
- Former Crow's Bakery
- Outer Limits

Greven Recreational Field

Residential Structures on the following roads were impacted

Carlton Rd: major damage to second homes

Cavendish Gulf Rd: primarily property damage

Chapman Rd, Davis Rd., Greven Rd., Greven Rd. Ext., High Street, Mill St., Mountain View, The Lane, Twentymile Stream Rd.: 2 to 3 homes impacted on each

Almost the entirety of Depot St., approximately 20 properties, including multi family structures.

Approximately 12 homes along Main St.

Roads impacted:

Essentially all roads were impacted to some degree.
Those that sustained the significant damage include:

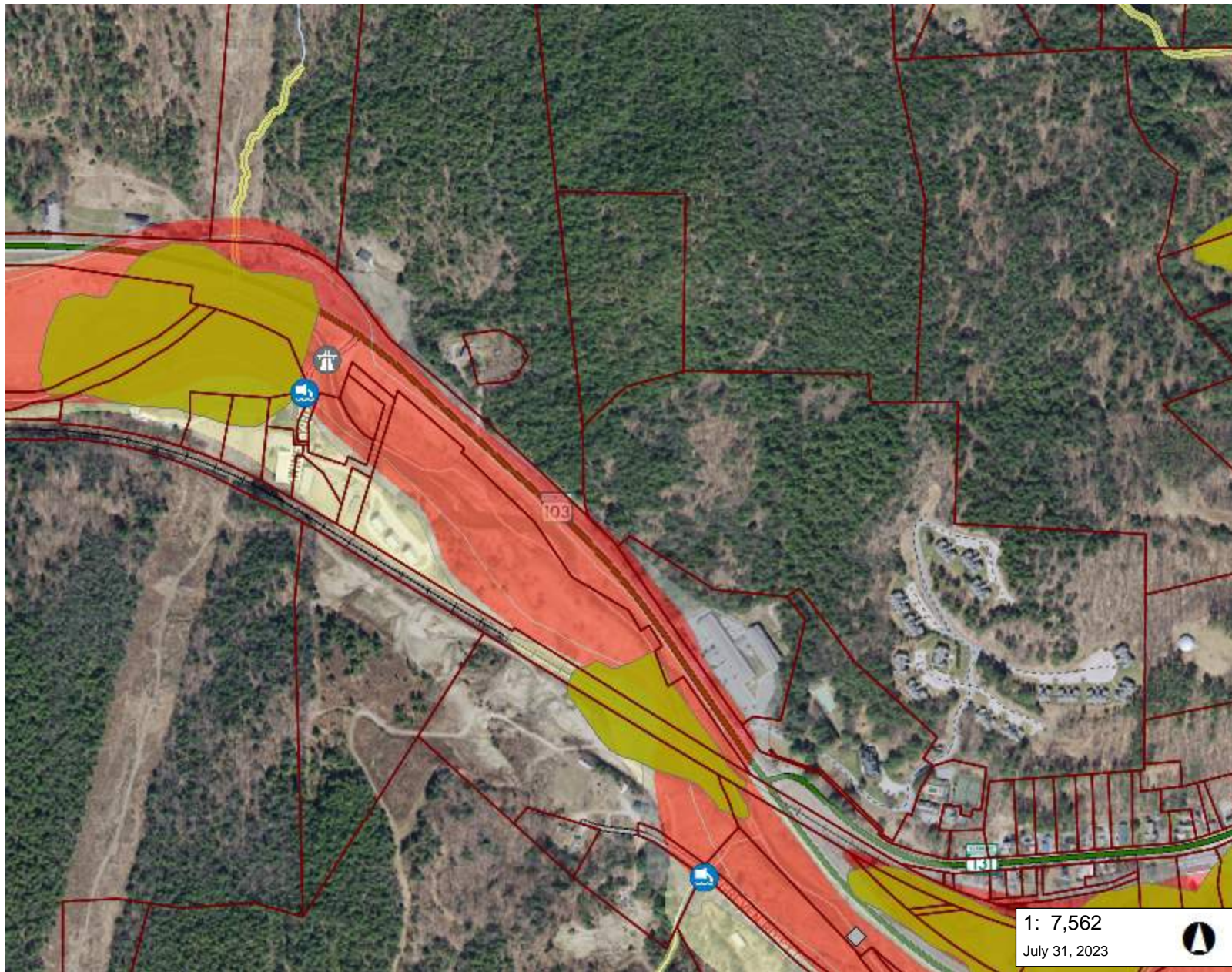
Route 103

Route 131/Main St.

Depot St.

The Lane
Whitesville Rd.
Whites Hill Rd.
Hardsgravel Rd.
Davis Rd.
Heald Rd.
Upper and lower Twenty-mile Stream Rd.
Brook Rd.
Winery Rod.
Gulf Rd.
Country Rd.
Tarbell Rd.
Stevens Rd.
Mill Rd.
Carlton Rd,
Greven Rd.
Power Plant Rd.

Appendix G
Village Flood Maps



1: 7,562
July 31, 2023

LEGEND

- Bridges
- Culvert
- Wetland - VSWI**
 - Class 1 Wetland
 - Class 2 Wetland
 - Wetland Buffer
- Hazard Class**
 - High Hazard Potential
 - Significant Hazard Potential
 - Low Hazard Potential
 - Minimal Hazard Potential
 - Undetermined Hazard Potential
- Historical Dam Location
- Flood Hazard Areas (Only FEM)**
 - AE (1-percent annual chance floodpl.)
 - A (1-percent annual chance floodpl.)
 - AO (1-percent annual chance zone feet)
 - 0.2-percent annual chance flood ha
 - River Corridors (Aug 27, 2019)
 - .5 - 2 sqmi.
 - .25-.5 sqmi.
- Parcels (standardized)
- Waterbody
- Stream**
 - Stream
 - Intermittent Stream
- Railroads

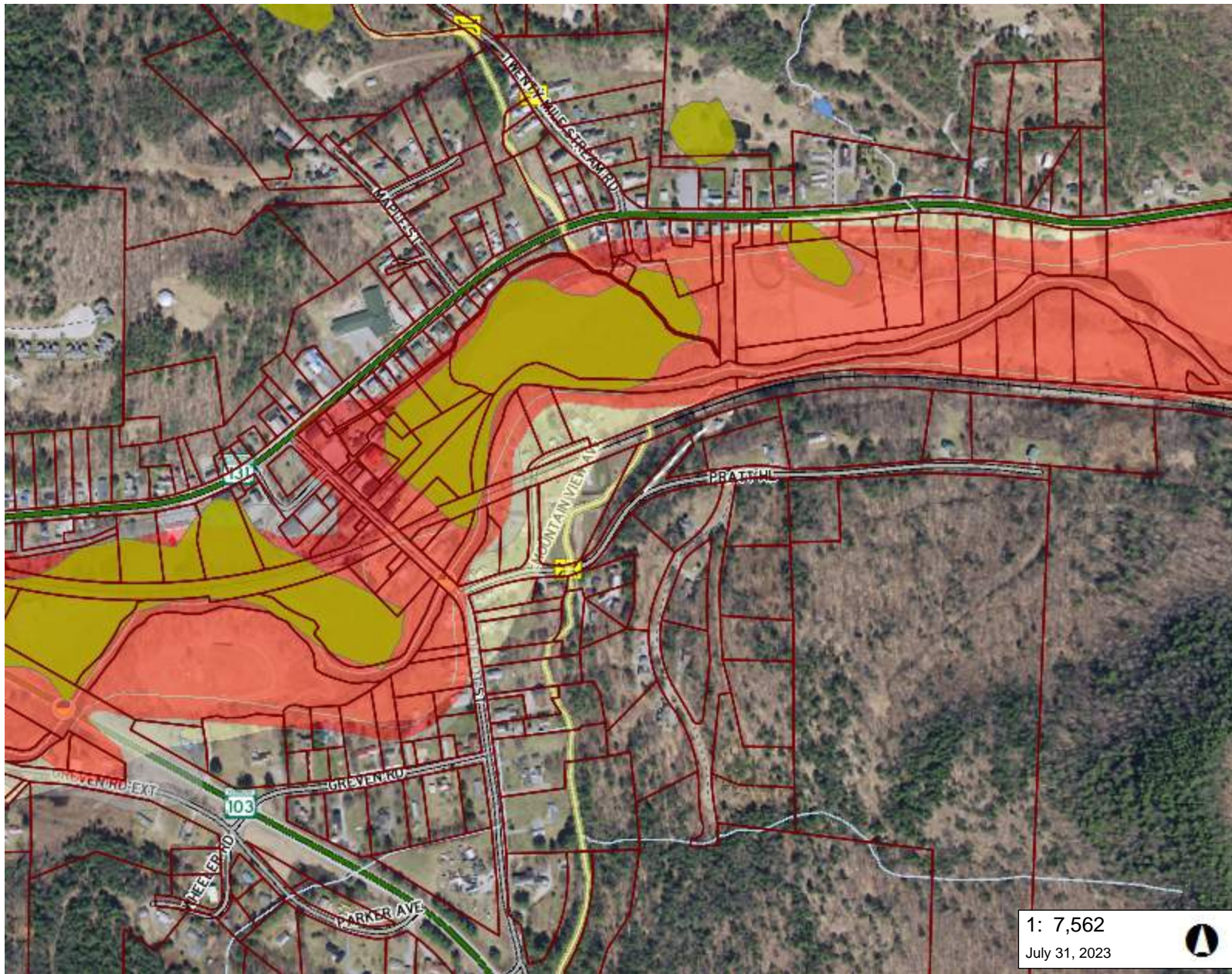
NOTES

Map created using ANR's Natural Resources Atlas

384.0 0 192.00 384.0 Meters

WGS_1984_Web_Mercator_Auxiliary_Sphere 1" = 630 Ft. 1cm = 76 Meters
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LEGEND

- Wetland - VSWI**
 - Class 1 Wetland
 - Class 2 Wetland
 - Wetland Buffer
- Flood Hazard Areas (Only FEMA)**
 - AE (1-percent annual chance floodpl.)
 - A (1-percent annual chance floodpl.)
 - AO (1-percent annual chance zone feet)
 - 0.2-percent annual chance flood ha
- River Corridors (Aug 27, 2019)**
 - .5 - 2 sqmi.
 - .25-.5 sqmi.
- Parcels (standardized)
- Waterbody
- Stream
 - Stream
 - Intermittent Stream
- VTRANS State and Town Long
- VTRANS State Short Structure
- Town Bridge
- Railroads
- Roads
 - Interstate
 - US Highway; 1
 - State Highway
 - Town Highway (Class 1)
 - Town Highway (Class 2,3)

1: 7,562
July 31, 2023

384.0 0 192.00 384.0 Meters

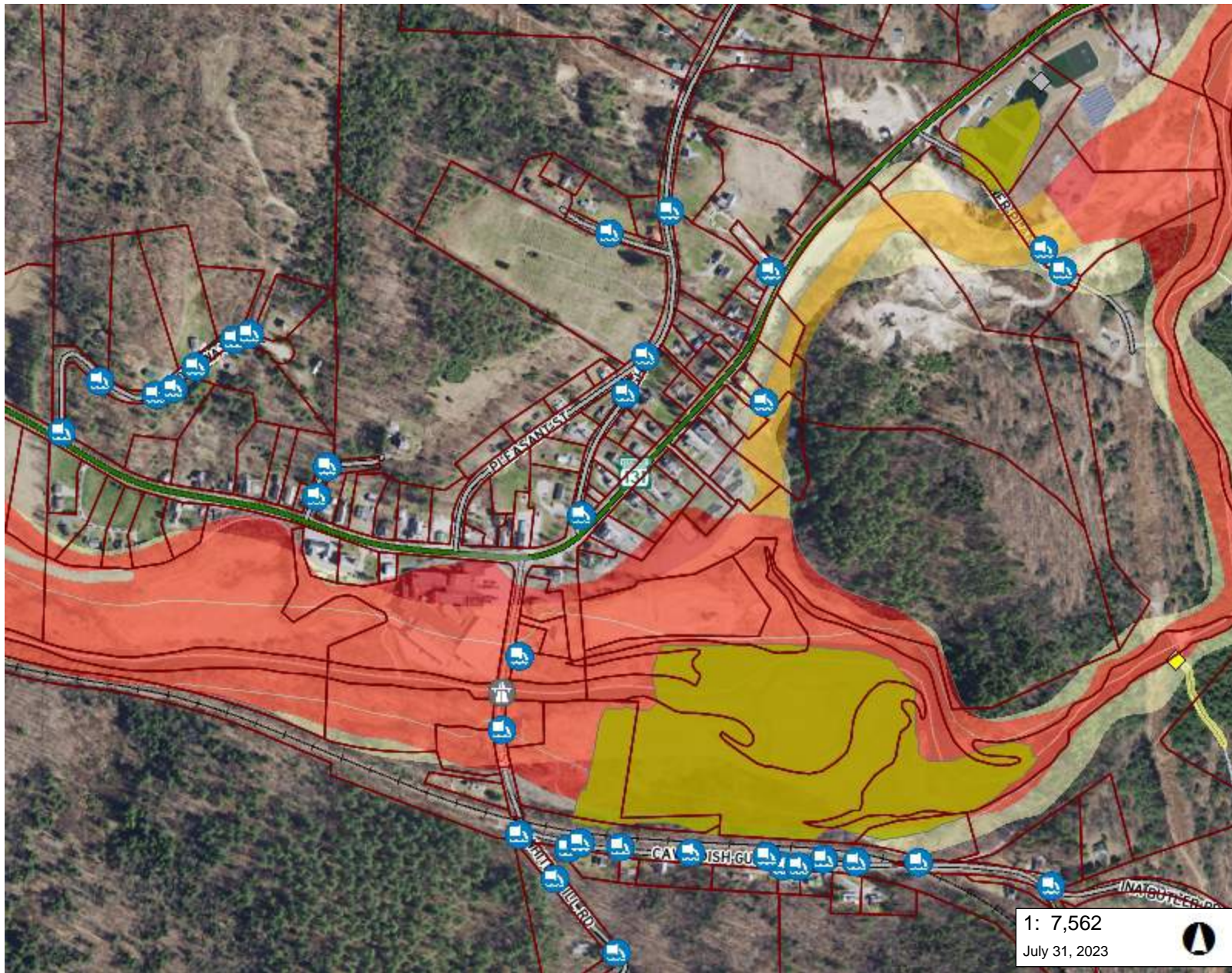
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NOTES

Map created using ANR's Natural Resources Atlas



LEGEND

- Bridges
- Culvert
- Wetland - VSWI**
 - Class 1 Wetland
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- Hazard Class**
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 - .25-.5 sqmi.
- Parcels (standardized)
- Waterbody
- Stream**
 - Stream
 - Intermittent Stream
- Railroads
- Roads

1: 7,562
July 31, 2023



NOTES

Cavendish Village Flood Map

384.0 0 192.00 384.0 Meters
 WGS_1984_Web_Mercator_Auxiliary_Sphere 1" = 630 Ft. 1cm = 76 Meters
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Appendix H
Plan Monitoring Forms

Cavendish 2023-2028 Local Hazard Mitigation Plan
Annual Monitoring Form
Progress on Mitigation Strategies & Actions
(WORD Doc Available)

Period Covered: _____

Date: _____

High Priority
Moderate Priority
Low Priority

*Edit Cell Color to Reflect changes in Priority of Mitigation Actions

MITIGATION ACTION	PROGRESS MADE*	FUNDING SOUGHT	NEXT STEPS	RESPONSIBLE PARTY	TIME FRAME
Permanently close off gated opening of high hazard stone culvert behind Singletons which directs water from the Black River to the Town during high flow events.					
Consider VTculvert.org data, VT Road & Bridge Standards, Geomorphic Assessments, and resident input to prioritize culvert replacement.					
Replace and Upgrade known undersized culverts based on above.					
Conduct a site review of identified dam structures and determine if remedial work is needed.					
Develop a schedule to identify and remove high hazard trees to reduce power outages.					
Implement a public outreach program on the Town's new Flood Hazard Area Regulations (FHAR) with focus on awareness of structures in River Corridor and Fluvial Erosion Hazard areas.					

Review sensitive areas identified in River Corridor Plan and make recommendations to Town Boards and Commissions for consideration in future planning.					
Identify and inform properties with structures within the River Corridor and in Fluvial Erosion Hazard Areas and provide information on FHAR, NFIP, and on Flood and Fluvial Erosion Hazard Risk.					
Initiate discussions and develop a plan to address citizens' concerns regarding flood risk at impoundment above Cavendish Gorge GMP Hydro Dam to determine whether actions can be taken to reduce flooding.					
Determine and formalize process for monitoring and implementing the Hazard Mitigation Plan action items.					
Develop and implement an outreach program to raise awareness and inform property owners about flood hazard risks and steps they can take to mitigate their risks (e.g. flood insurance, retrofit projects, property buy-outs, avoid new encroachments in harms-way).					
Determine benefit of land along Winery Road for flood storage and purchase property if cost/benefit is acceptable.					
Identify repeat flood damage properties and develop and implement a plan to prevent and/or eliminate the potential for future damage through buyouts or building retrofit.					
Encourage property owners in upland areas to utilize techniques that help to maximize on-site storm water infiltration and minimize off-site storm water flows					
Coordinate with the Black River Action Team, ANR's Watershed Coordinator, MARC and others to seek grants to protect or improve wetlands for the purpose of flood water retention.					

Encourage residents in high erosion risk areas to consider taking steps, such as limiting tree cutting or clearing, minimizing site disturbances, and using special design techniques to manage stormwater on site.					
Encourage property owners to tie down all non-anchored structures.					
Work with MARC to Identify and map fluvial erosion hazard areas for use by Planning Commission and consideration for future regulation.					
Contract Environmental Professional services to review past Stream Geomorphic Studies of the Black River Watershed, projects listed in the DEC Watershed Project Database, and Town list of High Hazard and Vulnerable sites (Appendix A: Map #4-High Hazard and Vulnerable Sites Map, #7-TRPT Map, and Appendix F-July Flood Damage) and recommend high priority mitigation projects that will provide the greatest cost/flood resiliency benefits to the Town.					
Determine whether local-level stormwater ordinances for development projects would be beneficial reducing flood risk.					
Review TABLE 4.3-2: Status of Community Resources and Capabilities for potential improvements or enhancements to improve Town hazard resiliency and preparedness.					
Annually seek funding and plan for implementation for MRGP compliance on high slope, High-Priority road segments as identified in the MRGP road assessment inventory and as experienced during July 2023 flood event (See Appendix F on roads that were damaged)					
Prioritize and implement culvert upgrade replacements for recent washouts (See Appendix F for list of impacted culverts)					

Commission advisory services from MARC to the Administrative Officer/Floodplain Officer in administering and implementing the FHAR regulations					
Initiate discussions with the State Basin Planner, VEM and neighboring towns within the watershed on coordinating development of a watershed-based mitigation plan for those within the Black River watershed.					
Develop a GIS town map with an 'erodible' soils and slope overlay for use by the Planning Commission and town permitting authorities.					
Work with MARC to develop a document repository that includes a streamline Emergency Response process and procedures (FEMA, State) as well as pertinent resources to inform town and residents.					
Contract services of an Environmental Professional to design a rebuild of Greven Recreational Filed to FEMA standards.					
Develop recommendations on how hazard mitigation can be addressed in the existing permitting process for building, driveway/access, and development in flood hazard area.					
<p>Determine most effective actions to reduce flooding in Proctorsville.</p> <p><u>Phase I:</u> Contract services of an Environmental Professional to conduct a hydraulic study of the intersection of Rt 103 & Rt 131 where water bypasses the trestle, runs over Rt. 103 and railroad tracks flooding Proctorsville.</p> <p><u>Phase II:</u> Contract services of an Environmental Professional to develop site specific mitigation actions based on the study to reduce flooding in Proctorsville.</p> <p><u>Phase III:</u> Implement selected high cost/benefit actions.</p>					

Evaluate the flood impact potential to the Town of upstream beaver dams and whether the expansion of beaver damming needs to be addressed.					
Work with State to evaluate the existing berm at the end of The Lane for the hydro-dam and whether there are mitigation actions to be taken to reduce flooding.					
Work with the State regional river scientist and floodplain manager to determine whether river debris at high risk for blocking underpass during flood events can be removed and how it can be funded. Clear debris if State permits.					
Seek available grant funding for designing sidewalks for village centers that can be maintained for snow and ice to ensure safe walking in Town during winter months.					
Evaluate and install a cooling system at Town shelter to provide relief from extreme heat for those without air conditioning.					
Consider and incorporate, if applicable, Hazard Mitigation Actions into each section of the Town Plan goals, policies, and recommendations during the next plan update.					
Make the Emergency Coordinator a separate position instead of combining with the Fire Chief position to oversee outreach for hazard preparedness, response and mitigation and activities for preparedness.					
Enhance community outreach for Disaster Preparedness, Response and Mitigation through a dedicated web-based media portal (town website, Cavendish Connects) and establish an email					

distribution list for notifications.					
Develop a plan to improve preparedness for mud season to occur throughout the winter season given the extreme variability in temperatures.					
Proactively seek project eligibility for the new Flood Resilient Communities Fund Program to support state climate adaptation efforts and to provide 25% federal match for other federal funding.					
Provide residents with information on home energy and weatherization assistance programs that may help address extreme heat and cold					

Note changes or improvements in effectiveness of Community Capabilities and Resources in Table 3:

Note changes in Goals or Objectives: