City of Montpelier, VT
Local Hazard Mitigation Plan Update
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Prepared by the City of Montpelier and CVPRC

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1. Introduction

The impact of expected, but unpredictable natural and human-caused events can be reduced through community planning. The goal of this Plan is to provide an all-hazards local mitigation strategy that makes the communities of Central Vermont more disaster resistant.

Hazard mitigation is any sustained action that reduces or eliminates long-term risk to people and property from natural and human-caused hazards and their effects. Based on the results of previous Project Impact efforts, FEMA and State agencies have come to recognize that it is less expensive to prevent disasters than to repeatedly repair damage after a disaster has struck. This Plan recognizes that communities have opportunities to identify mitigation strategies and measures during all of the other phases of emergency management – preparedness, response, and recovery. Hazards cannot be eliminated, but it is possible to determine what the hazards are, where the hazards are most severe and identify local actions that can be taken to reduce the severity of the hazard.

Hazard mitigation strategies and measures alter the hazard by eliminating or reducing the frequency of occurrence, avert the hazard by redirecting the impact by means of a structure or land treatment, adapt to the hazard by modifying structures or standards, or avoid the hazard by stopping or limiting development.

2. Purpose

The purpose of this Local Hazard Mitigation Plan is to assist Montpelier in recognizing hazards facing the region and their community and identify strategies to begin reducing risks from acknowledged hazards.

Montpelier strives to be in accordance the strategies, goals and objectives of the State Hazard Mitigation Plan, including an emphasis on proactive pre-disaster flood mitigation for public infrastructure, good floodplain and river management practices, and fluvial erosion risk assessment initiatives.

The 2013 Montpelier Local Hazard Mitigation Plan is an update of the 2007 plan. The plan has been reorganized and new sections have been added regarding:

- Plan Update Process
- Plan Maintenance
- Updates of worst and moderate threat hazards
- Updates of Local Areas of Concern Map
- Status update of 2007 mitigation strategies
- Identification of new mitigation strategies

3. Community Profile

The City of Montpelier, Vermont's State Capitol, is located at the geographic center of Washington County. The City is bounded to the north and east by East Montpelier, to the south by Berlin, and to the west by Middlesex. Totaling 10.3 square miles, the City is located in the upper segment of the Winooski watershed and according to the City of Montpelier Master Plan "its location at the confluence of the Winooski and North Branch Rivers has influenced development not only along the valleys, but also on the hillside slopes that overlook the valley."

According to the 2010 Census, Montpelier has a total population of 7,855 people living in 3,786 housing units. According to the Master Plan the city's residential population has "been stable at a little over 8,000 residents for the past 60 years." The City is a regional hub for employment due to the Capitol complex and the influx of commuters causes the day time population to more than double.

As of 2010, the City of Montpelier had seen a dramatic change in the pace of new development over the previous four or five years according to the 2010 Master Plan. Between 2003 and 2007 about 119 net new residential units were created – a rate of approximately 30 per year. Though the rate of development slowed with only another 16 units added between 2007 and the 2010 US Census, soaring energy costs are likely to be another factor that will encourage people to live closer to jobs, schools, and shopping.

In Montpelier, electricity is provided by Green Mountain Power Corporation (GMP), who maintains two transmission substations within city boundaries. The municipal water facility is located in the neighboring town of Berlin and services a majority of Montpelier and a few residential clients in Berlin. Residential developments not serviced by the treatment facility rely on private wells. The municipal wastewater treatment facility is located on the western edge of the City at the confluence of the Dog and Winooski River. According to the Master Plan "the city's municipal sewage system roughly corresponds to the water service areas" and "approximately 150 residents outside this area use private septic systems."

The Montpelier Police Department provides local law enforcement to the city. The department employs 16 full-time uniformed officers and has two part-time (full-time certified) police officers. According to Montpelier's 2012 Annual Report, during 2012 the police department managed 20,000 calls for service, which includes all the fire, EMS and police related calls. The City's fire and ambulance department is staffed by full-time career fire fighters, part-time emergency medical technicians and on-call paid fire fighters. The department services the City of Montpelier plus provides services via mutual aid agreement to the surrounding towns of Middlesex, Moretown and Worcester. The City of Montpelier has a Basic Emergency Operations Plan, most recently adopted in August 2010.

The Montpelier Master Plan includes descriptions, goals and recommendations in regards to public safety, resource protection, transportation and emergency services. Montpelier Zoning Regulations, last amended in January 2011, include a Flood Plain Overlay District and development standards which include *Vehicular Access & Circulation Development Standards* for the safety of citizens and the efficient mobility of vehicles; *Site Protection Design Development Standards* for the prevention

of erosion and protection of water quality; *Flood Plain Development Standards* for the insurance of new construction and substantial improvements are resistant to flood damage; and lastly *Water Supply Development Standards* for the insurance of fire protection for all developments.

Due to the City's vulnerability and history of flooding events caused by ice jams the City of Montpelier, in cooperation with Federal Emergency Management Agency, Region 1, completed the *Montpelier Flood Hazard Mitigation Plan* in July 1998. The purpose of the plan is to "assess the flood risks which confront the City and community of Montpelier and to articulate a comprehensive strategy for the implementing technically feasible flood mitigations activities." Information from the Flood Hazard Mitigation Plan has been incorporated into this plan.

4. Planning Process and Maintenance

4.1 Planning Process

The Central Vermont Regional Planning Commission (CVRPC) coordinated the Montpelier Local Hazard Mitigation Plan process. CVRPC contacted the Director of Planning and Community Development and sent City-specific hazard mitigation material for review. After assessing the material, a meeting open to the public was held with representatives from the Planning and Community Development Dept., Police Dept., Fire Dept., Public Works Dept., City Manager's Office and CVRPC staff on September 16, 2013 at the City Offices.

Preparation for the meeting included a review of the Montpelier City Master Plan, Montpelier Basic Emergency Operations Plan (2010), 2012 Montpelier Police Department Report, the Upper Winooski River Corridor Management Plan, and the 1998 Montpelier Flood Hazard Mitigation Plan. Information from these documents is incorporated into various sections of this plan. The Montpelier Hazard Mitigation Meeting focused on assessing past mitigation projects and compiling information on its current and future hazard mitigation programs, projects and activities.

Attendees included:
- Gwen Hallsmith, Director of Planning and Community Development
- Audra Brown, Planning and Zoning Assistant
- Tony Facos, Police Chief
- Bob Gowans, Fire Chief
- Jessie Baker, Assistant City Manager
- Todd Law, Director of Public Works
- Kim McKee, CVRPC Staff

The meeting indicated that the City is most vulnerable to ice jams, hazardous materials (fixed & transport) and flood/flash flood/fluvial erosion. Moderate threat hazards include winter storms/ice storms, water supply contamination and cyber disruption. Previously identified hazards included ice jams resulting in flooding and hazardous materials (fixed & transport).

Montpelier is now focusing on flood/flash flood/fluvial erosion as these events are the most common and most destructive.

Once an initial draft was prepared, a public hearing was held by the City to allow for further public input into the hazards and mitigation strategies identified. CVRPC placed a notice for public comments of the draft on the CVRPC blog, sent notification to Emergency Management Directors in neighboring municipalities via email and placed notice of the LHMP update in July 2014 CVRCP staff reports. The draft was also made available at the Montpelier City offices and by request from CVRPC for public review and comments from June 23, 2014 to July 8, 2014. No comments were received by CVRPC or Montpelier City Staff. Public comments submitted, in the future, will be reviewed by the City Manager (and CVRPC Staff dependant on funding) and attached as an appendix. In the future, the draft plan will be made available during the annual City Council Orientation and local meetings with State and local officials to allow for more public comment and review. After Approval Pending Adoption, the plan will go before the City Council for adoption.

4.2 Plan Update Process

The Montpelier Local Hazard Mitigation Plan was originally adopted by the City as an Annex to the Central Vermont Regional Local Hazard Mitigation Plan in November 2007 and received FEMA final approval in January 2007. The 2013 update is intended to be submitted as a standalone Local Hazard Mitigation Plan.

The current plan is an overhaul of the 2007 plan. Below is a list of the revisions that have been made from the past plan and the appropriate sections for reference. New hazards identified include water supply contamination and landslide.

General Updates

- General reorganization/restructuring of the plan according to future FEMA/VEM checklist
    - New sections added – 4.2 Plan Update Process, 4.3 Plan Maintenance, 5.2 Worst Threat Hazards, 5.3 Moderate Threat Hazards
- Update of all data and statistics using 2012 Montpelier Police Department Report and US Census Data (Section 3)
- Revaluation, identification and analysis of all significant hazards (Section 5)
- Acknowledgment of implemented mitigation strategies since 2007 – see matrix below (section 4.2)
- Identification of on-going mitigation projects and strategies – see Existing Mitigation Programs, Projects and Activities section (section 4.2)

Hazard Analysis Updates (Sections 5 and 6)

- New moderate threat hazards added – winter storms/ice storms, water supply contamination and cyber disruption

- Added location/vulnerability/extent/impact/likelihood table for each hazard to summarize hazard description (Section 5.1-5.3 – after each hazard)
- Review of Vermont Hazard Mitigation Plan (Section 5 – hazard analysis table)

Maps

- Review of 2007 Areas of Concern map and Local Hazards Analysis map

The following chart provides an overview of Montpelier's proposed 2007 hazard mitigation actions along with their current status.

Mitigation Action	2013 Status
Install permanent thermal induction system from waste water treatment facility for ice jam reduction.	• Completed in 2012 using Hazard Mitigation Grant funds and put into service in 2013. • The technique involved installing a pumping system at the waste water treatment facility and a new force main extending to just upstream of the Bailey Avenue Bridge, with a total of six new discharge points along the river.
Implement ice jam mitigation activities as identified by the US Army Corps of Engineers Feasibility Study	• Submitted Montpelier City ice jam mitigation activities information to the Army Corps of Engineers; several projects related to the grant currently under review to determine environmental impacts, etc. • 3 years into the 5 year grant process – the local match (50%) was a combination of City and State funding.
Dust river as thermal ice deterioration technique	• Most recently performed in 2007 with assistance from Cold Region Research and Engineering Lab (CRREL). • City has all equipment necessary and ready to perform again as needed.
Cut ice as mechanical ice reduction technique	• Prepared to perform on an as-needed basis with assistance from CRREL and USGS.
Train ice watcher	• Approx. 30 ice waters have been trained from the Fire Dept, Police Dept and Public Works Dept. • Ice watchers are retrained as ice jams are anticipated with assistance from CRREL.

Coordinate response and recovery action in the event of a hazardous materials spill at Montpelier Junction.	• Emergency Action Plan with Duke Energy in place for potential propane leak events.
Develop hazardous materials information for public outreach and notification program and provide training workshops.	• No action taken.
Implement system to alert drivers of problematic section of road to decrease accidents at exit 8, such as purchasing electronic message board.	• VTrans purchased an electronic message board to place at this location. It is connected to a weather system that receives updates from a nearby monitoring station at a high point between I-89 exits 7 and 8.
Install a hazardous materials spill warning system, such as reverse E911 notification system.	• The Blackboard connect system was completed and implemented in 2011. • The City also anticipates being able to use the AlertNow system launched and supported by the State.

Existing Programs, Projects & Activities

The ongoing or recently completed programs, projects and activities are listed by mitigation strategy and were reviewed for the development of the plan. The 2010 Montpelier City Master Plan, 2010 Basic Emergency Operations Plan, 2012 Montpelier Police Department Report, the Upper Winooski River Corridor Management Plan, the Montpelier Flood Hazard Mitigation Plan, and past newspaper articles were reviewed for pertinent information. Information from these sources is incorporated into appropriate sections of the plan.

<u>Community Preparedness Activities</u>

- Basic Emergency Operations Plan – 2010
- Capital Equipment Plan
- Montpelier Safe School Team (crisis and evacuation plan for Montpelier High School, Middle School and Elementary School.)

<u>Hazard Control & Protective Works</u>

- Maintenance Programs (Bridge & Culvert Inventory – 2007)
- Mutual Aid Agreement
- Enforcement of building and safety codes
- Informal dam release contracts
- Ice Movement Detection Units
- Ice Deterioration Techniques (Thermal & Mechanical)

Insurance Programs

- Participation in NFIP
- Participation in NFIP's Community Rating System Program (Montpelier rating = 9)

Land Use Planning/Management

- Montpelier City Master Plan - 2010
- Montpelier Zoning Regulations, amended 2011; Revisions include:
    - Definition of Flood Plain Lands (Section 309.B.)
    - Standards for Development in All Flood Hazard Areas (Section 716.A.)
    - Standards for Development in Numbered Flood Hazard Areas (Section 716.B.)
    - Notice of Violation relating to noncompliant structures and enforcement in the Floodplain (Section 1104.A)
    - Definitions of Terms (Section 1303)
- Montpelier Flood Hazard Mitigation Plan, 1998
- Berlin Pond Watershed Conservation Project, 2005
- Source Protection Plan
- Sprinkler Ordinance

Protection/Retrofit of Infrastructure and Critical Facilities

- Red Cross certified Emergency Shelters, capable of sheltering animals
- Back-up generators at Local Emergency Shelters
- Adopted Road and Bridge Standards (2011)

Public Awareness, Training & Education

- Fire safety educational programs (Captain No Burn Program, Annual Extradition Training)
- Commercial Building Inspection
- Home Inspection Program
- Motor vehicle accident response training
- First responder CPR & hazmat trainings
- School Fire Safety Program
- Flood outreach and education
- Flood Notification Plan (via web, phone, TV, radio and sirens)
- River Watch Program
- Blackboard Connect Emergency Notification System
- Montpelier Parks – Riverbank Restoration Volunteer Projects

4.3 Plan Maintenance

The Montpelier Local Hazard Mitigation Plan will be updated and evaluated annually at the March City Council Orientation meetings along with the review of the Basic Emergency Operations Plan. Updates and evaluation by City Council will also occur within three months after every federal disaster declaration and as updates to City plan/zoning and river corridor

plans come into effect. The plan will be reviewed by the City Council, City Manager, Director of Planning and Community Development and public during the above mentioned March City Council Orientation. CVRPC will help with updates or if no funding is available, the City Manager and Director of Planning and Community Development will update the plan.

The process of evaluating and updating the plan will include continued public participation through public notices posted on the City website, notice in City Hall, Front Porch Forum, and CVRPC newsletter and blog inviting the public to the scheduled City Council (or specially scheduled) meeting. Additional stakeholders invited to the meeting will be City residents, and representatives from the Planning Commission. Also invited in the future will be the VT Agency of Natural Resources (VT ANR), as they are able to provide assistance with NFIP outreach activities, models for stricter floodplain zoning regulations, delineation of fluvial erosion hazard areas, and other applicable initiatives. These efforts will be coordinated by the Director of Planning and Community Development.

Monitoring of plan progress, implementation, and the 5 year update process will be undertaken by the City Manager and Director of Planning and Community Development. Monitoring updates may include changes in community mitigation strategies; new City bylaws, zoning and planning strategies; progress of implementation of initiatives and projects; effectiveness of implemented projects or initiatives; and evaluation of challenges and opportunities. The plan is to be a "living document" to allow for new actions to be identified in the five year interim period and amended without formal re-adoption during regularly scheduled City Council meetings. Prior to the end of the five year period, the plan will be undergoing a formal update and submitted to FEMA for re-adoption following the process outlined the schematic found in the Attachments section.

Montpelier shall also incorporate mitigation planning into their long term land use and development planning documents. It is recommended the City review and incorporate elements of the Local Hazard Mitigation Plan when updating the municipal plan, zoning regulations, and flood hazard/FEH bylaws. The incorporation of the Local Hazard Mitigation Plan into the municipal plan, zoning regulations and flood hazard/FEH bylaws will also be considered after declared or local disasters. The City shall also consider reviewing future Upper Winooski Corridor planning documents for ideas on future mitigation projects and hazard areas.

The City's 2010 Master Plan incorporated extensive discussion on flood mitigation, natural and beneficial functions of floodplains, emergency management, and various supporting goals and strategies. A section on Flood Mitigation is included within the Natural Environment chapter and includes discussion of vulnerable areas, participation in the Community Rating System and the launch of an Army Corp of Engineers Winooski River Flood Damage Reduction Project to assist in protecting the City from flooding due to ice jams. A goal for 2015 states the City will "enhance floodplain management so that the capacity of our flood storage and mitigation areas has expanded by 25% of their 2010 levels" and the goal is supported by strategies related to NFIP compliance, flood resilient land use patterns and higher standards for review. As of June

2014, a flood hazard bylaw update is currently underway as part of an overall zoning bylaw revision.

Central Vermont's 2008 Regional Plan also discusses prevalent flood hazards including areas prone to inundation and to fluvial erosion. The Plan describes regional assistance with local bridge and culvert inventories to assess infrastructure vulnerable to hazards and joint efforts with the Vermont River Management Program to develop erosion hazard maps for sections of the main stem of the Winooski River and many of its tributaries. A Phase 2 River Corridor Plan for the Upper Winooski Watershed was completed in 2007 that evaluated the geomorphic condition for various reaches and helped prioritize which reaches warranted further study and/or restoration activities. A Land Use policy in the 2008 Regional Plan also includes working with municipalities in avoiding and mitigating flood damage through assistance with flood hazard bylaw and maps, in addition to other offerings related to flood resilience planning.

5. Community Vulnerability by Hazard

5.1 Hazard Identification

A natural hazard is a source of harm or difficulty created by a meteorological, environmental or geological event. The following natural disasters were discussed and the worst threat hazards were identified based upon the probability of the event and the community's vulnerability to the event. Hazards not identified as a worst or moderate threat may still occur. Upon full review of the below mentioned hazards, hazards not identified as worst or moderate threats are not analyzed in the plan due to low frequency of occurrence, limited (if any) past damages and low cost benefit of possible mitigation measures. These hazards include landslide, dam failures, drought, earthquake, high wind, structure fire, tornadoes and wildfire/forest fire. Greater explanations and mitigation strategies of low threat hazards can be found in the State of Vermont's Hazard Mitigation Plan.

Hazard	Likelihood [1]	Community Vulnerability[2]	Worst Threat
Landslide	Low	No	
Dam Failures	Low	No	
Drought	Low	No	
Earthquake	Low	No	
Extreme Cold/Winter Storm/Ice Storm	High	No	
Flash Flood/Flood/Fluvial Erosion	High	Yes	√

[1] High likelihood of happening: Near 100% probability in the next year.
Medium likelihood of happening: 10% to 100% probability in the next year or at least once in the next 10 years.
Low likelihood of happening: 1% to 10% probability in the next year or at least once in the next 100 years.
[2] Does the hazard present the threat of disaster (Yes)? Or is it just a routine emergency (No)?

High Wind	Low	No	
Ice Jam	High	Yes	√
Hurricane/Severe Storms	Low	No	
Structure Fire	Low	No	
Tornado	Low	No	
Water Supply Contamination	Low	Yes	
Wildfire/Forest Fire	Low	No	
Hazardous Materials	Low	Yes	√
Cyber Disruption	Low	Yes	

The City of Montpelier identified the following disasters as presenting the worst threat to the community:

- Ice Jam
- Hazardous Materials
- Flash Flood/Flood/Fluvial Erosion

The City is interested in focusing a majority of mitigation efforts into reducing impacts from flooding, as the events occur most frequently, severely and cause the most damage to public and private infrastructure.

Moderate threat hazards include:

- Winter Storms/Ice Storms
- Water Supply Contamination
- Cyber Attacks

A discussion of each worst and moderate hazard is included in the proceeding subsections and a map identifying the location of each hazard is attached (See map titled *Areas of Local Concern.*) Each subsection includes a list of past occurrences based upon County-wide FEMA Disaster Declarations (DR-#) plus information from local records, a narrative description of the hazard and a hazard matrix containing the following overview information:

Hazard	Location	Vulnerability	Extent	Impact	Probability
Type of hazard	General areas within municipality which are vulnerable	Types of structures impacted	Magnitude of hazard – scale dependant on hazard	Dollar value or percentage of damages.	High: 10% to 100% probability within the next year or at least once in the next 10 years. Medium: less than 10%

	to the identified hazard.				to 100% probability within the within the next year or less than once in the next 10 years.

5.2 Worst Threat Hazards

Ice Jam resulting in Flooding

History of Occurrences in the City of Montpelier (information from the Montpelier Flood Mitigation Plan, July 1998 – see attachments)

Date	Event	Location	Extent
2/13/1900	Ice Jam Flooding	Cemetery Bend, Montpelier	The downtown area of Montpelier, including State, Main, and Elm Streets, was inundated by about 2 feet of water above the street level. Ice also jammed against upstream bridges causing extensive damages to at least two bridges when the ice released
2/25/1915	Ice Jam Flooding	Langdon Farm, Granite Street Bridge, Montpelier	Ice jamming in the river caused water to back up the North Branch and flood basements. The ice crested just below the Langdon Street bridge. Out of bank flooding was reported along Lower State Street and Pioneer Street
2/28/1917	Ice Jam	Downstream of Granite Street Bridge and below Cemetery, Montpelier	No flood
3/26/1920	Ice Jam Flooding	Bailey Dam, Montpelier	No data available.
1/19/1929	Ice Jam Flooding	Granite Street Bridge and below Cemetery Bend, Montpelier	No data available.
1/9/1930	Ice Jam	Confluence with Dog River and confluence with Steven's Branch, Montpelier	No flood
1/9/1935	Ice Jam Flooding	Bailey Dam, below Cemetery, Silver Ledge,	Subsequent high water caused flooding of basements along State, Main and

		Middlesex Dam, Montpelier	Elm Streets. Another jam occurred near the Granite Street bridge, causing the inundation of Berlin Street.
3/16-3/17/1936	Ice Jam Flooding	Cemetery Bend, Middlesex, confluence with Steven's Branch, Montpelier	The high water caused localized flooding of the highway toward Middlesex. The Granite Street bridge was threatened by high water and ice.
12/30/1948	Ice Jam	Main Street Bridge and upstream of Granite Street Bridge, Montpelier	No flood
3/5/1964	Ice Jam Flooding	Main Street Bridge, Middlesex, Montpelier	An ice jam formed at the Main Street bridge, resulting in high water reaching Rte. 2 and adjacent local roads. Businesses along the North Branch were damaged by flood waters
12/21/73	Ice Jam Flooding	Bailey Dam, Montpelier	No data available.
1/8/1978	Ice Jam Flooding	Bailey Ave Bridge, Montpelier	An ice jam formed near the Bailey Avenue bridge resulting in high water within the Winooski River and North Branch and flooding within the City. The basements in buildings along State and Elm streets were flooded resulting in damages to contents.
3/18/1980	Ice Jam	Vicinity of Bailey Ave Bridge, Montpelier	No flood
2/12/81	Ice Jam	Cemetery Bend Area, Montpelier	No flood
3/19/86	Ice Jam	Cemetery Bend Area, Montpelier	No flood
3/4/91	Ice Jam	Cemetery Bend Area, Montpelier	No flood
3/11/92	Ice Jam Flooding	Railroad Bridge (briefly), downstream of Bailey Ave Bridge, Montpelier	Fractured ice stalled approximately 300 feet downstream of the Bailey Avenue bridge, Water depths up to 5 feet covered downtown Montpelier.
3/2007	Ice Jam	Between Granite Street Bridge and Main Street Bridge, Montpelier	No flood

The City of Montpelier is located in a narrow river valley at the confluence of two rivers and has been affected by flooding since its settlement over 300 hundred years ago. The Winooski River is one of the predominate bodies of water in Montpelier, it runs from southwest to northwest and

extends approximately 4 ½ miles within the City limits. The North Branch of the Winooski originates north of the Wrightsville Reservoir on the Montpelier and Middlesex border and flows to the south and feeds into the Winooski in the City's downtown core. Wrightsville Reservoir is primarily located in the town of Middlesex with the southern tip of the water body and dam located within Montpelier city limits. The Reservoir was designed and constructed by the US Corps of Engineers in the 1930's as a flood control measure following the devastating flood of 1927. The dam is classified by the Agency of Natural Resources Vermont Dam Inventory (VDI) as a "Dam of Concern" meaning it is a dam where failure or mis-operation will result in a high probability of a loss of human life and/or can cause economic loss, environmental damage, disruption of lifeline facilities, or impact other concerns. (See *Hazard Analysis Map*) Other rivers within the City boundaries include the Stevens Branch on the eastern boundary and the Dog River on the western boundary, both feed into the main stem of the Winooski River.

The majority of Montpelier's floodplain development is commercial, retail and institutional. Based on the results of overlaying the FIRM flood maps with the location of E911 points, there are 645 properties located within the National Flood Insurance Program's designated 100- year floodplain. The estimated loss for a severe flooding event for all properties located within the City's 100-year floodplain is approximately $135,846,291. Montpelier has three repetitive loss properties as identifies through the NFIP and the City ranks fourth among the top ten repetitive loss flood communities in the state. It should also be noted that FEMA is producing updated digitized floodplain maps for Washington County; these updates are currently being reviewed by municipalities and will replace previous floodplain maps by early to mid 2008. Part of the updating process included re-studying sections of the Winooski watershed and as a result may change the boundaries of the floodplain in some areas. According to the City of Montpelier website "The changes are extensive. Many previously excluded properties are now included in one or more flood hazard areas."

As previous events have made clear the City of Montpelier is especially vulnerable to flood related hazards due to ice jam events. According to the Montpelier Flood Hazard Mitigation Plan "in the event of a major ice jam flood, the entire downtown area of Montpelier including the historic business district, and the floodplain throughout the rest of the study area may be inundated depending on the location of the ice jam. As witness during the March 1992 event, and also recorded during the 1900 and other historical flood events, multiple area were flooded as the ice flow moved downstream prior to its final jam location below Bailey Avenue."

The most recent flood event occurred in March1992 where according to *Ice & Water: The Flood of 1992 - Montpelier, Vermont*, "in less than an hour, the two swollen rivers effectively shut down 120 businesses, left more than 50 residents homeless, threw the workings of much of state government into disarray, and caused upwards of $5 million in damage. Miraculously, there was no loss of life, but the lifeblood of Montpelier's historic downtown was devastated by the second great flood to strike the city in this century."

The threat of flooding due to ice jams is more prevalent than the history of flooding occurrences indicates. In addition to the dates listed above the City of Montpelier has experienced the following

ice jam events where flooding did not result:

- March 28, 1917
- January 9, 1930
- December 30, 1948
- January 8, 1978
- March 18, 1980
- February 12, 1981
- March 19, 1986
- March 4, 1991
- March 11, 1992
- March 2007

The most recent ice jam event in March 2007, according the City's flood web page, was a result of "an unusual combination of above-average river discharge followed by several weeks of very cold air temperatures resulted in a freezeup ice jam downstream of the city of Montpelier." During this event the City of Montpelier employed a combination of mitigation techniques, yet the techniques do not and will not decrease the probability of future ice jam events. During this ice jam event an ad hoc inter-agency mitigation team was formed with members from the following organizations: VT Emergency Management, VT Agency of Natural Resources, US Corps of Engineers, Cold Regions Research Laboratory (CRREL), National Weather Service, FEMA Region 1, city officials and Congressional Staff. The City has also formed a flood committee which has been charged with evaluating river restoration and flood mitigation projects. The City of Montpelier is currently 3 years into a 5 year process of working with the US Army Corps of Engineers to undertake a ice jam mitigation feasibility study.

Structures impacted by flooding resulting from ice jams include: downtowns businesses and retailers, City and State government buildings, schools, residences and transportation corridors (Route 2 and Route 12). While much of the downtown area is already built-out the City is planning to develop a transit center on Taylor Street, at the confluence of the North Branch and Winooski River. The project is in the early phases of planning, community input and design, but the final site design will place emphasis on riverfront vegetation, minimized flood vulnerabilities and overall flood hazard mitigation into account.

Considering past occurrences the potential for future occurrences is high. (For additional information about flooding and ice jams in Montpelier see *Attachments: Montpelier Flood Hazard Mitigation Plan.)*

Hazard	Location	Vulnerability	Extent	Impact	Probability
Ice Jam resulting in Flooding	Floodplain (see *Areas of Local Concern Map*.)	Downtown business and retailers, City and State government buildings, schools, residences and transportation corridors.	Severe	1992 = >$5 million in damages	HIGH

Hazardous Materials (fixed & transport)

Recent History of Occurrences (from Vermont Dept. of Environmental Conservation Hazardous Site Database http://www.anr.state.vt.us/WMID/HazSites.aspx):

DATE	PRODUCT	AMOUNT	UNIT	LOCATION
6/14/2000	Other, please indicate	20-25	Gallon/s	GMP Transformer storage barn, Montpelier
7/4/2000	Gasoline	20	Gallon/s	33 Berlin Street, Cumberland Farms, Montpelier
8/15/2000	Gasoline	2	Gallon/s	Champlain Farms, Montpelier
8/25/2000	#2 Heating Oil	5	Gallon/s	St. Augustine's Parish School/ St. Michael's School
4/5/2001	Gasoline	2	Gallon/s	Fast Stop Texaco, 108 State Street, Montpelier
5/15/2001	Unknown	Unknown	N/A	Langdon Street Bridge, Montpelier
10/16/2001	Unknown	N/A	N/A	AOT - Shop
10/16/2001	Unknown	Unknown	N/A	National Life Building, Montpelier
10/16/2001	White powder	Unknown	N/A	National Life Building, Montpelier
10/25/2001	Suspicious letter	Unknown	N/A	Letter received at home
10/29/2001	Envelope w/ white powder	Unknown	N/A	Mail Room, Liquor Control Board, Montpelier
11/3/2001	Suspicious letter	Unknown	N/A	Letter received at her home.
11/14/2001	Flu like symptoms	Unknown	N/A	National Life Building, Montpelier
11/26/2001	Envelopes w/ white powder	Unknown	N/A	Vermont Life, 6 Baldwin Street, Montpelier
1/11/2002	White powder	dusting	N/A	Vermont Life, 6 Baldwin Street, Montpelier
2/16/2002	Motor Oil	6	Quarts	Langdon Street, Montpelier
3/7/2002	#2 Heating Oil	Unknown	N/A	59 Elm Street & the N. Branch of the Winooski River
4/3/2002	Hydraulic Oil	50.0	Gallons	25 Green Mountain Drive, Montpelier
4/5/2002	Kerosene	Unknown	N/A	7 Hillside Drive, Montpelier
4/24/2002	**Hydraulic Oil**	**Unknown**	**N/A**	**Exit 8, Interstate 89, Montpelier**
6/19/2002	Gasoline	40	Gallon/s	Gulf Station, State Street, Montpelier
8/12/2002	Diesel Fuel	5-6	Gallon/s	Dumping site where the City of Montpelier uses for debris
9/9/2002	**Diesel Fuel**	**100**	**Gallon/s**	**Exit 8, North Bound, Interstate 89**
12/4/2002	#2 Heating Oil	30	Gallon/s	Agway Bulk Storage Plant, Montpelier
4/3/2003	#2 Heating Oil	5	Gallon/s	356 Town Hill Road, Montpelier
5/18/2003	#2 Heating Oil	Unknown	N/A	Heaton Woods Assisted Living Facility, Montpelier
6/27/2003	Diesel Fuel	Unknown	N/A	Walker Motors, RT2 & RT 302, Montpelier
12/12/2003	**Diesel Fuel**	**Unknown**	**N/A**	**I-89 northbound just south of exit 8, Montpelier**
12/22/2003	#2 Heating Oil	Unknown	N/A	13 Vine Street, Montpelier
12/31/2003	Gasoline	Unknown	N/A	Agway Energy Products, 3 Mile Bridge Road, Montpelier
1/9/2004	#2 Heating Oil	0.5	Gallon/s	10 Taylor Street, Montpelier
3/10/2004	Diesel Fuel	25	Gallon/s	Agway Energy Products, 3 Mile Bridge Road, Montpelier
3/27/2004	Gasoline	2	Gallon/s	Coastal Gas, Barre-Montpelier Road, Montpelier
4/25/2004	#2 Heating Oil	Unknown	N/A	62 River Street, Montpelier, VT
5/11/2004	Diesel Fuel	Unknown	N/A	Parking lot behind City Hall
9/10/2004	unknown	Unknown	N/A	Federal Highway Administration Building, State Street
10/8/2004	#2 Heating Oil	10-15	Gallon/s	National Life Building, Exit 8, Montpelier
12/1/2004	Gasoline	three	Gallon/s	Berlin Street Mobil, 3 Berlin Street, Montpelier
3/11/2005	#2 Heating Oil	Unknown	Gallon/s	175 River Street, Apt B, Montpelier
6/7/2005	#2 Heating Oil	3.0	Gallons	1 National Life Drive, Montpelier
6/23/2005	Multiple	Unknown	N/A	407 Barre St. Montpelier
1/26/2006	home heating oil	275	Gallon/s	396 Elm Street, Montpelier
1/29/2006	unknown oil or fuel	Unknown	N/A	N. Branch of Winooski River near Elm & School Streets
2/16/2006	Gasoline	2	Gallon/s	Simindinger Gas station, Main Street, Montpelier
5/24/2006	#2 Heating Oil	25	Gallon/s	66 Terrace Street, Montpelier
7/3/2006	Gasoline	3 to 4	Gallons	5 Memorial Drive, Montpelier
7/12/2006	Latex paint	5	Gallon/s	28 Langdon Street, Montpelier
7/17/2006	Transformer oil	1 to 2	Gallon/s	125 River Street, Montpelier
8/11/2006	#2 Heating Oil	Unknown	N/A	2 Murray Hill Drive, Montpelier
8/11/2006	#2 Heating Oil	Unknown	N/A	2 Murray Hill Drive, Montpelier
8/31/2006	Diesel Fuel	3.5	Gallon/s	5 Memorial Drive, Montpelier
1/5/2007	Unknown	Unknown	N/A	VT College & Union Institute, West St – Dewey Hall, Montpelier
2/7/2007	Unknown	20	Gallons	Montpelier Rail Yard, Junction Rd., Montpelier
2/22/2007	Unknown	5	Gallons	Suburban Energy, Montpelier
3/1/2007	Lead	Unknown	N/A	Montpelier Gun Club, 240 Goodnow Road
3/12/2007	Unknown	2	Gallons	49 Prospect St., Montpelier
3/16/2007	Unknown	5	Gallons	NECI, 118 Main St., Montpelier
4/13/2007	Gasoline	Unknown	N/A	Behind the Pavilion Building, Montpelier
4/13/2007	Diesel	5	Gallons	Winooski River near Taylor St., Montpelier
4/19/2007	Unknown	Unknown	N/A	Bliss Rd, Montpelier
5/22/2007	Gasoline	3	Gallons	Capital Shell, 108 State St., Montpelier

5/30/2007	Unknown	Unknown	N/A	School St. Bridge, Montpelier
8/1/2007	Unknown	30	Gallons	Suburban Propane Energy, 3 Mile Bridge Rd, Montpelier
8/18/2007	Paint	Unknown	N/A	11 Dairy Lane, Montpelier
9/8/2007	Gasoline	12	Gallons	Champlain Farms – Capital Shell, 208 State St., Montpelier
11/19/2007	Unknown	35	Gallons	Montpelier Schools Central Office, 58 Barre St.
1/30/2008	Unknown	5	Gallons	Old Country Club Rd, Montpelier
2/20/2008	Unknown	20	Gallons	MM54, I-89 south, Montpelier
2/25/2008	Diesel	20	Gallons	Casella Waste Mgmt, 378 E. Montpelier Rd., Montpelier
4/18/2008	Unknown	Unknown	N/A	Dewey Hall, Montpelier
5/2/2008	Unknown	5	Gallons	Montpelier Hauling/Casella, Rt2., Montpelier
5/16/2008	Unknown	Unknown	N/A	The Trading Post, 190 River St, Montpelier
6/26/2008	Gasoline	10	Gallons	Montpelier Exxon, 5 Memorial Dr., Montpelier
7/18/2008	Unknown	Unknown	N/A	Central VT Solid Waste Dist., 137 Barre St., Montpelier
8/30/2008	Gasoline	4	Gallons	Cumberland Farms, 37 Berlin St., Montpelier
10/10/2008	Unknown	Unknown	N/A	Former Grossmans, Rt 2, Montpelier
10/16/2008	Unknown	Unknown	N/A	2 Deerfield Drive, Montpelier
11/14/2008	Gasoline	Unknown	N/A	Capital Shell, 108 State St, Montpelier
11/29/2008	Diesel	80	Gallons	Exit 9; I-89 South, Montpelier
12/8/2008	Unknown	Unknown	N/A	Main St. Middle School, Montpeleir
12/15/2008	Unknown	Unknown	N/A	Terrace Rd, Montpelier
3/22/2009	Gasoline	10	Gallons	Muddy Brook, Rt 2, Montpelier
3/26/2009	Diesel	50	Gallons	I-89 South, Montpelier
4/4/2009	Unknown	Unknown	N/A	Union Elementary School, 1 Park Ave, Montpelier
4/27/2009	Gasoline	Unknown	N/A	Former Grossman's, 260 River St, Montpelier
5/7/2009	Gasoline	3	Gallons	Capital Shell, 108 State St., Montpelier
5/17/2009	Unknown	<1	Gallons	Prevost Residence, 6 Witt St., Montpelier
5/19/2009	Unknown	10	Gallons	Casella Waste Mgmt, 378 E. Montpelier Rd., Montpelier
6/12/2009	Unknown	100	Gallons	Montpelier Stump Dump, Montpelier
9/28/2009	Diesel	3	Gallons	Champlain Farms, 5 Memorial Drive, Montpelier
9/29/2009	Heating Oil	Unknown	N/A	Hurley/Kilian Residence, Montpelier
10/5/2009	Unknown	2-5	Gallons	Wrightsville Dam, Montpelier
10/5/2009	Unknown	Unknown	N/A	North Branch of Winooski River, Rt 12, Montpelier
10/15/2009	Unknown	Unknown	N/A	Barrett & Linda Gregoire Apartments, 163 State St., Montpelier
10/15/2009	Heating Oil	50	Gallons	Manion Residence, 19 Phelps St., Montpelier
11/1/2009	Gasoline	4	Gallons	Champlain Farms, 5 Memorial Drive, Montpelier
12/31/2009	Unknown	500-1,000	Gallons	Union Elementary School, 1 Park Ave, Montpelier
1/7/2010	Unknown	2	Gallons	3 Hubbard Park Dr., Montpelier
1/7/2010	Heating Oil	2	Gallons	187 State St., Montpelier
1/25/2010	Diesel	100	Gallons	I-89, Montpelier
2/11/2010	Gasoline	2.62	Gallons	Champlain Farms, 108 State St., Montpelier
2/11/2010	Gasoline	1	Gallon	Champlain Farms, 108 State St., Montpelier
3/4/2010	Unknown	<3	Gallons	47-49 E. State St., Montpelier
3/5/2010	Gasoline	5	Gallons	Champlain Farms, 108 State St., Montpelier
3/25/2010	Unknown	<250	Gallons	Terry's Antifreeze, 252 Mill Rd., Montpelier
4/9/2010	Gasoline	5	Gallons	Champlain Farms, 108 State St., Montpelier
4/30/2010	Gasoline	10	Gallons	Cumberland Farms, 5 Memorial Drive, Montpelier
5/12/2010	Gasoline	2	Gallons	Champlain Farms, 108 State St., Montpelier
6/14/2010	Gasoline	10	Gallons	Champlain Farms, 108 State St., Montpelier
7/21/2010	Unknown	50	Gallons	Montpelier WWTP, 730 Dog River Rd, Montpelier
8/4/2010	Unknown	100	Gallons	28 Spring Hollow Rd., Montpelier
10/1/2010	Unknown	Unknown	N/A	289 Barre St., Montpelier
1/4/2011	Unknown	100	Gallons	75 Berlin St., Montpelier
1/20/2011	Unknown	<1	Gallons	5 Winter St., Montpelier
1/24/2011	Diesel	35	Gallons	Cabot Warehouse, Gallison Hill Rd., Montpelier
2/9/2011	Unknown	Unknown	N/A	I-89 SB Exit 8, Montpelier
2/11/2011	Unknown	2	Gallons	47-49 E. State St., Montpelier
4/30/2011	Unknown	Unknown	N/A	125 River St., Montpelier
5/17/2011	Unknown	Unknown	N/A	River at 152 State St., Montpelier
5/28/2011	Unknown	Unknown	N/A	137 Elm Street, Montpelier
5/29/2011	Unknown	Unknown	N/A	35-37 Elm Street, Montpelier
5/31/2011	Unknown	Unknown	N/A	118 Robinhood Circle, Montpelier
6/1/2011	Diesel	600	Gallons	US FOB Montpelier, 87 State St., Montpelier
6/16/211	Unknown	30	Gallons	153 State St., Montpelier
7/11/2011	Unknown	20	Gallons	Agency of Agriculture, 116 State St., Montpelier
7/17/2011	Heating Oil	Unknown	N/A	138 Main St., Montpelier
7/21/2011	Unknown	Unknown	N/A	Winooski River, Rt. 2
8/24/2011	Unknown	1-2	Gallons	417 Barre St., Montpelier
8/29/2011	#2 Fuel Oil	Unknown	N/A	153 State St., Montpelier
8/31/2011	Gasoline	4	Gallons	Champlain Farms, 108 State St., Montpelier

9/3/2011	Unknown	Unknown	N/A	Positive Pie/Woodbury Mtn Toys, 22-24 State St., Montpelier
9/16/2011	Unknown	Unknown	N/A	53 Memorial Drive, Montpelier
11/16/2011	Gasoline	Unknown	N/A	384 River St., Montpelier
11/28/2011	Unknown	Unknown	N/A	North Branch, Main St., Montpelier
12/3/2011	#2 Fuel Oil	3	Gallons	24 Sibley Ave, Montpelier
12/11/2011	Gasoline	3	Gallons	Cumberland Farms, 5 Memorial Drive, Montpelier
1/13/2012	Gasoline	6	Gallons	Cumberland Farms, 5 Memorial Drive, Montpelier
2/3/2012	Unknown	Unknown	N/A	9 School St., Montpelier
3/3/2012	#2 Fuel Oil	30	Gallons	Clean Slate Tavern, 107 State St., Montpelier
3/13/2012	Gasoline	4	Gallons	Champlain Farms, 108 State St., Montpelier
3/27/2012	Gasoline	5	Gallons	Champlain Farms, 108 State St., Montpelier
4/16/2012	Hydraulic Oil	Unknown	N/A	Glen Rd., Montpelier
5/31/2012	#2 Fuel Oil	2	Gallons	89 Main St., Montpelier
5/27/2012	#2 Fuel Oil	2	Oz	15 Grandview Terrace, Montpelier
6/25/2012	Hydraulic Oil	10-15	Gallons	2140 River Rd, Montpelier
8/7/2012	#2 Fuel Oil	100	Gallons	8 Wilder St., Montpelier
10/3/2012	Hydraulic Oil	5	Gallons	VTrans District 7, 1876 VT Rt 214
10/17/2012	Pesticide/Herbicide	Unknown	N/A	Frank Z's Central VT Auto, 100 Gallison Hill Rd., Montpelier
11/21/2012	Anti-freeze	2	Gallons	Rt 2 near Exist 9, I-89
12/5/2012	#2 Fuel Oil	150	Gallons	14 Charles St., Montpelier
12/17/2012	Gasoline	2	Gallons	Cumberland Farms, 5 Memorial Drive, Montpelier
4/19/2013	Motor Oil	5	Gallons	I-89 S; MM 52.2
5/14/2013	Hydraulic Oil	2-3	Gallons	11 Dewey St., Montpelier
7/19/2013	Gasoline	2-4	Gallons	377 River St., Montpelier
8/30/2013	Gasoline	Unknown	N/A	Cumberland Farms, 37 Berlin St., Montpelier

The Montpelier LHMP meeting found the Montpelier Junction area and the adjacent road network in the vicinity of and extending to the Interstate 89 to be particularly vulnerable to hazardous material events. Montpelier Junction is located in the neighboring town of Berlin but due to its proximity it is an area of concern to Montpelier. Montpelier Junction is located at the confluence of the Dog and Winooski Rivers, and at the interchange of Central Vermont's most significant railroads, the Montpelier Junction area contains a variety of industrial uses. The Capitol Steel & Supply Company is located within the area's NFIP designated 100-year floodplain and Duke Energy's Berlin Propane Terminal (120,000 gallons of pressurized propane in above ground tanks) is located just beyond the floodplain, in addition to various storage facilities in and out of the floodplain. The railroad transports a variety of materials that could pose a threat to the area, in addition to the hazardous materials located onsite. The Berlin Police Department estimates that 100,000 gallons of additional propane sits in railcars and approximately 30 trucks make stops in Montpelier Junction daily.

The grade and approach to northbound Interstate 89 Exit 8 has contributed to transport accidents of vehicles carrying hazardous materials. The September 2002 incident cost the City of Montpelier $1,377 for response and clean-up efforts. This type of incident not only affects the City financially but can detrimentally affect public safety of travelers along Interstate 89, potentially close a major transportation corridor in the State of Vermont (Interstate 89) and can have negatively affect the environment. Considering the factors which contribute to this hazard plus past occurrences, the probability and likelihood of a reoccurring incident is likely.

Mobile sources are in addition to the three Tier II sites that are depicted on the *Hazardous Analysis Map*. Areas potentially affected by a hazardous material incident in this area are the Winooski River, the New England Central Railroad, the Washington County Railroad, Interstate 89, Route 2, the Montpelier Wastewater Treatment Plant, and potentially the Vermont State House. The nearest

hazmat truck is located 35 miles away at the IBM Facility in Essex Junction. The nearest hazmat decontamination trailer is located 5 miles away at the Berlin Fire Station.

Hazard	Location	Vulnerability	Extent	Impact	Probabili
Hazardous Materials (fixed and transport)	Interstate 89 northbound Exit 8, exit ramp, section of Memorial Drive to Dog River Road to Montpelier Junction (see *Areas of Local Concern Map)*	Winooski River, the New England Central Railroad, the Washington County Railroad, Interstate 89, Route 2, the Montpelier Wastewater Treatment Plant, and potentially the Vermont State House.	Mode rate	September 2002 incident $1,377 for response and clean-up efforts	HIGH

Flood/Flash Flood/Fluvial Erosion

History of Occurrences (from NCDC website and FEMA DR list) within Central Vermont – City-specific data not available.

Date	Event	Location	Extent
11/08/2011	Flood/Severe Storms	County Wide	DR 4043
8/28/2011	Flash Flood (TS Irene)	County Wide	Winooski River crested at 19.05 feet in Montpelier– flood stage is at 15'; 5-7" of rain -DR 4022
5/26/2011	Flash Flood	County Wide	4" of rain; Montpelier gauge at 17.59' – DR4001
4/23-5/9/2011	Flash Flood	County Wide	DR 1995
8/2/2008	Flash Flood	County Wide	Not a historical crest; data gap
7/11/2007	Flash Flood	Northeast Washington County	3-6" of rain in 2 hrs – DR 1715, not a historical crest
6/26/2006	Flood	County Wide	3-4" of rain, not a historical crest
9/16/1999	Tropical Storm Floyd	County Wide	Montpelier flood gauge at 9.30 feet, 5-7" rain county wide DR 1307
6/27/1998	Flash Flood	County Wide	3-6" of rain over 2 day period - DR

			1228, not a historical crest
6/6-6/8/1984	Flood/Severe Storms	Montpelier, County Wide	DR-712
8/5/1976	Flood	County Wide	Montpelier flood gauge at 12.31 feet – DR 518
6/30/1973	Flood	County Wide	Montpelier gauge at 17.55 ft DR 397
9/22/1938	Flood/Hurricane	County Wide	Montpelier flood gauge at 14.11 feet
11/03/1927	Flood	County Wide	Montpelier flood gauge at 27.10 feet

The City of Montpelier has been severely affected by flooding of various forms since its founding in the 1700s. In more recent times, residents, city government, state government, the Army Corps of Engineers, and the Federal Emergency Management Agency have constructed flood mitigation devices, enacted various forms of legislation, and initiated numerous activities and programs designed to mitigate flooding and flood damage in the city. While many of these strategies have been successful in reducing some forms of flooding, the threat of flooding and flood damage remains significant. Past floods have caused millions of dollars in damages to the city and its residents and the potential exists for further damage to the city's buildings, property, infrastructure, and people. In 1998, the City of Montpelier adopted a stand-alone Flood Hazard Mitigation Plan which presented strategies to mitigate future flood losses in the event flooding does occur.

The flood plain in Montpelier is depicted in the Flood Insurance Rate Maps (FIRM) produced by the Federal Emergency Management Agency (FEMA) revised March 19, 2013. Much of the land surrounding each of the city's four rivers is located within the flood plain. In most areas, the flood plain consists of only a small area on either side of the river; however, in the downtown area near the confluence of the Winooski and North Branch Rivers the floodplain widens considerably.

Montpelier joined the National Flood Insurance Program (NFIP) in 1973. The City also received approval from FEMA to be designated a Level 9 community which became effective in October 1998. A rating of 9 reduces flood insurance rates by 5% for policy holders. The City was granted this reduced rating based upon existing City programs such as participation in the NFIP, mapping of the flood plain, public outreach and education, zoning regulations, and the amount of open space in the flood plain. The City designation is reviewed by FEMA on an annual basis to ensure the required programs are retained.

However, based on the results of overlaying the FIRM flood maps with the location of the E911 points, there exist 302 buildings in the City which are vulnerable to potential flooding. The estimated loss for a severe flooding event for all properties located within the City's 100-year

floodplain is approximately $108,909,500. This flood loss potential represents 23.99% of the total value of properties within Montpelier. Currently there are 306 flood insurance policies in Montpelier covering $70,770,600 in property value. Of these policies, 257 are identified as being in a flood hazard area (Zone A). As such 89 percent of the structures at risk are carrying flood insurance. Pursuant to the Biggert-Waters Act of 2012, Pre-FIRM structures will be paying much higher premiums than in the past. Currently 233 of the flood insurance policies in the Special Flood Hazard Area are for Pre-FIRM structures, which may affect insurance use and ownership.

Montpelier has 30 repetitive loss properties, which comprises 28.8% of repetitive loss properties in the state of Vermont. All repetitive loss properties in Montpelier are located within A Zones, including one building with 4 or more claimed losses. Most of the recurring damage to repetitive loss properties stem from water coming into basements.

Table 1. Montpelier: FEMA Irene Relief & Recovery Funds

Program	Subtotal	Total
Individuals and Households Program		$1,195,196
Housing Assistance	$1,064,657	
Other Needs	$130,539	
Public Assistance		$19,745
Hazard Mitigation Grant Program		$0
National Flood Insurance		$406,781
Total		$1,621,722

In 2011, two widespread floods caused significant damage to residences, businesses and infrastructure. Montpelier suffered the most damage in the May 2011 flooding event, during which washouts occurred on numerous roads within the City and the wastewater treatment plant flooded. A road damage inventory from May 2011 is included in the attachments to this plan. To mitigate for future events, numerous culverts were resized and replaced and drainage-ways were reinforced. During Tropical Storm Irene in August 2011 additional basement flooding occurred, though damages were minimized in the City due to repairs and mitigation measures following the May event. FEMA administered $1,621,722 in Irene Relief and Recovery funds overall to the residents and the City of Montpelier (see Table 1). Failure or emergency release of the Marshfield Dam, located less than 20 miles upstream from the City of Montpelier, and potential ensuing flooding to areas within the City was a concern during TS Irene, though no emergency release did occur.

As previous events have made clear, even areas beyond the NFIP designated 100-year floodplain may be vulnerable to flood related hazards. Channel adjustments with devastating consequences have frequently been documented wherein such adjustments are linked to historical channel management activities, floodplain encroachments, adjacent land use practices and/or changes in watershed hydrology associated with conversion of land cover and drainage activities, within and beyond the NFIP floodplain.

Hazard	Location	Vulnerability	Extent	Impact	Probability
Flood/Flash	100 yr	Downtown	Severe	Losses to	High

Flood/Fluvial Erosion	Floodplain, Areas adjacent to Winooski River and North Branch	residences and businesses; roads, bridges and culverts		businesses and residences; Replacements of culverts and road reconstructio n	

5.3 Moderate Threat Hazards

Winter Storms/Ice Storms

A winter storm is defined as a storm that generates sufficient quantities of snow, ice or sleet to result in hazardous conditions and/or property damage. Ice storms are sometimes incorrectly referred to as sleet storms. Sleet is similar to hail only smaller and can be easily identified as frozen rain drops (ice pellets) that bounce when hitting the ground or other objects. Sleet does not stick to wires or trees, but in sufficient depth, can cause hazardous driving conditions. Ice storms are the result of cold rain that freezes on contact with the surfaces coating the ground, trees, buildings, overhead wires and other exposed objects with ice, sometimes causing extensive damage. Periods of extreme cold tend to occur with these events.

The extent of winter storms on Montpelier is difficult to estimate as it is dependent on the size and path of the storm. For the next plan update, Montpelier will more closely monitor winter storms to determine the worst impacts possible on the City.

One of the major problems associated with ice storms is the loss of electrical power. Major electric utility companies have active, ongoing programs to improve system reliability and protect facilities from damage by ice, severe winds and other hazards. Typically, these programs focus on trimming trees to prevent encroachment of overhead lines, strengthening vulnerable system components, protecting equipment from lightning strikes and placing new distribution lines underground. The City of Montpelier also has multiple power grids in place serving different areas, which minimizes the probability that a City-wide power outage will occur. Other major problems associated with ice storms include closed roads and restricted transportation.

By observing winter storm watches and warnings, adequate preparations can usually be made to lessen the impact of snow, ice and sleet, and below freezing temperature conditions on the City of Montpelier. Providing for the mass care and sheltering of residents left without heat or electricity for an extended time and mobilizing sufficient resources to clear broken tree limbs from roads, are the primary challenges facing community officials. Montpelier should plan and prepare for these emergencies. That planning and preparedness effort should include the

identification of mass care facilities and necessary resources such as cots, blankets, food supplies and generators, as well as debris removal equipment and services. Shelters within Montpelier include Montpelier High School, Main St. School, Union School, Vermont College, Trinity Church, Kellogg-Hubbard Library and City Hall. The City encourages residents who are in remote locations to be equipped with generators and backup fuel supplies in the event of prolonged power outages and travel restrictions.

Hazard	Location	Vulnerability	Extent	Impact
Extreme Cold/Winter Storm/Ice Storm	City-wide	Elderly & handicapped populations, remote structures, old/under-insulated structures, utilities, trees	Below freezing and severe wind chill factor for multiple days; depends on severity of event;	Depends on severity – additional sheltering/plowing/emergency services costs for City

Water Supply Contamination

The City of Montpelier distributes an average of 1 million gallons of water to Montpelier and Berlin residents each day. (Montpelier provides municipal water service to over 2,500 commercial and residential customers within the city limits and about 500 customers in Berlin Fire District 1, and the Montpelier Junction Railroad Station, the U-32 Junior/Senior High School, the Hill Top Apartments in Berlin, as well as four residences in Berlin. In addition, there is one private water system—a private well and storage tank serving the Murray Hill development. All other home owners are on private wells.)

The city's municipal water is drawn by siphon from its source at Berlin Pond, and passes through a rapid sand filtration plant before being transmitted into the city's grid of mains. The system has capacity to about 900 feet. Special pressure districts operate in the Terrace Street area and on Towne Hill. Potential service areas are generally established below the 900 foot elevation, except where special infrastructure can be installed, as on Terrace Street and Towne Hill.

The purity and security of its water supply is one of the city's greatest concerns. While Montpelier appears to have an adequate supply of water, there is some concern over the yield and quality of the system over time. Concern of possible petroleum pollution and proliferation of invasive species that could clog the water intake pipe has been heightened following a 2011 Vermont Supreme Court decision, which ruled that the City can not prohibit public recreational use of the pond. The City has been monitoring the pond's water quality and no issues have arisen to date, though as of July 2013, the City petitioned the State of Vermont for a rule change "to prohibit the presence of internal combustion motors on Berlin Pond including tools powered by internal combustion, petroleum, and ice shanties.

Hazard	Location	Vulnerability	Extent	Impact	Probability
Water Supply Contamination	Municipal Water Supply at Berlin pond	City of Montpelier and Town of Berlin	Severe	Costs associated with remediation of potential petroleum pollution or clearing of water intake pipe	Low

Cyber Disruption

Cyber disruptions may be driven by criminal motives for profit, extortion, or theft, or as deliberate attacks to destroy, damage, or interfere with infrastructure systems. Cyber terrorism is a deliberate act of computer-to-computer attack that undermines the confidentiality, integrity, or availability of a computer or computer system or information.

Cyber disruption is a hazard that touches many aspects of our communities: industry, government, health, business, and private. The rapid growth of social media use and technology has increased the potential of cyber disruption exponentially. The commonplace use of computers in practically every office and system contributes to the complexity of protecting and mitigating cyber threats. Because Montpelier is the capital city and seat of state government in Vermont, there exists a heightened threat of cyber terrorism on state systems that could have potential ripple effects on the City's information systems.

In order to mitigate for this risk, the City's Information Technology Department regularly monitors information systems for viruses and other potential threats and the City has redundant server locations to prevent any disruptions. City staff also regularly participates in state cyber security efforts to assess and mitigate these threats.

Hazard	Location	Vulnerability	Extent	Impact	Probability
Cyber Disruption	Information systems	City of Montpelier, residents, businesses, State Offices	Severe; Generally no direct effects on built environment	Costs associated with data loss, secure or personal information leaks, etc.	Low

6. Mitigation

6.1 City Master Plan (Sept. 2010) Goals that Support Local Hazard Mitigation

The following goals were incorporated into the 2010 City Master Plan related to hazard mitigation based on the 2007 Annex:

- Expand set-backs and buffer ordinances around water-ways to increase natural flood protection.
- Alter mowing practices to ensure that landowners near waterways allow natural vegetation to re-emerge for flood protection.
- Consider the addition of a Shoreline Overlay District to the zoning ordinance and design guidelines that can preserve and enhance the pollution filtering, flood mitigating, aesthetic, and recreational value of riverfronts.
- Conform and comply with existing National Flood Insurance Program requirements by analyzing and updating our existing floodplain regulations as per the NFIP Community Floodplain Management Regulations Review Checklist and Agency of Natural Resources suggestions.
- Articulate a pattern of safe and flood-resilient growth by designating zones of uses and densities in flood hazard areas.
- Develop higher standards of review and/or regulatory requirements in the floodplain.
- Consider policies that provide density bonuses for development that avoids the floodplain.
- Preserve and promote open spaces and the natural and beneficial functions of floodplains.
- Work with State and Federal authorities to reduce the risk of ice jam flooding.
- Support and promote existing systems of communication, and take advantage of new systems as they develop.

Montpelier City Master plan will be updated in 2015. The City is interested in adding goals which relate to mitigation planning, such as:

- To take actions to reduce or eliminate the long-term risk to human life and property from natural hazards.

The goal of this hazard mitigation plan is to:

- To take actions to reduce or eliminate the long-term risk to human life and property from:
    - Ice Jams
    - Hazardous Materials (fixed and transport)
    - Flooding/Flash Flooding/Fluvial Erosion
    - Winter Storms/Ice Storms

- Water Supply Contimation
- Cyber Disruption

Specific hazard mitigation strategies related to goals of the Plan include:

- Ensure existing and future drainage systems are adequate and functioning properly.
- Preserve and prevent development in areas where natural hazard potential is high.
- Ensure that all residents and business owners are aware of the hazards that exist within Montpelier and ways they can protect themselves and insure their property.
- Ensure that emergency response services and critical facilities functions are not interrupted by natural hazards.

6.2 Identified Hazard Mitigation Programs, Projects & Activities

Hazard mitigation programs, projects and activities that were identified for implementation at the City Local Hazard Mitigation meeting are:

Hazard Mitigated	Mitigation Action	Local Leadership[3]	Prioritization (High, Med)	Possible Resources[4]	Time Frame
Ice Jams	Coordinate another formal ice watcher training with CRREL	Fire Dept., Police Dept.	Med	Local Funds	2 yrs
Ice Jams	Initiate the wastewater effluent bypass station to melt ice formation around cemetery bend based on monitoring of the ice cover situation	City of Montpelier, State Rivers Management/ DEC-Wastewater Division	High	Local funds	current
Ice Jams	Continue situating crane at Cemetery Bend during the winter months as needed	City of Montpelier, State Rivers Management	Med	Local funds	current
Ice Jams	Study the area of the Winooski River from the Bailey Ave bridge to Cemetery Bend to determine if rock vans to encourage improved	City of Montpelier, State Rivers Management, CRREL	Med	COE/State/ Local	2 yrs

[3] SB – Select Board, PC - Planning Commission, ANR – Agency of Natural Resources
[4] HMGP – Hazard Mitigation Grant Program, EMGP – Emergency Management Grant Program, PSIC/NTIA – National Telecommunications and Information Administration, USDA – United States Dept. of Agriculture

	hydraulic grade lines would be beneficial.				
Ice Jams	Explore feasibility of ice retention, bypass channels, etc through COE Feasibility Study currently ongoing.	City of Montpelier, COE, CRREL, State Rivers Manageme nt	High	COE/CRREL / State/ Local	2 yrs
Ice Jams	Implement results of the COE Feasibility Study.	City of Montpelier, COE, CRREL, State Rivers Manageme nt	High	COE/CRREL / State/ Local	5 yrs
Flood/Flash Flood/Fluvial Erosion	Develop Stormwater Master Plan	Planning & Community Dev., PC	High	Ecosystem Restoratio n Program	2 yrs
Flood/Flash Flood/Fluvial Erosion, Ice Jams	Update floodplain regulations in zoning ordinance	Planning & Community Dev., PC	High	Municipal Planning Grants	1 yr
Flood/Flash Flood/Fluvial Erosion, Ice Jams	Review Strategies in Community Rating System program	Planning & Community Dev., PC	High	Local Funds	1-2 yrs
Flood/Flash Flood/Fluvial Erosion, Ice Jams	Implement Capital Area Neighborhoods (CAN) communications system; identify neighborhood leaders	Planning & Community Dev., City manager	Med	Local Funds	1-2 yrs
Flood/Flash Flood/Fluvial Erosion, Ice Jams	Remove flood-prone heating systems below from structures connected to District Heating Plant	Public Works	High	HMGP, Local Funds	1-2 yrs
Cyber Disruptions	Training for City Staff in non-internet based communication in case of internet failure	Police Dept., City Manager	Med	EMGP	2-3 yrs

VEM also emphasizes a collaborative approach to achieving mitigation on the local level, by partnering with ANR, VTrans, ACCD, Regional Planning Commissions, FEMA Region 1 and other

agencies, all working together to provide assistance and resources to towns interested in pursuing mitigation projects and planning initiatives.

The Hazard Mitigation Activities Matrix (Attached) lists mitigation activities in regards to local leadership, possible resources, implementation tools, and prioritization. Prioritization was based upon the economic impact of the action, the Community's need to address the issue, the action's cost, and the availability of potential funding. The action's cost was evaluated in relation to its benefit as outlined in the STAPLEE[5] guidelines.

Montpelier understands that in order to apply for FEMA funding for mitigation projects, a project must meet FEMA benefit cost criteria. In addition, the City must also have a FEMA approved Hazard Mitigation Plan.

A High prioritization denotes that the action is either critical or potential funding is readily available and should have a timeframe of implementation of less than two years. A Medium prioritization is warranted where the action is less critical or the potential funding is not readily available and has a timeframe for implementation of more than two years but less than four. A Low prioritization indicates that the timeframe for implementation of the action, given the action's cost, availability of funding, and the community's need to address the issue, is more than four years.

Attachments

- Inventory of Road Damage from May 2011 Flooding Event
- City of Montpelier Local Hazard Mitigation Public Hearing notice (6/26/14) in Barre-Montpelier Times Argus on 6/24/14
- 6/26/2014 Public Hearing posting on City of Montpelier's web site
- CVRPC Blog Post announcing draft Local Hazard Mitigation Plan available for comment (6/24/14)
- Hazards Analysis Map
- Areas of Local Concern Map
- 5 year review and maintenance process
- City Resolution Adopting the Plan
- *Montpelier Flood Hazard Mitigation Plan, July 1998*.

[5] A method of evaluating mitigation actions based on **S**ocial, **T**echnical, **A**dministrative, **P**olitical, **E**conomic, **E**nvironmental criteria

Inventory of Road Damage – May 2011 Flooding Event

				Severity	Status of	Private/Public
	Street Name		***Description of Damage***	***of Damage****	***Repairs/Cleanup***	***Property***
1	**Moonlight Terrace**	a.	Driveway culvert w/roadside erosion & sedimentation.	Mod	Temp	Public
		b.	Road lateral culvert (18") washout both sides - road restoration priority.	Mod	Temp	Public
		c.	Downstream channel erosion.	Minor	Temp	Public
2	**Sherwood Drive**	a.	Flow from **Robinhood Circle** across road - #230 **Sherwood Dr** residential foundation			
			erosion & propane tank.	?	N/A	Private
		b.	DI erosion w/structure damage & curb loss @ near #103 **Sherwood Dr**.	Mod	Temp	Public
		c.	Road surface erosion @ **River St** intersection.	Minor	Temp	Public
3	**Northfield Street**	a.	Roadway surface erosion, **Prospect St - Derby Dr**, incl. MH washout.	Severe	Temp	Public
		b.	Sidewalk erosion, **Prospect St - Derby Dr.**	Mod	Temp	Public
		c.	Roadway surface & bituminous concrete sidewalk/curb damage **Prospect St - Derby Dr;** debris			
			sediment deposits @**Berlin St - Northfield St** intersection	Severe	Temp	Public
		d.	Sewer MH washout in SB lane approx. 300' LF south of **Prospect St**.	Moderate	100%	Public
		e.	Storm system sediment accumulation.			
		f	Pavement buckling West side of road @fire hydrant - Econo Lodge.	Moderate	No	Public
		g	Road shoulder West side w/minor pavement damage **Derby Dr - #123 Northfield St**.	Moderate	No	Pub/Pvt
4	**Prospect Street**	a.	Debris and silt in road @#71-81 **Prospect St.**	Minor	No	Pub/Pvt.
		b.	Minor road surface damage @**Hill St** intersection (DI maintenance @**Hill St**).	Minor	No	Public
5	**Taplin Street**	a.	Catch basin debris obstructed; flooding of 4 private properties:			
			#1 , # 3 , # 5 , & #9 Taplin Street and # 183 River Street.	Severe	Temp	Pub/Pvt.
		b.	Road surface damage throughout.	Severe	No	
		c.	Debris cleanup to **River St.**	Minor	80%	
6	**Gallison Hill Road**	a.	Washout of 7' x 11' pipe arch culvert - road closure.	Significant	Temp Rd	Pub/Pvt.
		b.	Roadside erosion - driveway culverts (4) plugged.		Culverts only	
7	**Towne Hill Road**	a.	Culvert @#**128 Towne Hill Rd** surcharged. 300 LF or roadside ditch erosion (pvmt okay)			
			driveway washout.	Moderate	No	Public
		b.	**Leap Frog Hollow Rd** (pvt.) partial washout - access to	Minor		Private

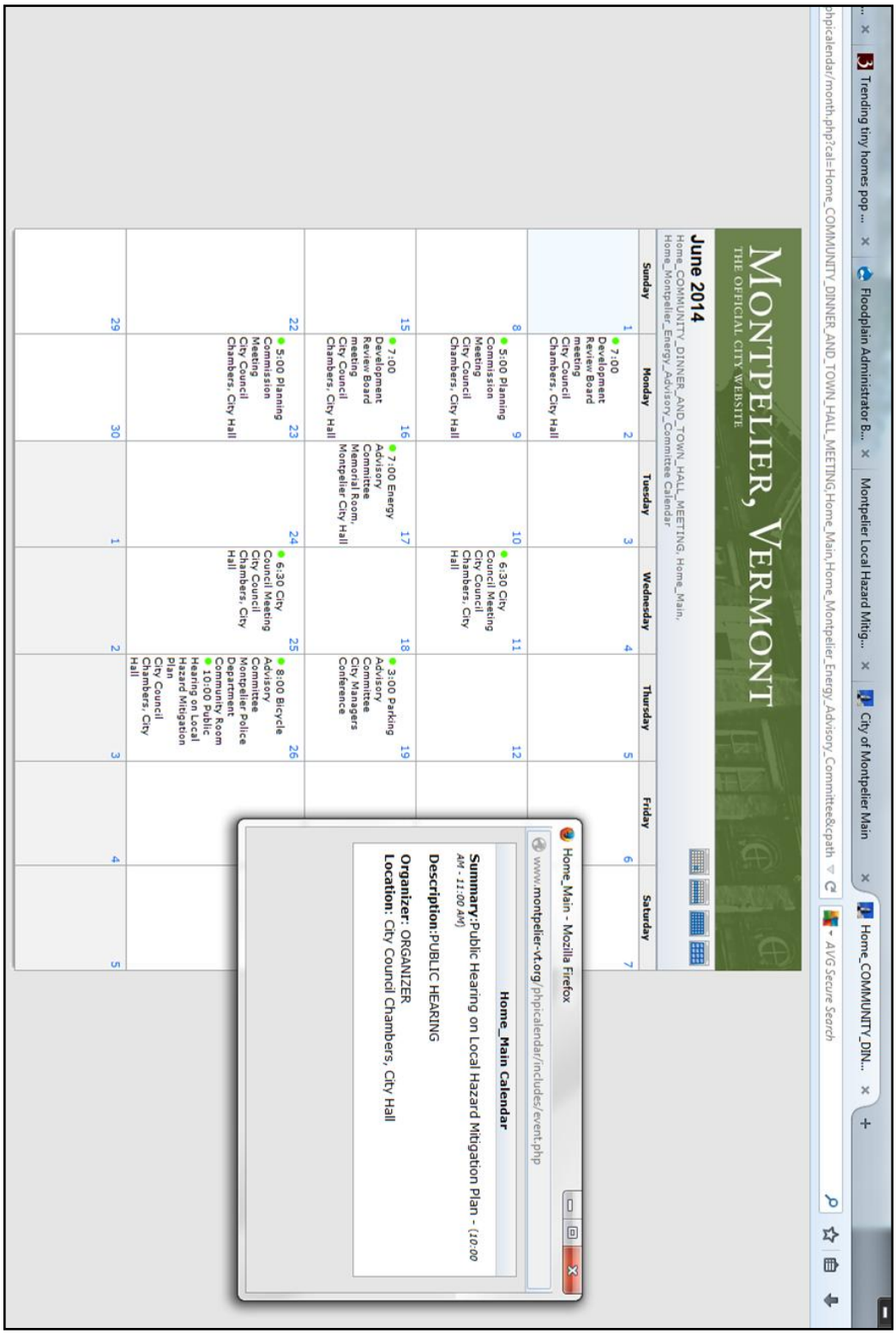
			homes passable.			
		c.	Erosion - pothole @**Westwood Drive** int.	Minor	No	Public
		d.	Roadside erosion North side **Grandview Terr - Greenock Ave**.	Moderate	No	Public
		e.	Roadside erosion w/pvmt damage South side **Hackamore Rd-Bliss Rd.**	Moderate	No	Public
8	**Marvin Street**	a.	Landslide aggravation (large maple tree lifted - non-threatening hazard)	Severe	Temp	Public
		b.	Roadside erosion (minor pavement damage) north of **Bingham St.**	Minor	No	Public
		c.	Slope failure (moderate) and guardrail undermined.	Moderate	No	Public
9	**Parkway Ave**	a.	Hubbard Park Pond surcharge, inlet obstruction overtop to erodable spillway and road; extreme erosion - 1/3 road width loss, full length	significant	90%	public
		b.	Debris & heavy sediment/gravel deposits of 6"-3") in and around private properties			
			#1 (Cranse) & # 4 (Segale) Summer St and over **Spring St** & **Summer St** surface & sidewalks - Road Closed until cleanup.	Severe	50%	Pub/Pvt
10	**Hill Street**	a.	Curb erosion - water overtopped with flow to **#101 Berlin St.** (need to lower CB rim elevation)	Minor	Temp	Pub/Pvt
		b.	Tree across road - removed by Farr Tree Service. Tree fall damage to metal fence / railing.	Moderate	50%	Public
		c.	roadside erosion @ Prospect St (65 River St)			
11	**Elm Street**	a.	Roadway and property flooding - silt deposits sidewalk and road (**Spring St - State St**).	Moderate	80%	Public
	VT Route 12					
12	**Main Street**	a.	Debris and sedimentation cleanup.	Moderate	80%	Public
		b.	**242 Main St** channel erosion - driveway erosion (**Towne St** drainage system).			
			244 Main St slope failure.	Moderate	Temp	Pub/Pvt
		c	roadside pavement buckle opp # **250 Main St** (formerly NECI)	moderate	no	pub
13	**Gould Hill Road**	a.	16" GMP lateral culvert debris plugged and inlet header erosion near **# 574 Gould Hill Rd**.	moderate	100%	Public
		b.	1,000+/- LF of roadside erosion along north side 1/4 to 1/3 road width loss.	Severe	Temp 40%	Public
		c.	12" PCC lateral culvert debris obstructed and inlet control loss.	Moderate	100%	Public
		d.	15" GMP culvert & conc. DI silt & gravel obstructed - silt deposition in North side ditch +/- 200 LF. Resulting roadside erosion at guardrail on South side of road.	Moderate	Temp	Public
		e	12" concrete culvert (old) washed out - new culvert outlet needed, w/landowner permission?	Minor	No	Public
14	**Phelps Street**	a.	Road surface erosion with structure damage 110' LF (**Roberts St - Berlin St**) - Road Closure.			
			Debris & silt deposition to **River St** including sidewalk.	Severe	60%	Public
15	**River Street**	a.	Culvert surchage @GMP substation - debris obstructed drainage systems w/silt & gravel deposition causing lane closure. Inlet channel erosion.	Minor	80%	Public
	US Rte 2/VT Rte 302	b.	Culvert surcharge & debris obstruction @ **# 161 River St.**	minor	80%	Public

		c.	Box culvert surchage @**VT Tire** (79 & 90 River St.) with silt & gravel deposition in roadway - passable. Invert channel erosion.	Moderate	No	Public
		d.	**199 River St** culvert overflow (road parking lot sedimentation). Culvert sink hole behind building.	Moderate	No	Pub/Pvt
		e.	Roadside erosion opposite **Sherwood Dr** at guardrail.	Minor	No	Public
		f.	**317-365 River St** (Crossway culvert) culvert surcharge and debris obstruction with road and property damage	Significant	Temp	Pub/Pvt
		g	Roadside slope / riverbank erosion @ roadside pullout with guardrail undermining.	Moderate	No	Pub
16	**Old Country Club Rd**	a.	Back slope landslide North side approx 1500' LF East of **Barre St**.	Moderate	Temp	Public
		b.	Lateral plugged _18_" HD culvert - overtop erosion damage & ditch debris sedimentation.	Minor	Temp	Public
		c.	Upland stream surcharge East of dam - road erosion, sediment & debris.	Moderate	Temp	Public
17	**Berlin/Granite/**	a.	Traffic signal electrical short resulting in conflict flash operation.	Minor	100%	Public
	River St Intersection					
18	**Berlin Street**	a.	Silt & debris **Granite St - Cedar Hill Lane**. **Cedar Hill Lane** upslope road and hillside erosion.	Moderate	80%	Pub/Pvt
	US Rte 2	b.	Lateral culvert sinkhole middle of the road @ **31 Berlin St** - 8" GMP culvert.	Severe	Temp	Public
		c.	Roadside erosion and pavement buckling @ **204 Berlin St**.	Minor	No	Public
19	**Gidney Road**		Road and ditch erosion, full length	Moderate	0	
20	**Hubbard Park & Parkside Drive**	a	erosion with curb loss @ **#10 HP Dr**	Moderate	temp sand bags	Public
		b	undermining / pavement buckle @ **#14 HP Dr**	Moderate	""	""
		c	curbing needed @ **#22 HP Dr** to replace home made burm (non-flood related)	Moderate	""	""
		d	Parkside Dr - edge of road erosion with some pavement undermining	moderate	No	""
21	**Bike Path:**	a.	Erosion @ Peace Park - Dog River obstructed RR culvert overtopping.	Moderate	No	Public
	(Winooski East)	b.	Sinkhole in shoulder between bridge - VSECU. Damage extent?	minor	hole filled	""
22	**Emmons Street**		Driveway erosion - damage extent?	?	?	
23	**Recreation Dept.**		Dog River Field siltation & erosion damage of ballfields (fence, infield, parking area)	significant	underway	Public
24	**Bliss Road**	a	Trench erosion gravel road surface & ditch sediment deposit throughout. Undersized cross culverts overtopped & plugged	Moderate	no	Pub/Pvt
		b	12" driveway culvert surcharged & erosion (**#67 Bliss Rd**, Mrs Kerr)	Moderate	temp	Pub/Pvt
		c	12" driveway culvert surcharged & erosion (**#111 Bliss Rd**)	Moderate	temp	Pub/Pvt
		d	18" driveway culvert surcharged & debris obstruction (**#128 Bliss Rd**)	Severe	temp	Pub

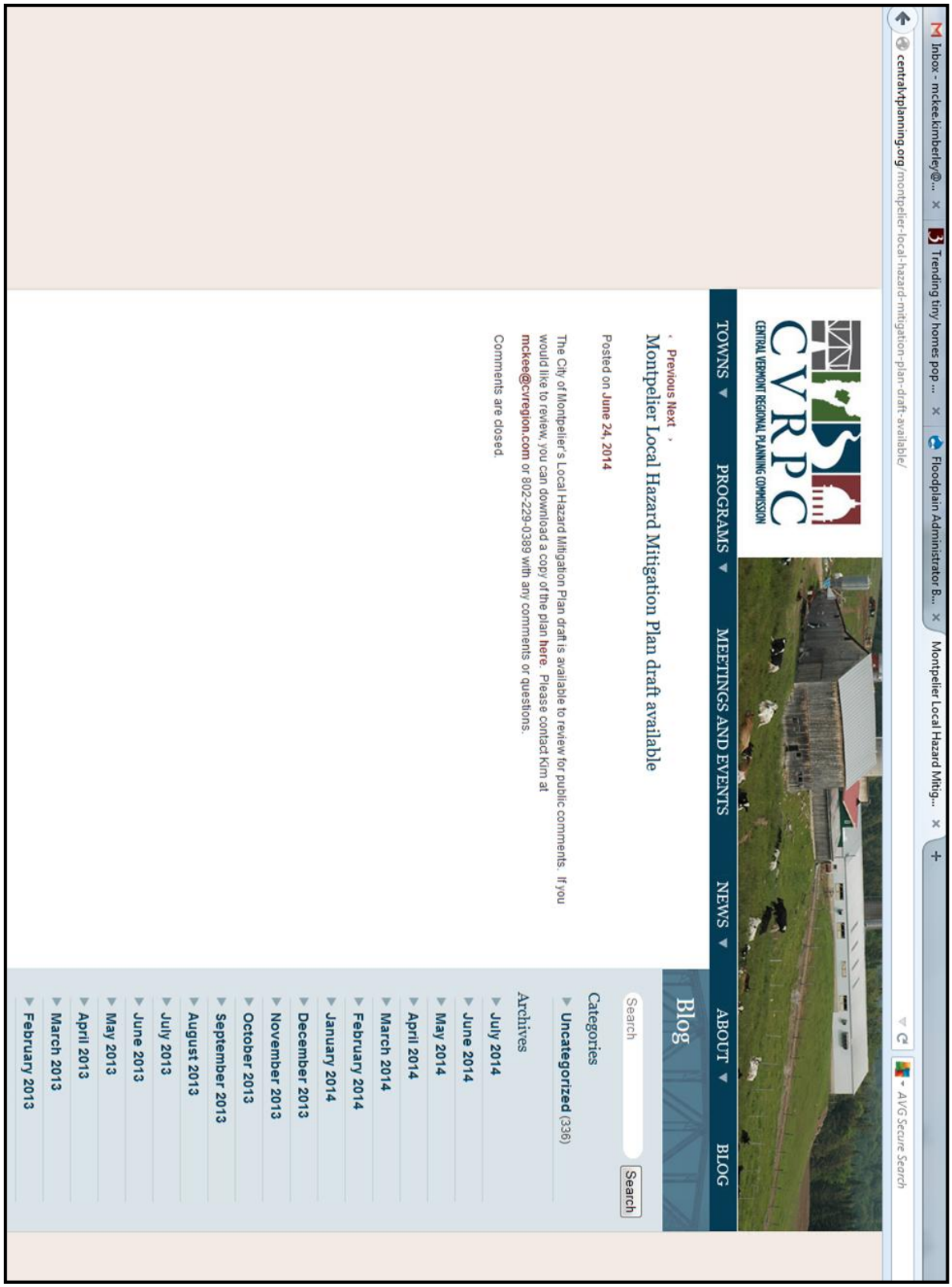
		e	12" driveway culvert surcharged & debris obstruction (**#204 Bliss Rd**)	Moderate	temp	pub
		f	about 400 lf roadside erosion (west side) from E. Mont Green Rd down hill	Severe	no	pub
		g	fore ditch erosion (**#254 Bliss Rd**)			
25	**Wheelock Street**	a	roadside & driveway erosion, debris obstructed catch basins & drive culverts (2), slope failure	moderate	minimal	public
26	**Mill Road / Corey Rd**		Culvert plugged & regrading	Minor	No	Public
27	**Terrace Street**	a.	shoulder erosion and obstructed culvert @ **#1157 Terrace**	Minor	No	Public
		b.	roadside ditch debris filled - east side south of Ledgewood Ter -	Minor	No	Public
		c.	shoulder erosion incl. pavement damage **89 - 94 Terrace St**	moderate	No	Public
		d.	sink hole edge of road (east side) near curb @ **15 Bailey Ave**	moderate	No	Public
		e.	green strip erosion @ drain MH - NE corner of **Bailey Ave/State St**	minor	No	Public
28	**Trees**	a.	College St @ Kemp.			Private
	Trees	b.	Barre St near Granite St.			Private
	(cont'd)	c.	Hill St above River St.	Minor	100%	Public
		d.	Behind S. L. Garand, **91 Pioneer Center**, on the riverbank			
		e.	Robinhood Circle			
29	**City Parks**	a.	Hubbard Park - Roadway erosion			
		b.	North Branch Park - erosion, silt/debris deposits, picnic tables & benches lost. ?	Severe	30%	Public
30	**Green Mount Cemetery**		Roadway erosion; debris obstructing drains.	Severe	?	Public
31	**North Street**	a.	Roadside erosion ditch and culvert @**#459 North St.**	minor	no	pub
		b.	Driveway erosion @**#459 North St.**	minor	no	pub
		c.	Culvert header erosion @**#720 North St** (18" culvert ok).	moderate	no	pub
		d.	Pavement undermine @0.1 mile above **#882 North St.**	moderate	no	pub
		e.	Stream channel and debris @culvert above Mechanic St.	moderate	no	pub
32	**State Street**		**60 State St** parking lot damage pavement sink hole / buckling - silt cleaning.	Moderate	no	private - leased by City
33	**Whitier Street**		3 Whitier St & 26 Harrison Ave - curb overtopped with some erosion of pvmt & curb and sediment deposition of adjacent properties.	moderate	no	public & private
34	**Independence Green**		Minor washouts, road erosion.	Moderate	No	Public
35	**Chestnut Hill Road**		DI erosion - culvert surcharge @ # **60 Chestnut Hill Rd**	moderate	No	Public
36	**Waste Water Treatment Facility**		flooding of facility, dewatering, teporary operational modifications, electrical control and pump damage	Significant	70%	Public

37	**Corse Street**	a	catch basin @ Cliff St intersection surcharged - roadside sandbagged to protect private prop. Curb needed but minor damage	minor	0	public/private
		b	curb over topped below house near Hubbard Pk gate. Flow to 20 Vine St - private prop erosion & deposition. Amend curb on Corse St	minor	0% pub /100% private	pub / private
38	**Blackwell Street**		Obstructed & surcharged culvert at top of hill. Driveway / edge of road erosion @ #7, 2 catch basins and pavement damage.	moderate	culvert opened	public
39	**Forest Drive**		back slope landslide (debris in road)	moderate	debris removed from road	public / private
40	**Easy Street**		Road washout and Ditch erosion	moderate	road rebuilt	public/ private
41	Frank Street		edge of road erosion - exposed sewer service line.			

6/26/2014 Public Hearing posting on City of Montpelier's web site



CVRPC Blog Post announcing draft Local Hazard Mitigation Plan available for comment (6/24/14)



Inbox - mckee.kimberley@... | Trending tiny homes pop ... | Floodplain Administrator B... | Montpelier Local Hazard Mitig...

centralvtplanning.org/montpelier-local-hazard-mitigation-plan-draft-available/

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Montpelier Local Hazard Mitigation Plan draft available

Posted on June 24, 2014

The City of Montpelier's Local Hazard Mitigation Plan draft is available to review for public comments. If you would like to review, you can download a copy of the plan here. Please contact Kim at mckee@cvregion.com or 802-229-0389 with any comments or questions.

Comments are closed.

Blog

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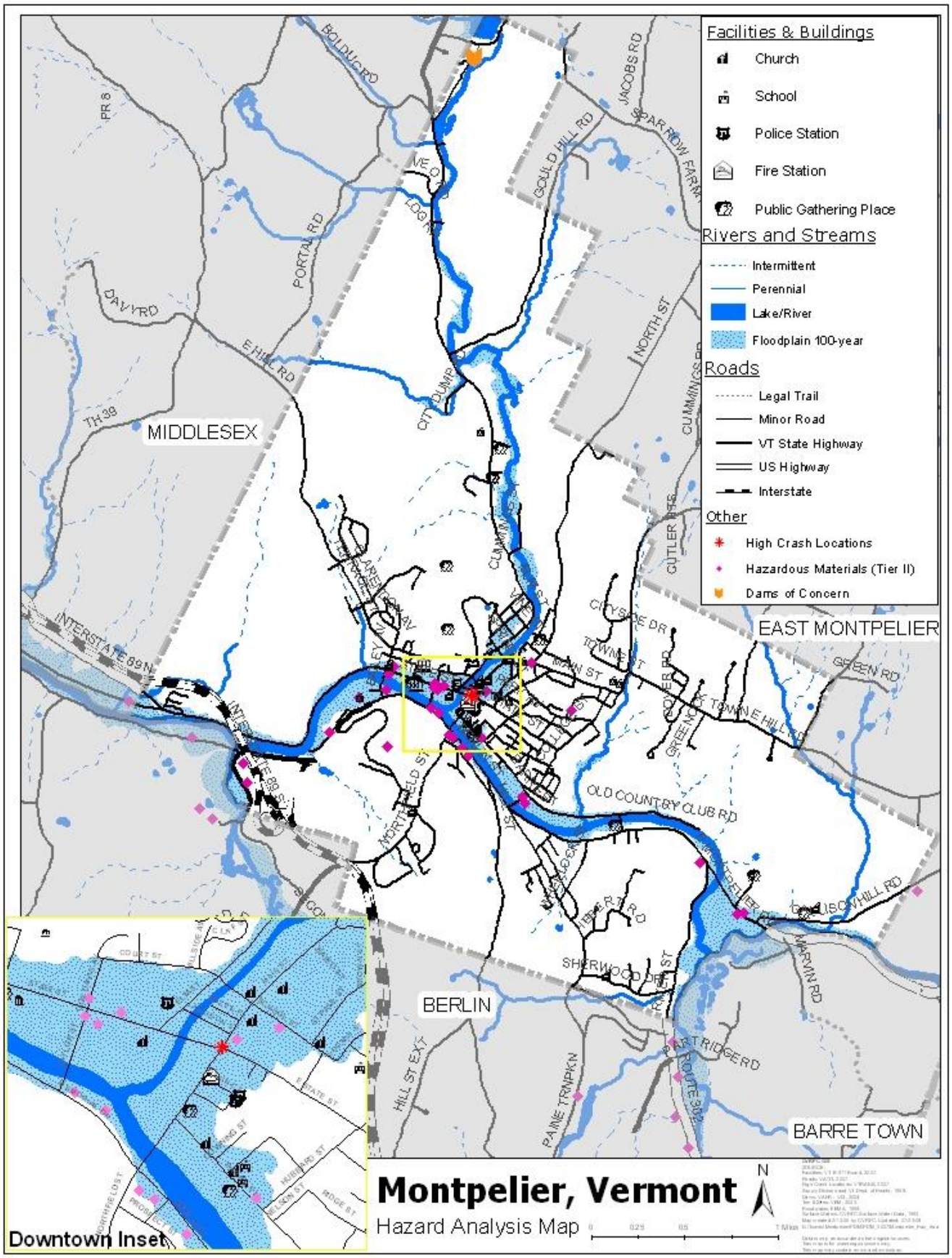
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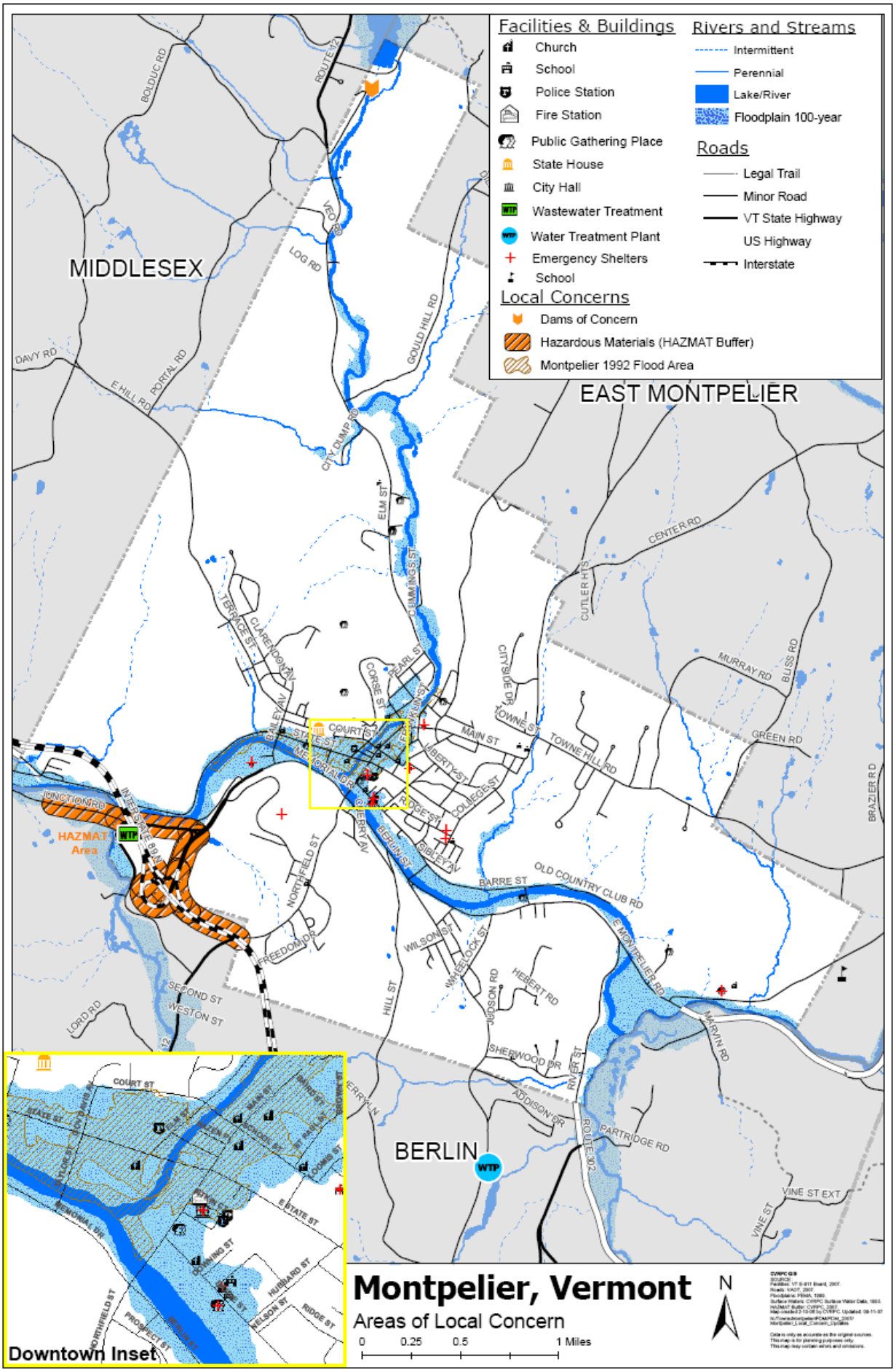
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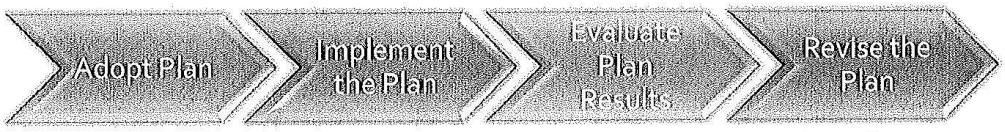
5-Year Plan Review/Maintenance



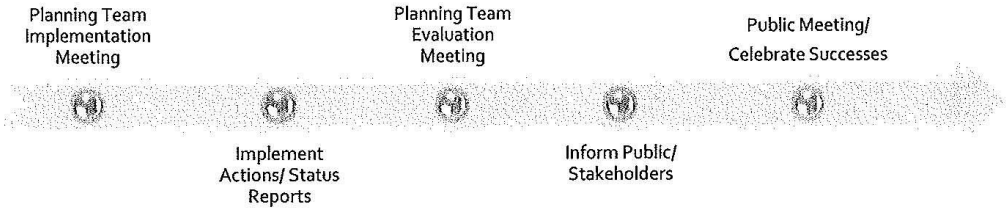
- Brief local leadership on plan approval
- Formally adopt plan
- Publicize plan approval and adoption
- Celebrate success

- Confirm/clarify responsibilities
- Integrate mitigaction actions
- Monitor and document implentation of projects and actions
- Establish indicators of effectiveness or success

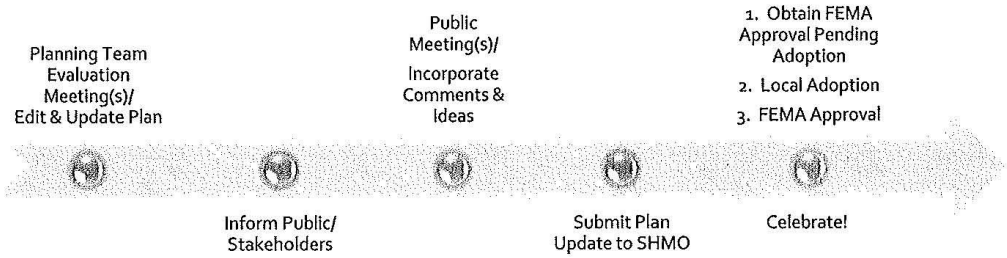
- Effectiveness of planning process
- Effectiveness of actions
- Document success & challenges of actions
- Update and involve community
- Celebrate successes

- Review factors affecting community's context
- Analyze findings; determine whether to revise process or strategy
- Incorporate findings into the plan

After Plan Adoption-Annually
Implement and Evaluate



Fifth Year, and After Major Disaster
Evaluate and Revise



Certificate of Adoption

The City of Montpelier
City Council
A Resolution Adopting the Local Hazard Mitigation Plan
_____ __, 2014

WHEREAS, the City of Montpelier has worked with the Central Vermont Regional Planning Commission to identify hazards, analyze past and potential future losses due to natural and manmade-caused disasters, and identify strategies for mitigating future losses; and

WHEREAS, the Montpelier Local Hazard Mitigation Plan contains several potential projects to mitigate damage from disasters that could occur in the City of Montpelier; and

WHEREAS, a duly-noticed public meeting was held by the City of Montpelier City Council on _____ __, 2014 to formally adopt the Montpelier Local Hazard Mitigation Plan;

NOW, THEREFORE BE IT RESOLVED that the Montpelier City Council adopts the Montpelier Local Hazard Mitigation Plan Update.

_____
Mayor

_____
Member of City Council

ATTEST

_____

Montpelier Clerk