



Town of Montague



Municipal Vulnerability Preparedness (MVP) Program

MVP Resiliency Plan

Public Comment DRAFT May/June 2018

Facilitated by the
Franklin Regional Council of Governments
A State-Certified MVP Provider



DRAFT

MVP Resiliency Plan

including the Summary of Findings from the
Community Resilience Building Workshop

June 2018

Table of Contents

Overview:.....	5
Community Resilience Building Workshop	6
Summary of Findings.....	6
Top Hazards.....	6
Areas of Concern	7
Current Concerns & Challenges Presented by Hazards.....	7
Specific Categories of Concerns and Challenges.....	9
Top Recommendations to Improve Resilience	13
CRB Workshop Participants: Department/Commission/Representative:.....	23
CRB Workshop Project Team: Organization and Role	25
Recommended Citation	25
Appendices	26
MAPS	27
EXERCISE OUTPUTS	35
WORKSHOP PRESENTATION.....	41

DRAFT

Town of Montague

Community Resilience Building Workshop

Summary of Findings

Overview:

Throughout Franklin County, Massachusetts, communities are experiencing more extreme weather events – especially heavy rains and flooding – along with higher temperatures and other climate-related conditions. These types of conditions are predicted to increase as a result of climate change.

In the face of these changes, municipalities have more of a sense of urgency to increase their resilience and adapt to extreme weather events and mounting natural hazards. Relatively recent events in Franklin County, such as Tropical Storms Irene and “Snow-tober”, have reinforced this urgency and compelled communities like the Town of Montague to proactively plan and mitigate potential risks. This type of planning will reduce the vulnerability of Montague’s people, infrastructure and natural resources, and will empower Montague’s officials and citizens to take steps to protect themselves and their community.

In the early spring of 2018, with funding from the Massachusetts Executive Office of Energy and Environmental Affairs, the Franklin Regional Council of Governments (FRCOG) offered the Town of Montague technical assistance in completing their Community Resilience Building Workshop to achieve a designation as Municipal Vulnerability Preparedness Community or “MVP” Community. As a State-certified MVP Provider, the FRCOG helped Montague engage in a community-driven process that brought together climate change information and local knowledge to conduct the workshop, whose central objectives were to:

- Define top local natural and climate-related hazards of concern;
- Identify existing and future strengths and vulnerabilities;
- Develop prioritized actions for the Community;
- Identify immediate opportunities to collaboratively advance actions to increase resilience.

This report summarizes the findings of the Town of Montague’s Community Resilience-Building Workshop.

Community Resilience Building Workshop

Summary of Findings

The Town of Montague, population 8,325, has conducted a number of planning projects in previous years, including its 2014 Hazard Mitigation Plan, which enabled the Town to identify high priority hazards as well as areas, infrastructure and populations vulnerable to a variety of hazards, and action items to potentially address hazards. Other recent Montague plans include: 2018 Community Development Strategy, 2017 Open Space and Recreation Plan, 2015 Montague Housing Production Plan, 2015 Tree Inventory, 2014 Turners Falls and Millers Falls Slum and Blight Inventory, and 2013 Downtown Turners Falls Livability Plan.

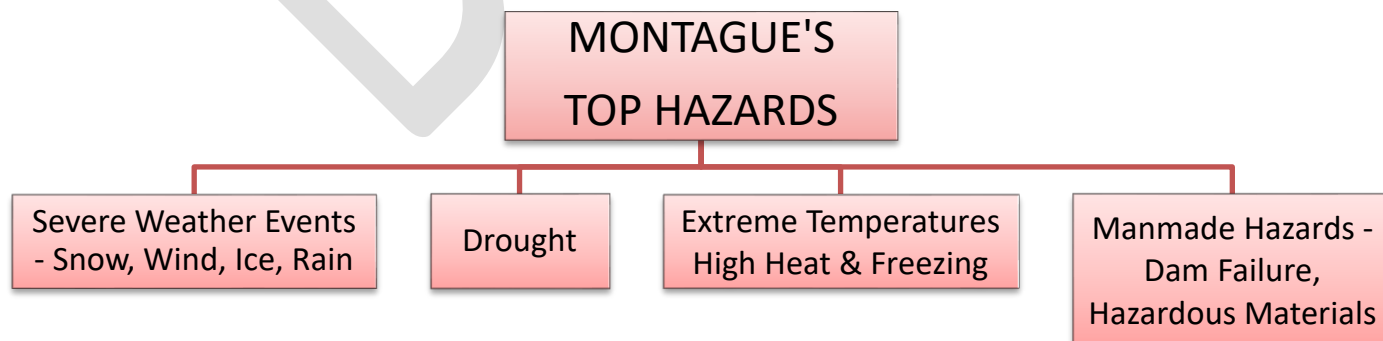
In spite of Montague's diligence in completing these planning efforts, there was still a need for the community to conduct a hazard assessment across scales – from individual buildings and bridges to rivers and landscapes, and across sectors – infrastructure, society and environment – looking specifically through the lens of climate change and its likely impacts.

Workshop participants considered climate change impacts most likely to impact Montague, include rising and extreme air temperatures, extreme weather events and increased precipitation, both in quantity and intensity.

The workshop was critical to enabling participants to think about and engage with people from different sectors. People representing public health, planning, fire, water pollution control, and several others came together to determine the most threatening hazards to the Town of Montague and to agree upon high priorities and actions to address them.

Top Hazards

Workshop participants discussed a number of hazards that impact Montague, deliberating on how frequent, how intense and how widespread each hazard has been and could potentially be in the future. Hazards discussed included: dam failures, severe winter storms/ice storms, earthquakes, hurricanes, wind storms/microbursts, tornados, ice jams, floods, wild fires, landslides, droughts, manmade hazards and extreme temperatures. Top hazards identified by the participants are as follows:



Areas of Concern

Infrastructure and buildings: Municipal buildings in Turners Falls; canal and dike in Turners Falls and Montague City; wastewater treatment plant on Greenfield Road; Community Action school in the Patch; Turners Falls High School; two schools on Industrial Boulevard; Hillcrest School parking lot; emergency communication systems throughout Town

Transportation: Bridges throughout Town; Millers Falls rail yard; rail line throughout Town; flooding on Montague City Road; erosion on Millers Falls Road

Facilities and businesses: Farren Care facility; Cumberland Farms gas station on Montague City Road

Public sanitation and water: Private wells around Montague Center; fire hydrants in Montague Plains; aquifers throughout Town; Combined Sewer Overflows (CSOs) in Turners Falls; public water supply in Montague Plains

People: Low-income residents throughout Town; homeless people primarily in Turners Falls; non-English-speaking residents primarily in Turners Falls and Millers Falls; elders throughout Town; people living in the Village of Lake Pleasant

Ecosystems and natural resources: Montague Plains; floodplains throughout Town; Sawmill River; beaver dams and impoundments on Montague City Road and Meadow Road; steep slopes and unstable soils at edges of Montague Plains near roads and along Connecticut and Millers Rivers; Dry Hill

Current Concerns & Challenges Presented by Hazards

Participants in the workshop discussed a number of hazards, both natural and manmade which have impacted the community in recent years. Short-term, acute weather events including severe rain and snow storms, ice and wind are of the most concern for participants.



Bridges throughout Montague, including the General Pierce Bridge over the Connecticut River, are of serious concern to workshop participants.



Fifth Street Bridge's condition was the subject of artistic commentary recently, as bridge buckling has worsened.

For many in Franklin County, Tropical Storm Irene in 2011 is a bellwether event, demonstrating the extent and severity of extreme weather and increased rain that is predicted to become more frequent in the coming years. Although Montague was not impacted nearly as severely as towns to the west, the damage and extreme impact from Irene was felt throughout the region.

Workshop participants expressed concern about heavy rain events and potential future flooding, particularly with villages, bridges, and roads located on the Connecticut, Millers, and Sawmill Rivers. Heavy snow, ice and wind events were also identified as a top hazard, due to the potential for downed trees and widespread power outages. Even though most people in Montague are accustomed to severe winter weather, such events can still have broad and significant impacts on the Town.

Drought was also a top concern for workshop participants. The drought of 2016 was severe enough to reduce groundwater levels and to impact water pressure for about 10 percent of Montague's population, or approximately 800 people, who rely upon private well water. With the prediction of more frequent droughts as a result of climate change, participants voiced concern that there could be more private well water issues in the future.

Participants also selected temperature extremes – high heat and freezing temperatures – as another top concern. Elderly, low income, and homeless residents are particularly vulnerable to extreme temperatures and may lack air conditioning or safe ways to adequately heat their homes. Periods of extended high heat or extreme cold may strain the electrical grid and natural gas supply in town. Public health concerns related to extreme temperatures included poorer air quality and increased disease.

Wildfire was a concern related to drought and high temperatures. In particular residents of the Village of Lake Pleasant are vulnerable to the impact of wildfire due to the village's location adjacent to the Montague Plains.



With Turners Falls nestled between the Connecticut River and a canal (left), areas of flooding concern include the Patch neighborhood (right) and homes and businesses in Montague City.

Finally, participants determined that manmade hazards, particularly dam/dike failure and hazardous materials transported by rail and road, were a top concern.

Specific Categories of Concerns and Challenges

Vulnerability of downtown Turners Falls and Montague City: Several concerns about Downtown Turners Falls were voiced by participants of the workshop should there be a severe rain event, causing catastrophic flooding. There is also a worry about the potential vulnerability of the 150-year-old canal alongside Turners Falls, separating the downtown from an island comprised of a residential neighborhood (the Patch) and a series of old mill buildings. Participants said the canal is probably leaking into mill building foundations which could compromise the canal since the foundations are essentially supporting the canal. If the canal were breached, spill-over could flood Montague City Road and businesses and residential properties in the village of Montague City. New residents may be unaware of FirstLight's (owner of the canal) reverse call system to alert residents of a dam or canal failure.

Safety and well-being of students: Community Action's school in the Patch could be vulnerable in the event of a severe weather event requiring evacuation, given the limited access to the neighborhood, according to participants. Another of Montague's schools, Turners Falls High School, serves as a regional shelter but is in need of an emergency back-up water supply and improved emergency radio communications and air-conditioning. Two schools on Industrial Boulevard were identified as potentially vulnerable should a hazard cause the need for their evacuation. Franklin County Technical School and Ja'Duke Preschool are located on a dead-end road in the Airport Industrial Park and there could be challenges accessing the schools should the road be closed off. Underground utilities at Hillcrest School were also identified by participants as vulnerable due to regular flooding in the parking lot. Finally, participants discussed distances and conditions for students who walk to school. Currently, if students live within one mile of their school, they do not have bus service. Participants were concerned about student safety, maintenance of sidewalks especially in winter, as well as whether low-income and other vulnerable students had appropriate attire to walk a mile in inclement or severe weather.

Safety and well-being of other vulnerable populations: Low-income residents throughout Town may have more limited ability to be able to travel to a shelter during a hazardous event and may require better information on responding to an emergency, according to workshop participants. Homeless people, primarily in Turners Falls, are vulnerable to all types of hazards, have less access to information about emergency response and, in some cases, do not want to be contacted and/or do not want to stay at shelters. Non-English-speaking residents, located primarily in Turners Falls and Millers Falls, are typically tight-knit communities that help each other during emergencies. However, Town officials have challenges and limited capacity to communicate with non-English-speaking residents. Elders throughout Town, particularly those who live alone and/or have no transportation, are highly vulnerable to hazards, including high heat and freezing temperatures. The 220-bed Farren Care facility, which serves adults with both medical and psychiatric illnesses, was identified by participants as a facility that would be

extremely complicated to evacuate, given the severe medical challenges of its residents. People who live in the Village of Lake Pleasant were also identified as potentially vulnerable in the event of a fast-moving wild fire in adjacent forests. And, finally, residents need to be encouraged to sign up for the Town's Code Red reverse call system used to alert residents of emergencies.

Vulnerability of transportation and communication networks: Many bridges throughout Town are in need of repair or replacement, according to workshop participants. One exception is the Gill Montague Bridge over the Connecticut River, which was replaced a couple of years ago. The General Pierce Bridge on Montague City Road is in notoriously poor condition as is the Fifth Street Bridge in Turners Falls. Bridges over the Sawmill River in Montague Center were recently limited to one lane traffic due to weight restrictions, and are vulnerable to flooding. A privately owned bridge near Chestnut Hill was also called out by participants as needing repair or replacement. Should any of the bridges in Montague fail before they can be repaired or replaced, first responders are concerned about being able to access parts of Town. In addition, a stream causes annual flooding along Montague City Road, a major transportation and evacuation route in town. Millers Falls Road was singled out as needing maintenance, given ongoing erosion issues due to steep slopes and poor soil. Culverts are another transportation concern in Montague. Although there have been several culverts replaced in Town in recent years, there are several more that need replacing.

Rail lines in Montague were also a category of concern, including the Millers Fall rail yard, located adjacent to residences and businesses. Workshop participants voiced concerns about a derailment in Millers Falls that could cause a hazardous spill, as well as ongoing issues with trains idling and causing air quality issues, which could be exacerbated with higher temperatures. A hazardous spill on the rail line as it passes through the Montague Plains would also pose a serious hazard to the Town's public water supply, which is directly adjacent to the rail line in that location. Rail lines throughout town were also identified as a potential hazard in the event of sparks causing a fire which could be intensified in the event of drought or high temperatures.

Finally, participants identified needed improvements to the emergency radio communications system in town, specifically more radio towers in the eastern and southeastern section of town. Cell phone coverage is also spotty in these areas.

Vulnerability of water supplies and wastewater management during hazards or power outages:

As mentioned earlier, about 10 percent of Montague's 8,325 residents are served by private wells. If droughts become more intensified, workshop participants indicated there could be more issues with private wells. Also related to drought, participants thought there should be additional fire hydrants installed on the Montague Plains, should that area be subject to a forest fire. The town's aquifers and public drinking water supply are vulnerable to a hazardous material spill, particularly from the railroad that travels through the public water supply protection areas. Finally, the Town has an area on the "hill" section of Turners Falls where stormwater is combined with the sewer collection system (Combined Sewer Overflow or CSOs). Stormwater from this



The Montague Sandplains were identified by workshop participants as both a strength and a vulnerability.

area flows to the wastewater treatment plant where it is treated along with sewage. During heavy rain events, overflow of the sewer system is captured and retained in several structures intended to reduce overflow into the Connecticut River. While these structures have been updated recently, increasing amounts of stormwater from more intense rain events may overwhelm these systems in the future.

Protection of natural resources:

Montague Plains, a rare pitch-pine scrub-oak barren forest, was identified by participants as potentially vulnerable to fires as was Dry Hill. Montague Plains is also vulnerable to the southern pine beetle and, with warming temperatures, other pests and pathogens could imperil the Montague Plains. Steep slopes and erosion are also a concern for parts of the Montague Plains. Other natural resources subject to erosion include river banks along the Sawmill, Connecticut and Millers Rivers. Beaver dams and impoundments – and related flooding – on Montague City Road and Meadow Road were also pointed out by participants as natural resource concerns that could worsen during severe rain events. Outdated floodplain mapping was also identified as a concern.

Current Strengths and Assets

Montague has a number of strengths and assets, as identified by workshop participants. They include:

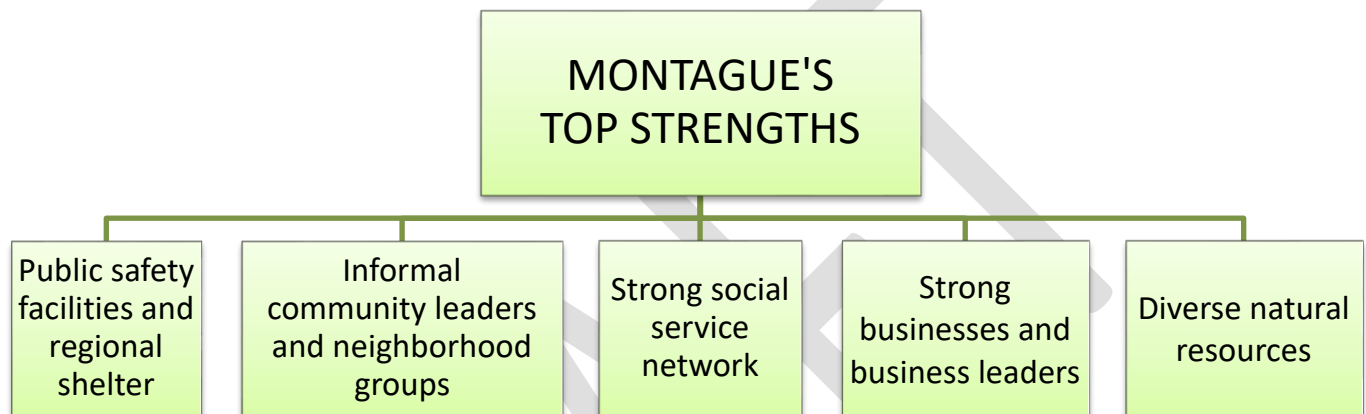
Infrastructural strengths and assets: Newer facilities and shelters located safely outside of floodplains were identified as strengths. They include the Public Safety Complex and the Turners Falls High School. These facilities have back-up power generators, and the Town is studying the feasibility of implementing a solar powered micro-grid to provide additional resiliency to these buildings. The wastewater treatment plant and pump houses also have back-up power. In terms of transportation, although there are many challenges, there are also assets, such as several new culverts and the recently replaced Gill Montague Bridge. An upcoming Town Meeting vote will determine if a new Highway Department Garage will be built next to the Public Safety Complex.

Despite concerns voiced about the railroad, communication with the railroad has improved and clean-up and maintenance along the rail lines is better as well. There are also back-up public water supplies in Montague, a strength identified by workshop participants. A connection to Greenfield's water supply is being pursued for additional redundancy. Recent tree clearing by Eversource around power lines has also reduced the risk of power outages.

Societal strengths and assets: These include Montague's informal community leaders and neighborhood networks. Businesses and business leaders were also identified as a current societal strength as were social services and churches in Montague.

Environmental strengths and assets: Workshop participants identified Montague's diverse natural resources and zoning bylaws that help protect them as strengths and assets. In particular, the Montague Plains, a State wildlife refuge managed for habitat restoration and fire suppression, was pointed to as an asset. The Sawmill River and the work completed in recent years to restore access to floodplains and reduce erosion were also seen as an asset.

Montague's top strengths include:

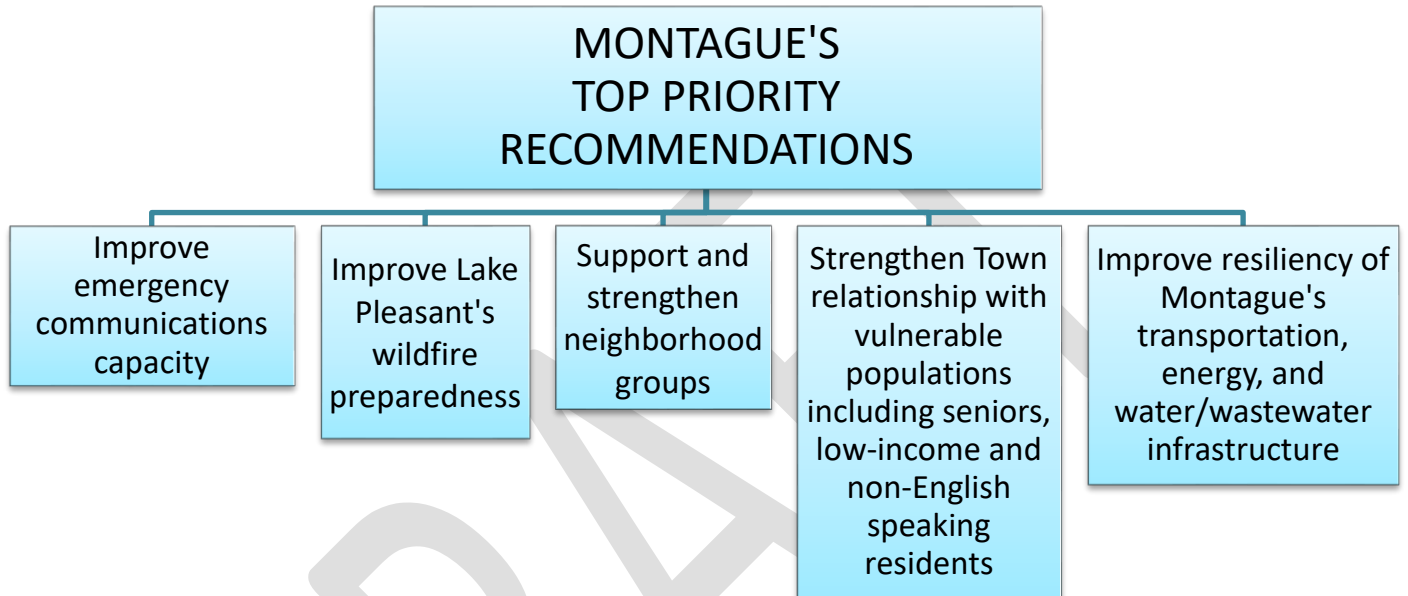


- **Public safety facilities and regional shelter:** Workshop participants noted that important public facilities are located safely outside of floodplains, such as the Public Safety Complex on Turnpike Road. The Turners Falls High School, which serves as a regional shelter, is also outside of the floodplain.
- **Informal community leaders and neighborhood groups:** Participants said that there are a number of well-connected informal leaders in the community who could serve to help strengthen connections between Town officials and vulnerable or underserved populations. Neighborhood groups, also informal in nature, provide support to residents in the event of an emergency or severe weather, such as heavy snow, wind or rain.
- **Strong social service network:** Workshop participants expressed appreciation for social service organizations in Montague, including the regional housing authority that serves elders and low income people. They also said that relationships between social service providers and the Town are strong.
- **Strong businesses and business leaders:** Participants said that businesses and business leaders play an important role in the cohesiveness of the community. There are also good relationships between Town officials and business leaders, and participants stated that business leaders could play an important role in the event of an emergency or hazardous event.

- **Diverse natural resources:** This asset rounds out an impressive list of Montague's strengths and assets. The Montague Plains came up several times during the workshop as one of the community's greatest natural resources strengths.

Top Recommendations to Improve Resilience

Montague's top priority recommendations, shown below, address key vulnerabilities while building upon current strengths.



Emergency communications topped the list of a highest priority recommendation, with first responders and other workshop participants agreeing that new or improved radio towers are essential to improving town-wide communications in the event of a hazardous event. In particular, more radio and cell phone towers are said to be needed in the eastern and southeastern parts of Montague. Also, the radio communication system at the Turners Falls High School, which serves as a regional shelter, needs improvement including the installation of repeaters.

Wildfire preparedness is also a top priority recommendation, specifically in the Lake Pleasant Village of Montague. A communication related strategy for wildfire preparedness is to increase the awareness of residents about opting into the Code Red reverse call system, so that residents can be notified swiftly of a wildfire or other hazardous event. Other strategies include becoming a Fire Wise Community and determining whether there is a need for some tree cutting or other forest management on the edges of adjacent forests for fire suppression purposes.


Neighborhood groups also topped the list of highest priority recommendations, with workshop participants suggesting that the Town support the creation of additional neighborhood

coalitions or networks, and strengthening the connection between neighborhood groups and Town government or organizations.

Strengthening Relationships with Vulnerable Populations is a high priority recommendation. Actions suggested by workshop participants include building the Town's capacity to communicate to residents in multiple languages, identifying unofficial community leaders, and compiling a list of social service agencies and contacts who serve these population groups.

Improving the resiliency of the Town's infrastructure was identified as a high priority through a number of action items. A short-term priority is to address the persistent flooding along Montague City Road. Building additional back-up power and drinking water sources are key actions as well. Addressing erosion and flooding that threaten infrastructure and natural resources are ongoing efforts.

DRAFT




Community Resilience Building Risk Matrix				 www.CommunityResilienceBuilding.org						
<u>H-M-L</u> priority for action over the <u>Short</u> or <u>Long</u> term (and <u>Ongoing</u>) <u>V</u> = Vulnerability <u>S</u> = Strength				Recommendations	Severe Weather	Drought	Extreme Temps (Hot/Cold)	Man-made Hazards	Priority	Time
									<u>H</u> - <u>M</u> - <u>L</u>	<u>Short</u> <u>Long</u> <u>Ongoing</u>
Features	Location	Owner-ship	V or S							
Infrastructural										
Micro-grid - the Town received a grant to study the feasibility of creating a micro-grid to serve the High School and Public Safety Complex	Turnpike Road	Town	S	Establish a micro-grid powered by solar PV between the High School and Public Safety Complex to provide emergency back-up power	X		X	X	H	S
Emergency Communication Systems	Throughout	FRCOG / Private	V	Install more radio and cell phone towers in the eastern and southeastern part of town	X	X	X	X	H	S
	Turners Falls High School	Public	V	Improve the radio communication system at the Turners Falls High School and install repeaters.	X	X	X	X	H	S
General Pierce Bridge - On the State Captial Improvement Plan for rehabilitation between 2018-2022	Montague City Road	State	V	Repair the General Pierce Bridge before it has to be closed	X	X	X	X	H	S
Canal - 150 years old, probably leaking into foundations. As buildings decay, could also compromise the canal since the foundations are holding it up. If canal were breached, could flood Montague City Road.	Turners Falls / Montague City	FirstLight	V	Maintain the Mill District in Turners Falls; coordinate with property owners and FirstLight about redevelopment plans and the structural integrity of the canal				X	H	S
Montague City Road - frequent flooding from stream located adjacent to road	Montague City Road	Town	V	Secure funding to complete improvements along Montague City Road to mitigate flooding	X				H	S
Turners Falls High School which serves as regional shelter	Turners Falls	Town	S/V	Connect the irrigation well to the Turners Falls High School to be available as a back-up drinking water supply.	X	X	X	X	H	S
			S/V	Install a chilling tower at the Turners Falls High School to improve the air conditioning system	X	X	X	X	M	S
220 bed Farren Care facility - must shelter in place due to sensitive nature of patients' conditions - if evacuation were to take place, it would have to be via ambulances	Montague City Road	Private	S/V	Work to create an evacuation plan for the Farren Care Center in the event patients need to be transported offsite.	X	X	X	X	M	S
			S/V	Improve first responder and town official communication with Farren Care staff and leaders.	X	X	X	X	M	S
Public water supply - the Turners Falls Water District can supply the Montague Center Water District if needed. Lake Pleasant and Green Pond serve as back-up water supplies.	villages	Town	S	Connect to Greenfield's public water supply for redundancy	X	X		X	M	S


Community Resilience Building Risk Matrix




www.CommunityResilienceBuilding.org

H-M-L priority for action over the Short or Long term (and Ongoing) V = Vulnerability S = Strength				Top Priority Hazards						
				Recommendations	Severe Weather	Drought	Extreme Temps (Hot/Cold)	Man-made Hazards	Priority	Time
									H - M - L	Short Long Ongoing
Features	Location	Owner-ship	V or S							
Millers Falls Road - erosion, steep slopes, poor soils continues to be an issue	Millers Falls Road	Town	V	Seek funding to implement additional erosion control measures.	X				M	S
Rail sparks causing fires on Montague Plains	Montague Plains	Private	V	Install more fire hydrants in the Montague Plains	X	X		X	M	L
Center Street and South Street Bridges over Sawmill River	Montague Center	Town	V	Evaluate repairs and incorporate design improvements to accommodate floodplain capacity flows as identified in the Sawmill River Restoration Plan	X				H	S
Bridges - all but the new Gill-Montague bridge are vulnerable. Bridge failure or closure could prevent emergency responders from getting to emergency.	Throughout	Town; state; private	V	Prioritize bridges for upgrade or replacement.	X	X	X	X	M	O
Rail clean up and maintenance has improved	throughout	Private	S/V	Continue to work with railroad to ensure continued cleanup and maintenance				X	M	O
Communication with railroad is improving	throughout	Private	S/V	Continue to work with railroad to keep lines of communication open.				X	M	O
Bridge near Chestnut Hill		Private	V	Encourage/work with private owner to upgrade or replace	X				M	L
Wastewater treatment plant in floodplain and near rail, has back-up generator (pump stations also have generators); solar PV array may be added	Greenfield Road	Town	S/V	Study the cause of the soil subsidence around the plant.	X				L	S
Hillcrest Elementry School - parking lot flooding	Griswold Street	Town	V	Fix drainage to prevent parking lot flooding.	X				L	L
Town hall - vulnerable to flooding	Turners Falls	Town	V	Install generator.	X				L	L
		Town	V	Digitize current records and store past records off site.	X				L	L
Combined sewer overflows (CSOs) recently upgraded	Turners Falls/ Montague City	Town	S/V	Maintain and monitor CSOs. Study options for reducing amount of stormwater entering CSOs.	X				L	O
Turners Falls Airport	Industrial Blvd.	Town	S	See recommendations from forthcoming Airport Master Plan	X	X	X	X	L	O
Culverts	Throughout	Town	V	Prioritize culverts for upgrade or replacement.	X				M	O
Several new culverts in Town		Town	S	None						

Community Resilience Building Risk Matrix				<div>    </div> <div>www.CommunityResilienceBuilding.org</div>						
<div> H-M-L priority for action over the Short or Long term (and Ongoing) V = Vulnerability S = Strength </div>				Recommendations	Severe Weather	Drought	Extreme Temps (Hot/Cold)	Man-made Hazards	Top Priority Hazards	
Features	Location	Owner-ship	V or S						Priority	Time
									H - M - L	Short Long Ongoing
Private drinking water wells - water pressure impacted during drought	Montague Center	Private	V			X				
Gill-Montague bridge is new	Between Turners and Gill	State	S	None						
First responder facilities	Throughout	Town	S	None						
Millers train yard - derailment and idling concerns (poor air quality)	Millers Falls	Private	V	Improve communication with the railroad			X	X	M	O
Existing highway department garage – substandard building, inadequate for current fleet	Turners Falls	Town	V	Construct a new highway garage	X			X	H	S
Natural gas supply - Montague would be first to be cut off during times of insufficient supply. High School boiler loses gas pressure during very cold weather, cannot operate. Backup oil system can only run for one day.	Turners Falls	Private	V	Establish a more resilient back-up heating system for the high school.			X		M	L
Two schools in industrial zone - could be access challenges in emergency	Industrial Blvd.	Public/Private	V		X			X		
Critical infrastructure in dam inundation area	Montague City Road	Private	V		X			X		
Pharmacies, stores, grocers outside floodplain	Throughout	Private	S		X					
Community Action school on the Patch in floodplain	G Street	Non-Profit	V	Coordinate with Community Action about evacuation plans	X			X	M	S
Canal Dike - An emergency plan has been established for potential failure of the dike, which could flood Montague City	Montague City	FirstLight	V	Inform new residents in Montague City to sign up with FirstLight's emergency call system				X	M	O
Public elderly housing - most residents are mobile	multiple locations	HRA / private	S/V		X	X	X	X		
Emergency sheltering plan underway		Town	S							

Community Resilience Building Risk Matrix				 www.CommunityResilienceBuilding.org						
H-M-L priority for action over the Short or Long term (and Ongoing) V = Vulnerability S = Strength				Recommendations	Top Priority Hazards					
Features	Location	Owner-ship	V or S		Severe Weather	Drought	Extreme Temps (Hot/Cold)	Man-made Hazards	Priority H - M - L	Time Short Long Ongoing
Powerlines - Eversource is in the process of replacing high-tension lines, and recently cleared a wide swath around power lines which reduces risk of tree damage but could be a wildfire risk.	Throughout	Eversource	S/V		X	X				
Societal										
Neighborhoods - there are already informal neighborhood groups who could support one another during emergency.	Throughout	Private	S	Support the creation of additional neighborhood coalitions or networks, and strengthen connection with Town government or organizations.	X	X	X	X	H	S
			S	Establish an unofficial list of community members who have skills important during or after an emergency/hazard.	X	X	X	X	H	S
Low income residents - Town has agreement with Kuzmeskus to transport low income residents to the emergency shelter.	Throughout	Private	S/V	Provide education about emergency preparedness and resiliency	X	X	X	X	H	S
	Throughout	Public	S	Promote fire wood bank for low-income residents through Council on Aging.	X		X	X	M	S
Lake Pleasant - could be vulnerable to wildfire	Lake Pleasant	Private	V	Become a "fire wise community"		X		X	H	S
	Lake Pleasant	Private	V	Increase awareness of opting in to the Code Red reverse call emergency system	X	X	X	X	H	S
	Lake Pleasant	Public	V	Conduct an assessment of Town Forest adjacent to developed areas to determine if there is a need for any fire control / tree cutting.		X		X	H	S
Homeless population	Turners Falls	Private	V	Explore the creation of a communication plan to reach out to homeless populations regarding emergency information	X		X	X	H	S
Non-English speaking populations - predominantly Russian and Spanish-speaking. These are tight-knit communities that come together to support each other during emergencies. The Public Health Dept. has some capability to communicate in other languages, but in general Town government lacks this capacity.	Millers Falls, Turners Falls	Private	V/S	Increase the Town's ability to communicate with residents in multiple languages.	X	X	X	X	H	S

Community Resilience Building Risk Matrix				<div>  </div> www.CommunityResilienceBuilding.org						
H-M-L priority for action over the Short or Long term (and Ongoing) V = Vulnerability S = Strength				Recommendations	Top Priority Hazards					
Features	Location	Owner-ship	V or S		Severe Weather	Drought	Extreme Temps (Hot/Cold)	Man-made Hazards	Priority H - M - L	Time Short Long Ongoing
Social services - The Town government has a good relationship with social service agencies.	Throughout	Private	S	Compile a list of social services available including contacts and roles.	X	X	X	X	H	S
Elders - Montague Center Fire has a list of residents needing support during emergencies.	Throughout	Private	S/V	Conduct an educational program to encourage elders to register for assistance through TRIAD.	X	X	X	X	H	S
			S/V	Develop additional capabilities to identify elders who need oxygen and other specialized medical equipment or services.	X	X	X	X	M	O
Children walking to school - can be difficult in the winter and in extreme weather. Have a walking school bus coordinated by volunteers, but only in fair weather	Turners Falls	Public/Private	S/V	Maintain sidewalks for all pedestrian routes to schools	X				H	S
	Turners Falls	Private	S/V	Ensure that children have adequate and warm clothing for walking to school.	X		X		H	S
	Turners Falls	Public	S/V	Evaluate the one-mile walk to school policy to determine if busing is feasible.	X		X		M	S
Unofficial community leaders	Throughout	Private	S	Identify and convene unofficial community leaders, including non-English speakers, to establish a coordinated response to hazard events.	X	X	X	X	H	S
	Throughout	Private	S	Build residents' resilience through self-sufficiency and energy efficiency.	X	X	X	X	H	O
Business / community relationships - Good existing relationships with some businesses, have plans to medicate in place in the event of a disease outbreak etc.	Throughout	Private	S	Conduct outreach with business owners to establish emergency plans including to medicate in place in the event of a pandemic etc.	X	X	X	X	M	S
Churches	Throughout	Private	S	Work with willing churches to create plans to have churches serve as overflow shelter facilities.	X	X	X	X	M	L
Park Villa - HRA has evacuation plans in place for all properties	Turnpike Road	HRA	S	Maintain evacuation plans for senior housing facilities	X		X	X	L	O
Farren Care facility - Have plan to shelter in place	Montague City Road	Private	V	See recommendation under infrastructural						
Communication systems	Throughout	Public	V	See recommendation under infrastructural						

Environmental										
Montague Plains - Vulnerable to wildfires. Unique pitch pine-scrub oak sandplain habitat threatened by southern Pine Beetle.	Montague Plains	Public	S/V	See recommendations under Infrastructural.						
		Public (DFG)	S/V	Continue to implement habitat management plan; integrate climate change adaptation & resiliency	X	X	X		M	L

Community Resilience Building Risk Matrix



H-M-L priority for action over the Short or Long term (and Ongoing)

V = Vulnerability S = Strength

<u>H</u> - <u>M</u> - <u>L</u> priority for action over the <u>S</u> hort or <u>L</u> ong term (and <u>O</u> ngoing) <u>V</u> = Vulnerability <u>S</u> = Strength				Recommendations	Severe Weather	Drought	Extreme Temps (Hot/Cold)	Man-made Hazards	Priority	Time
Features	Location	Owner-ship	V or S						<u>H</u> - <u>M</u> - <u>L</u>	<u>S</u> hort <u>L</u> ong <u>O</u> ngoing
Beaver dams and impoundments cause flooding along Montague City Road and Meadow Road	Montague City Road / Meadow Road	Private	V	Map dams	X				M	L
		Private	V	Implement mosquito control	X				M	L
Dry Hill - vulnerable to wildfire	Dry Hill	Public / Private	V	Improve emergency access to Dry Hill	X	X		X	M	L
Steep slopes and unstable soils	Edges of Montague Plains near roads / along CT River & Millers River	Public / Private	V	Monitor erosion and landslide potential	X	X			L	O
		Public / Private	V	Continue to implement slope stabilization projects as part of the FERC license for First Light Power	X	X		X	L	S
Town Forest	Montague Plains	Public	S/V	Coordinate with State and Water District to maintain a forest management plan.	X	X	X	X	L	O
Water supplies	Montague Center	Public/Private	V	Delineate Montague Center Zone II water protection area.				X	L	L
Floodplains	Throughout	Public/Private	V	Accurately map limits of floodplains	X				L	L
	Throughout	Public/Private	V	Strengthen floodplain zoning.	X				L	L
Sawmill River	Montague Center	Public/Private	V/S	Revisit recommendations from the Sawmill River Restoration Plan. Implement additional erosion control measures identified in the plan.	X				L	L
Montague Center water supply - shallow well with old holding tank	Montague Center	Public	V		X	X		X	L	L
Access to the rivers / water	Rivers, lakes, ponds	Public / Private	V	Designate public swimming area			X		L	L
Existing zoning protects natural resources	Throughout	Private	S		X	X	X		L	L
Fish hatchery - adjacent to railroad tracks	Hatchery Road	Public	V					X		
Aquifers	Throughout	Public/Private	V			X		X		
Town planner is asset to Town	Throughout	Public	S							

Highest Priority Recommendations

- Establish a micro-grid powered by solar PV between the High School and Public Safety Complex to provide emergency back-up power
- Install more radio and cell phone towers in the eastern and southeastern part of town
- Improve the radio communication system at the Turners Falls High School and install repeaters
- Repair the General Pierce Bridge before it has to be shut down
- Maintain the Mill District in Turners Falls and coordinate with property owners and FirstLight about redevelopment plans and the structural integrity of the canal
- Secure funding to complete improvements along Montague City Road to mitigate flooding
- Evaluate repairs to the Center Street and South Street bridges over the Sawmill River, and incorporate design improvements to accommodate floodplain capacity flows as identified in the Sawmill River Restoration Plan
- Construct a new highway garage
- Connect the irrigation well to the Turners Falls High School to be available as a back-up drinking water supply
- Support the creation of additional neighborhood coalitions or networks, and strengthen connection with Town government or organizations.
- Establish an unofficial list of community members who have skills important during or after an emergency/hazard
- Provide education about emergency preparedness and resiliency
- Assist Lake Pleasant with becoming a "fire wise community"
- Increase awareness among Lake Pleasant residents of opting in to the Code Red reverse call emergency system
- Conduct an assessment of the Town Forest adjacent to developed areas to determine if there is a need for any fire control / tree cutting.
- Explore the creation of a communication plan to reach out to homeless populations regarding emergency information
- Increase the Town's ability to communicate with residents in multiple languages.
- Compile a list of social services available including contacts and roles.

- Conduct an educational program to encourage elders to register for assistance through TRIAD.
- Maintain sidewalks for all pedestrian routes to schools
- Ensure that children have adequate and warm clothing for walking to school
- Identify and convene unofficial community leaders, including non-English speakers, to establish a coordinated response to hazard events
- Build residents' resilience through self-sufficiency and energy efficiency

Moderate Priority Recommendations

- Install a chilling tower at the Turners Falls High School to improve the air conditioning system
- Work to create an evacuation plan for the Farren Care Center in the event patients need to be transported offsite
- Improve first responder and Town official communication with Farren Care staff and leaders
- Connect to Greenfield's public water supply for additional redundancy
- Seek funding to implement additional erosion control measures on Millers Falls Road
- Install more fire hydrants in the Montague Plains
- Prioritize bridges for upgrade or replacement
- Prioritize culverts for upgrade or replacement
- Continue to work with the railroad to ensure continued cleanup and maintenance
- Continue to work with the railroad to keep lines of communication open
- Establish a more resilient back-up heating system for the high school
- Coordinate with Community Action about evacuation plans
- Inform new residents in Montague City to sign up with FirstLight's emergency call system
- Encourage/work with private owner to upgrade or replace the bridge near Chestnut Hill
- Promote the fire wood bank for low-income residents through the Council on Aging
- Develop additional capabilities to identify elders who need oxygen and other specialized medical equipment or services
- Evaluate the one-mile walk to school policy to determine if busing is feasible

- Conduct outreach with business owners to establish emergency plans including to medicate in place in the event of a pandemic etc.
- Work with willing churches to create plans to have churches serve as overflow shelter facilities
- Continue to implement habitat management plan; integrate climate change adaptation & resiliency
- Map beaver dams in town
- Implement mosquito control
- Improve emergency access to Dry Hill

Lower Priority Recommendations

- Study the cause of the soil subsidence around the wastewater treatment plant
- Fix drainage at the Fisher Hill Elementary School to prevent parking lot flooding
- Install a generator at the Town Hall
- Digitize current records at the Town Hall and store past records off site
- Maintain and monitor CSOs. Study options for reducing the amount of stormwater entering CSOs
- See recommendations from the forthcoming Airport Master Plan
- Maintain evacuation plans for senior housing facilities
- Monitor erosion and landslide potential at the edges of the Montague Plains and along the Connecticut and Millers Rivers
- Continue to implement slope stabilization projects as part of the FERC license for First Light Power
- Coordinate with the State and the Turners Falls Water District to maintain a forest management plan on Town-owned forest land
- Delineate the Montague Center Zone II water protection area
- Accurately map the limits of floodplains in town
- Strengthen floodplain zoning
- Revisit recommendations from the Sawmill River Restoration Plan. Implement additional erosion control measures identified in the plan
- Designate a public swimming area in town

CRB Workshop Participants: Department/Commission/Representative:

Chris Bonnett, Montague Police Department
 Tim Dowd, Franklin County Regional Housing and Redevelopment Authority
 Steven Ellis, Montague Town Administrator
 Phil Gilmore, Massachusetts Department of Conservation and Recreation
 Pam Hanold, Montague Energy Committee
 David Hansen, Montague Center Fire Department
 Diane Hansen, Montague Center Fire Department
 Jim Huber, Gill Montague School District
 Walker Korby, Turners Falls Fire Department
 Bob McDonald, Superintendent, Montague Water Pollution Control Facility
 Gina McNeely, Montague Director of Public Health
 Roberta Potter, Montague Council on Aging
 Neal Slocombe, FirstLight Power Resources
 John Zellman, Montague Emergency Management Director; Chief, Turners Falls Fire Department

Montague Community Resilience Building Workshop		
Wednesday, April 4, 2018		
Montague Public Safety Complex		
Name	Affiliation	Contact
John Zellmann	Montague EMD	chief@turnersfallsfire.org
Walter Ramsey	Montague Planning	planner@montague-ma.gov
Nealon Rhodes	FRCOG	
Kimberly MacPhee	FRCOG	
Pat Smith	FRCOG	
NEAL SLOCOMBE	FIRST LIGHT POWER	
Phil Gilmore	MASS DCR	PHIL.GILMORE@STATE.MA.US
DIANE HANSEN	Mont. Center Fire Dept	haney0728@gmail.com
David Hansen	Mont. Center Fire Dept	chief@montaguecenterfire.com
Gina McNeely	Montague BOH	healthdir@montague-ma.gov
Steven Ellis	Montague Bld of Selectmen	townadmin@montague-ma.gov
Rob Potter	Montague COA	COA@montague-ma.gov
Bob McDonald	MONTAGUE WPCF	RoborTim@MONTAGUE-MA.GOV
Chris Bonnett	Montague Police	cbonnett@montague.net
Pam Hanold	Resident - MEC, TM	pjhanold@icloud.com
WALKER KORBY	TURNERS FALLS FD	cwalkerkorby@gmail.com
Jim Huber	Gill-MONTAGUE Schools	james.huber@qmbusd.org
Tim Dowd	Franklin County HA	tdowd@fcrbcs.org

CRB Workshop Project Team: Organization and Role

Town of Montague

Walter Ramsey, Town Planner & Conservation Agent

Franklin Regional Council of Governments:

Alyssa Larose, Project Lead, Principal Contact and Scribe

Kimberly Noake MacPhee, Lead Presenter

Mary Chicoine, Co-Facilitator

Megan Rhodes, Co-Facilitator

Patricia Smith, Scribe

Recommended Citation

Larose A. Noake MacPhee K. Chicoine M. Rhodes M. Smith P. (2018) Town of Montague Community Resilience Building Workshop Summary of Findings. Franklin Regional Council of Governments.

Photo credits:

Cover	Bridge over Connecticut River	Town of Montague Facebook page
Cover	Canal	Town of Montague Facebook page
Cover	Montague Plains	The Recorder
Cover	Bike path	Basically Bicycles
Page 7	General Pierce Bridge	Alps Roads
Page 7	Fifth Street Bridge	Mike Jackson
Page 8	The Patch	Joe Manning, MorningsOnMapleStreet.com
Page 8	The canal	Joe Manning, MorningsOnMapleStreet.com

All other photos not cited above were taken by the FRCOG

Appendices

Maps

Exercise Outputs

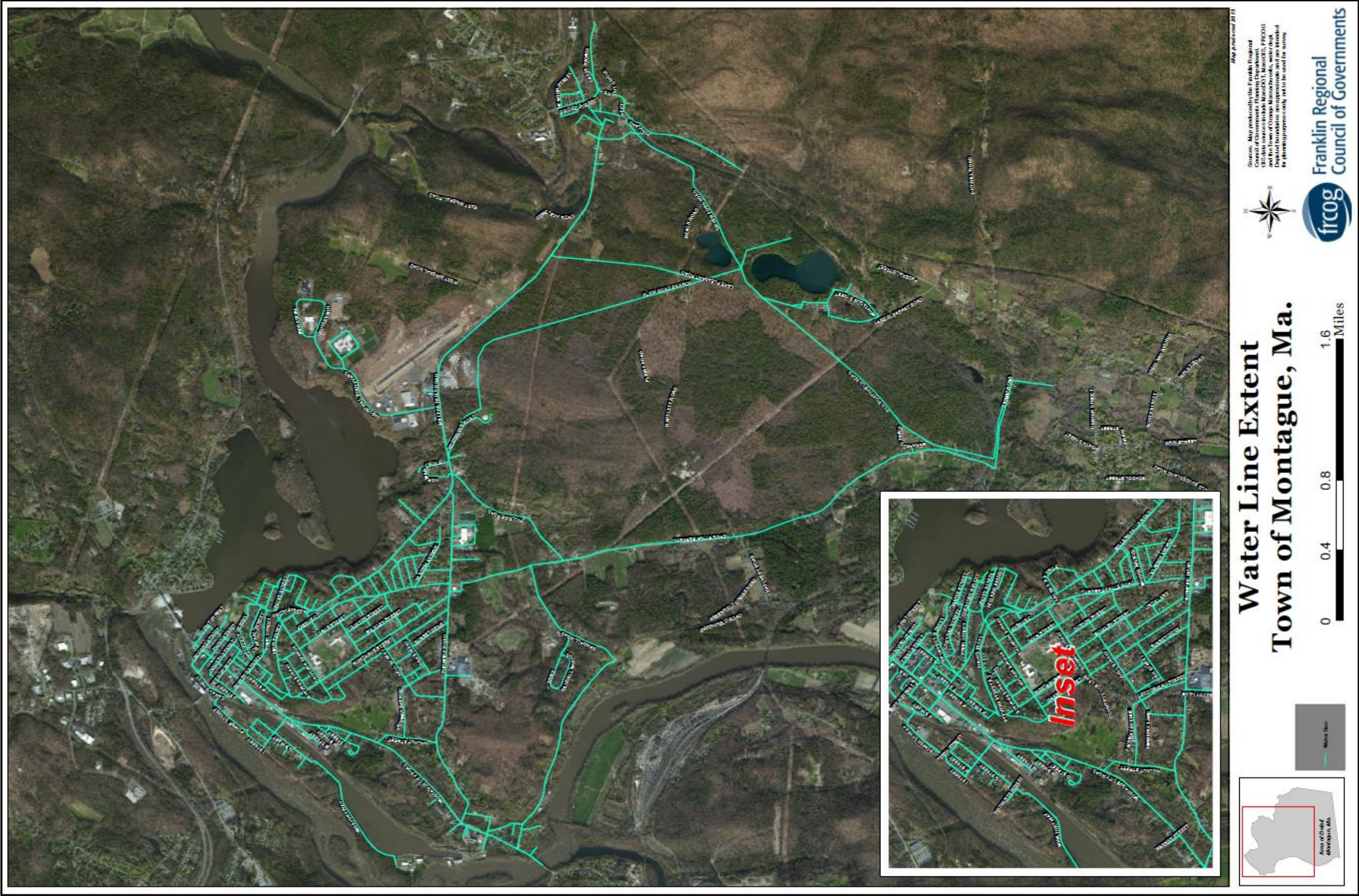
Workshop Presentation

DRAFT

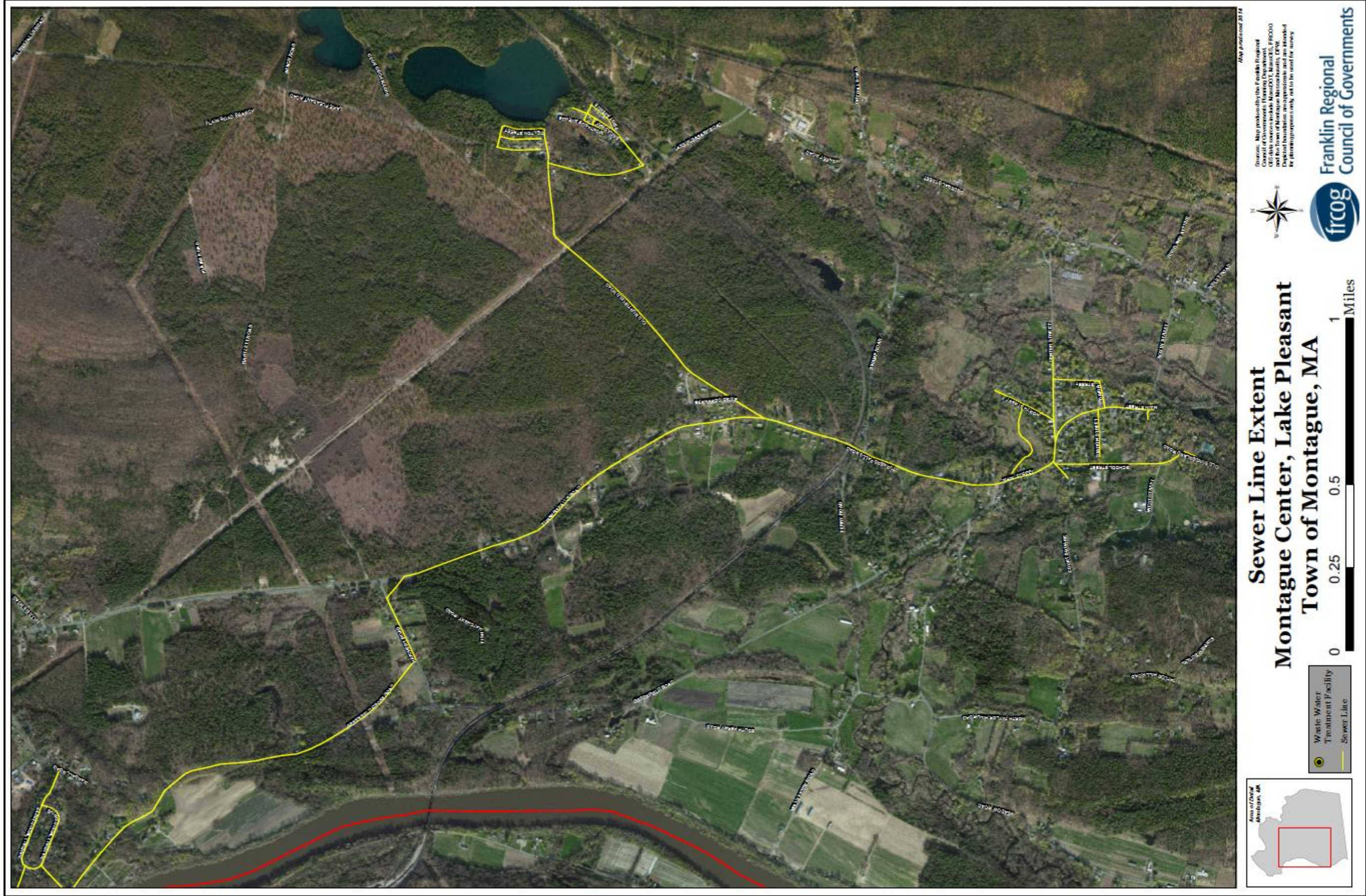




OTHER MAP: Water Lines

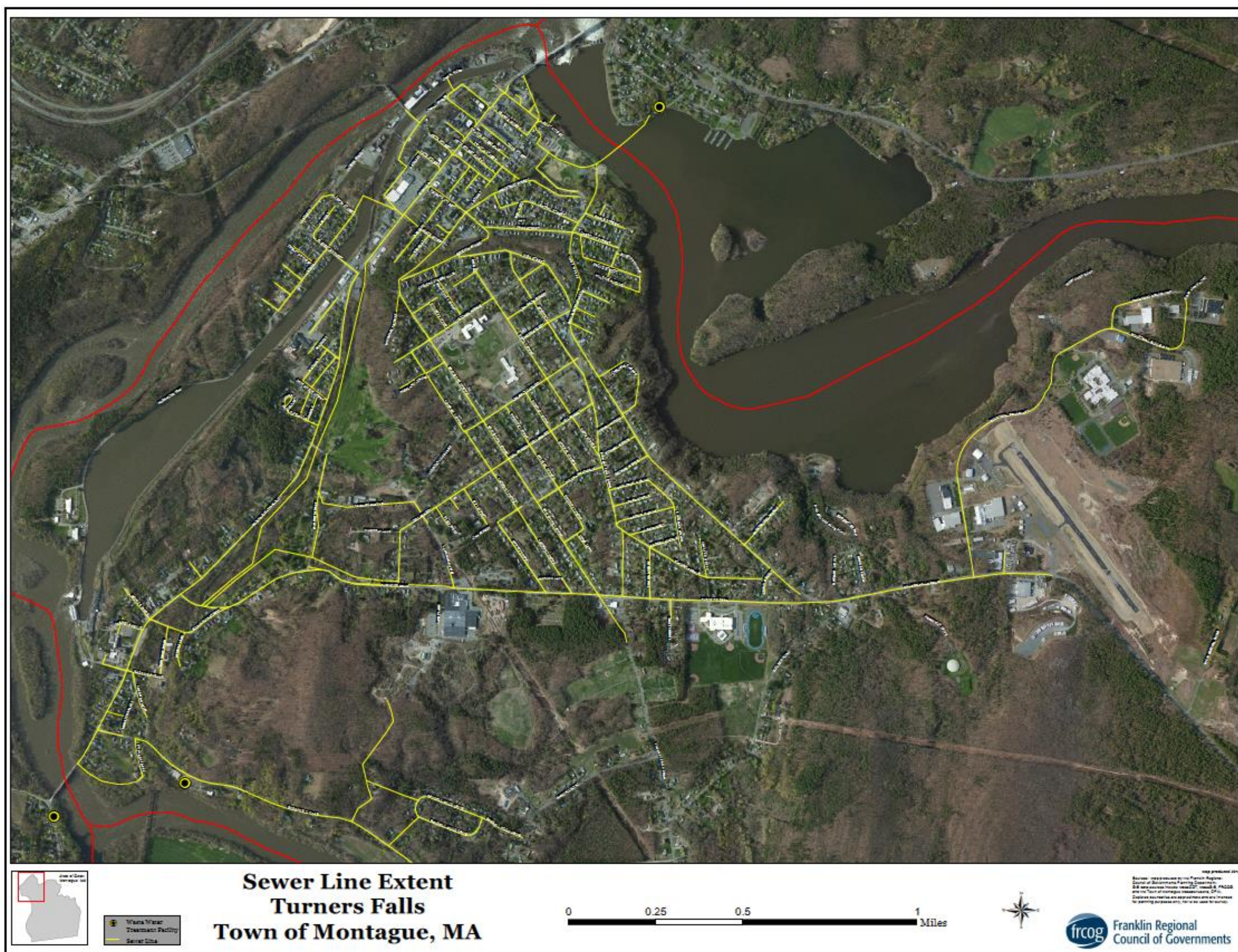


OTHER MAP: Sewer Lines (1 of 3)

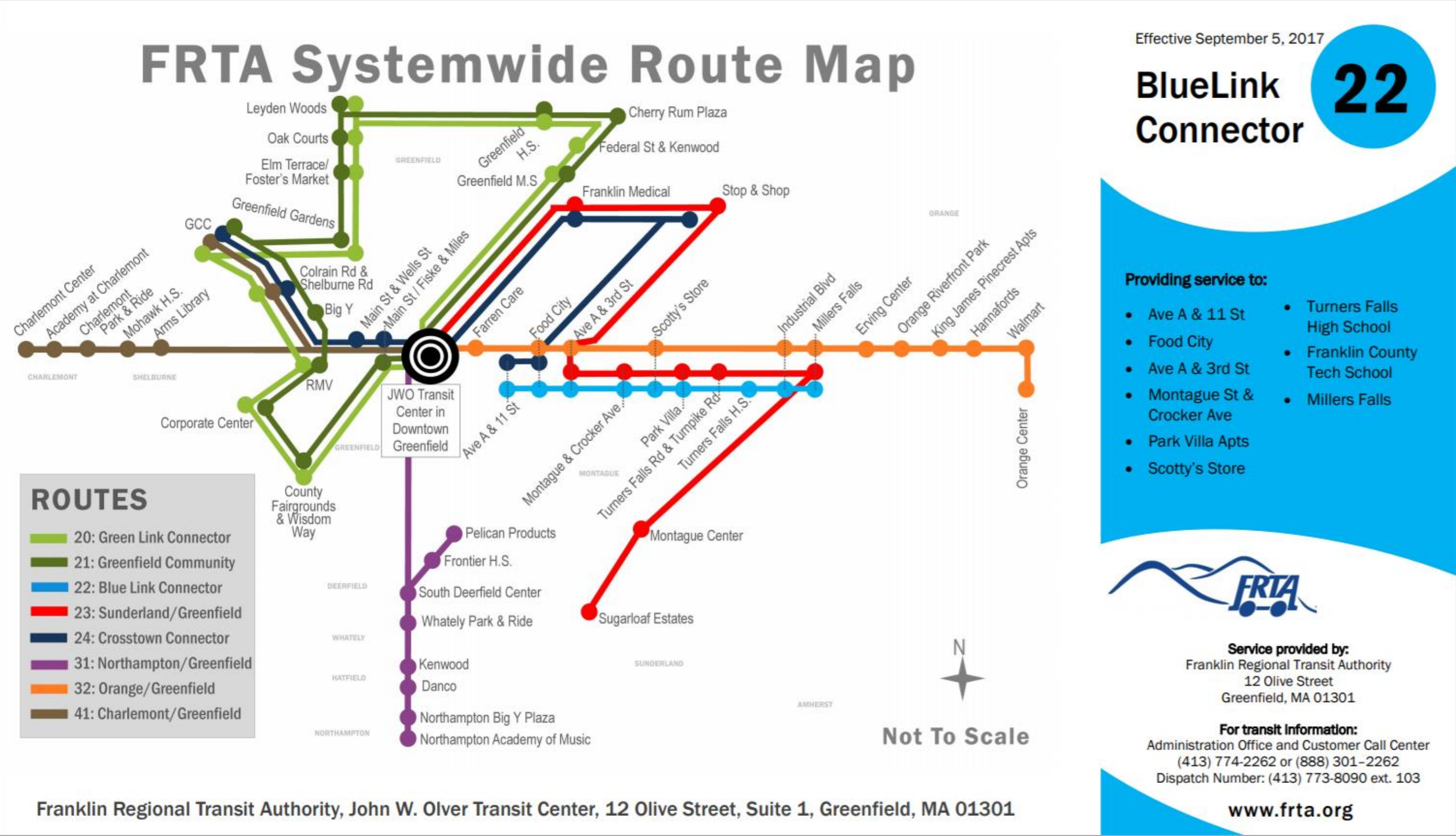


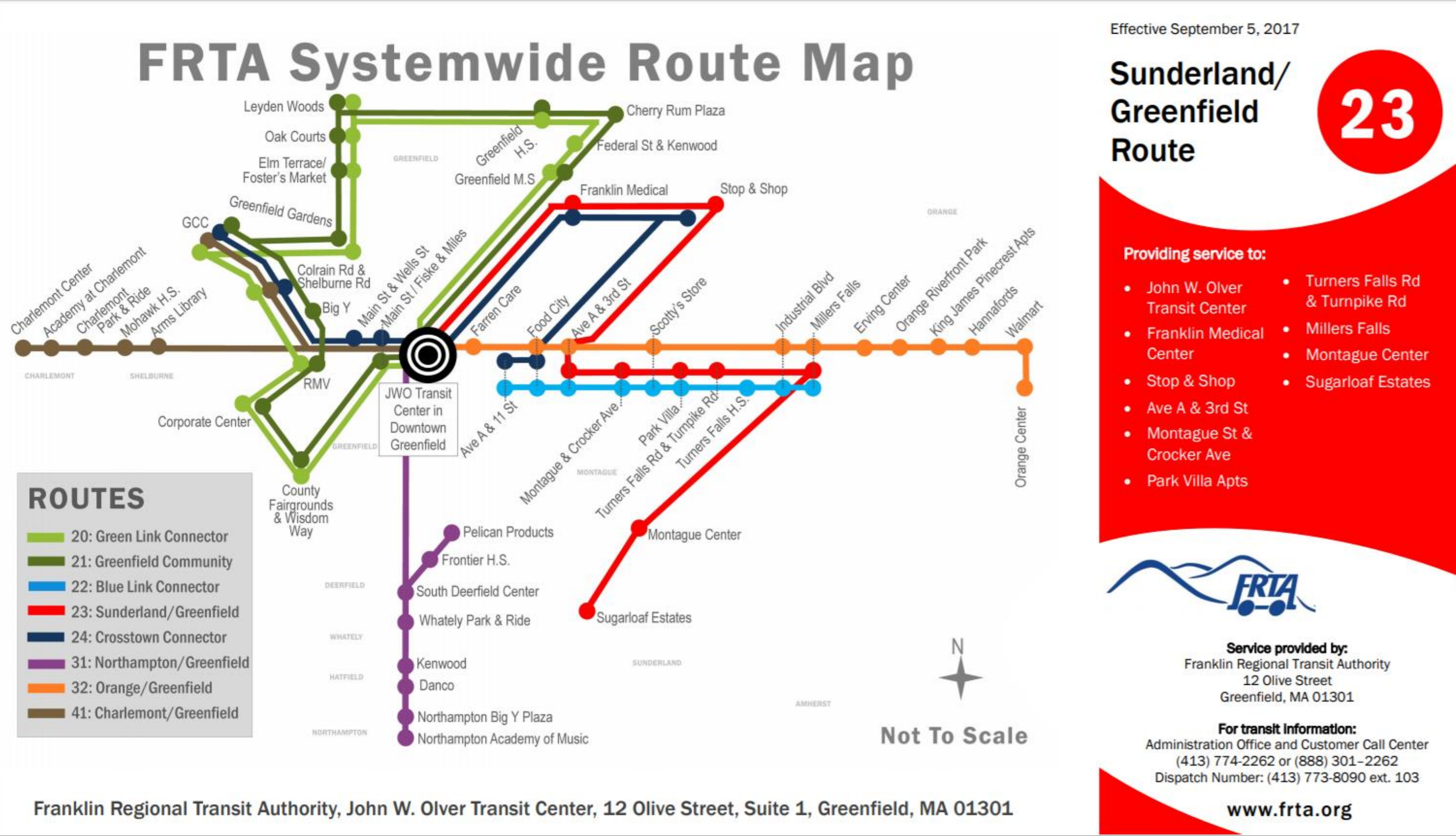
OTHER MAP: Sewer Lines (2 of 3)

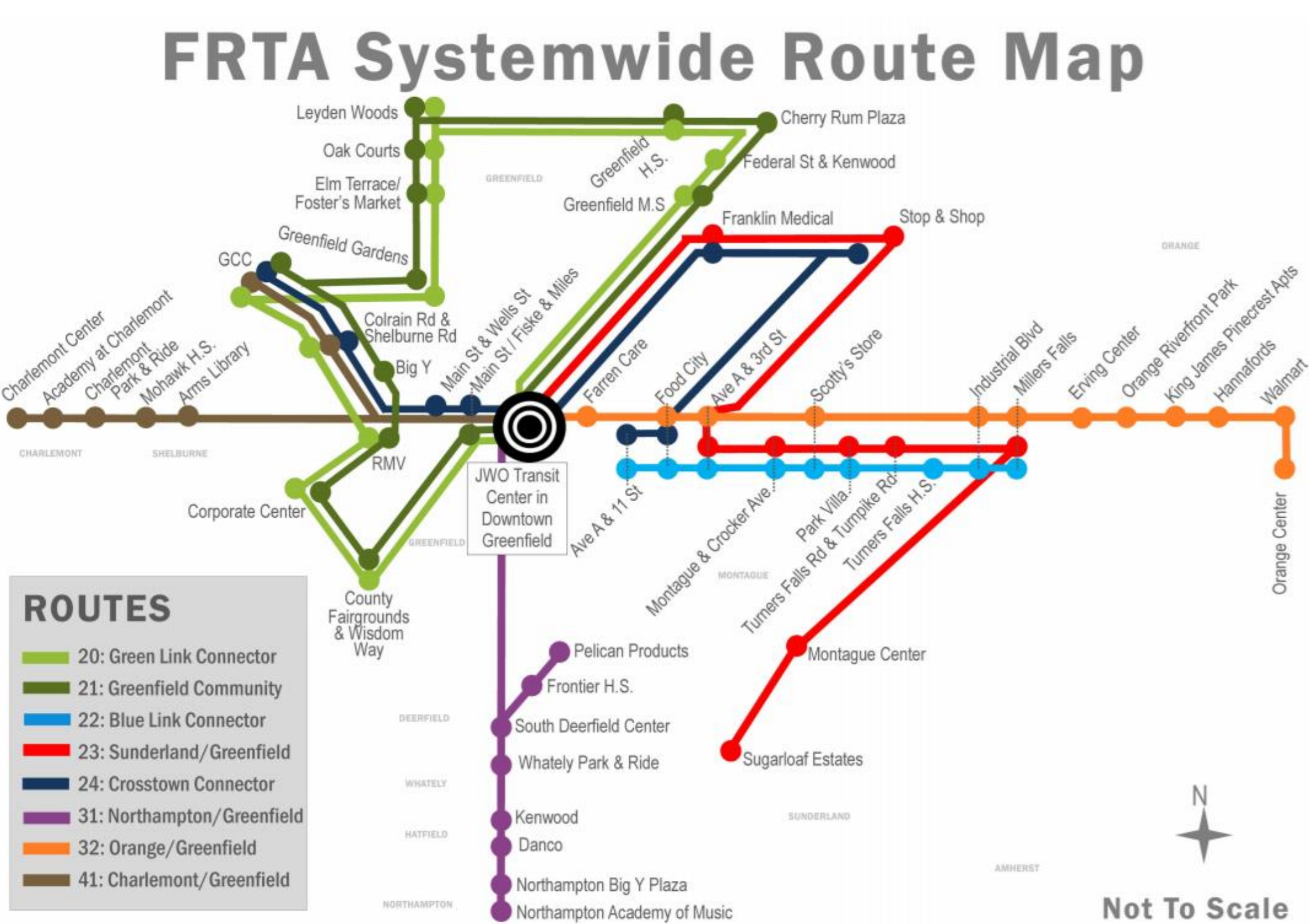




[illegible]







Effective September 5, 2017

Crosstown Connector
(Montague-Greenfield)

24

Providing service to:

- Ave A & 11 St
- Food City
- Stop & Shop
- Franklin Medical Center
- John W. Olver Transit Center
- Greenfield Main Street
- Colrain Rd & Shelburne St
- GCC

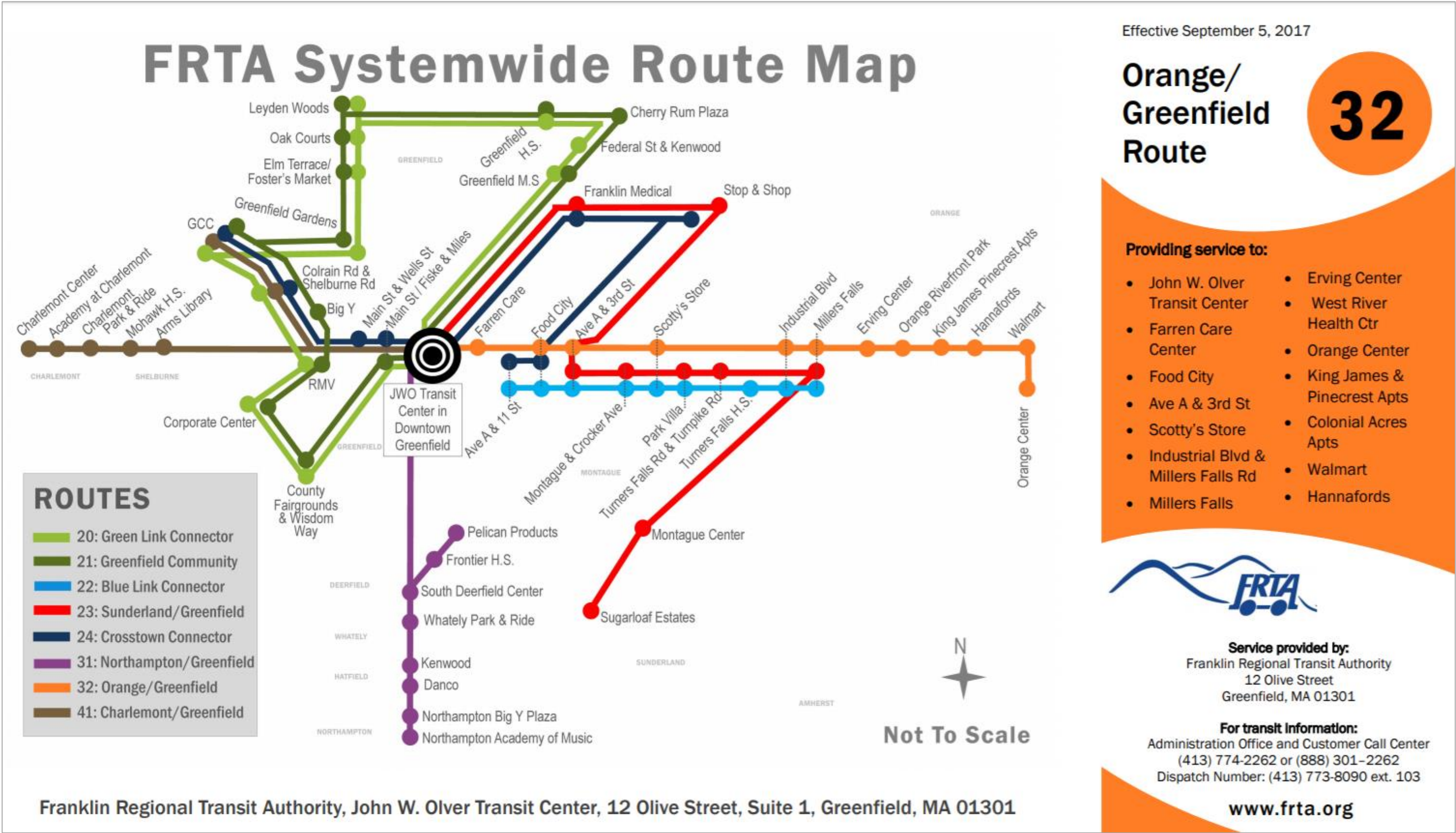


Service provided by:
Franklin Regional Transit Authority
12 Olive Street
Greenfield, MA 01301

For transit information:
Administration Office and Customer Call Center
(413) 774-2262 or (888) 301-2262
Dispatch Number: (413) 773-8090 ext. 103

www.fрта.org

Franklin Regional Transit Authority, John W. Olver Transit Center, 12 Olive Street, Suite 1, Greenfield, MA 01301





EXERCISE OUTPUTS

Top Hazards

- Severe weather events
(snow, ice, ~~drought~~, wind, rain)
↳ Short term, acute event
- Drought / ~~Extreme temps~~
- Extreme Temps (hot + cold)
- Man-made Failures

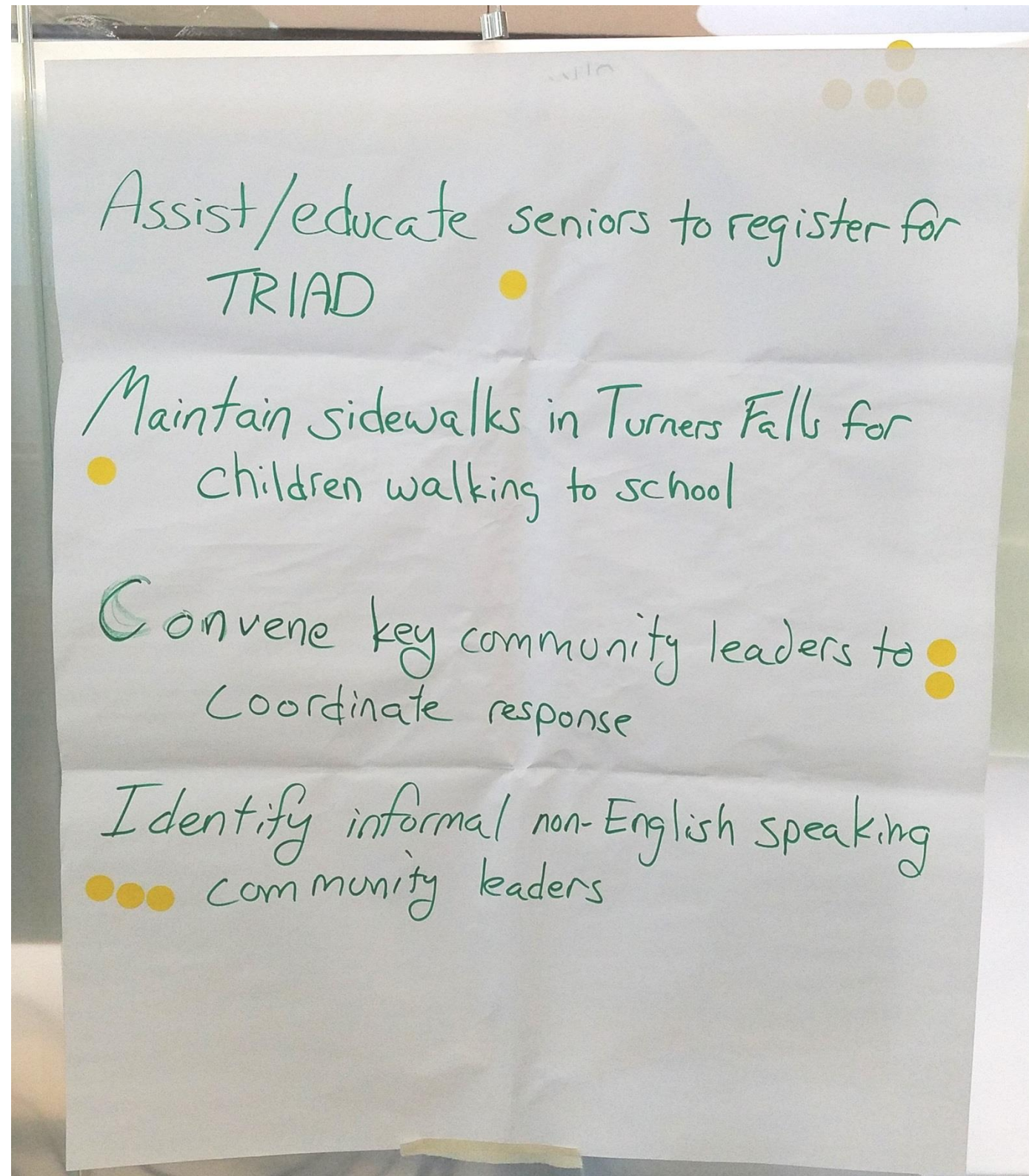
Montague
MVP

Recommendation Prioritization (1 of 3)

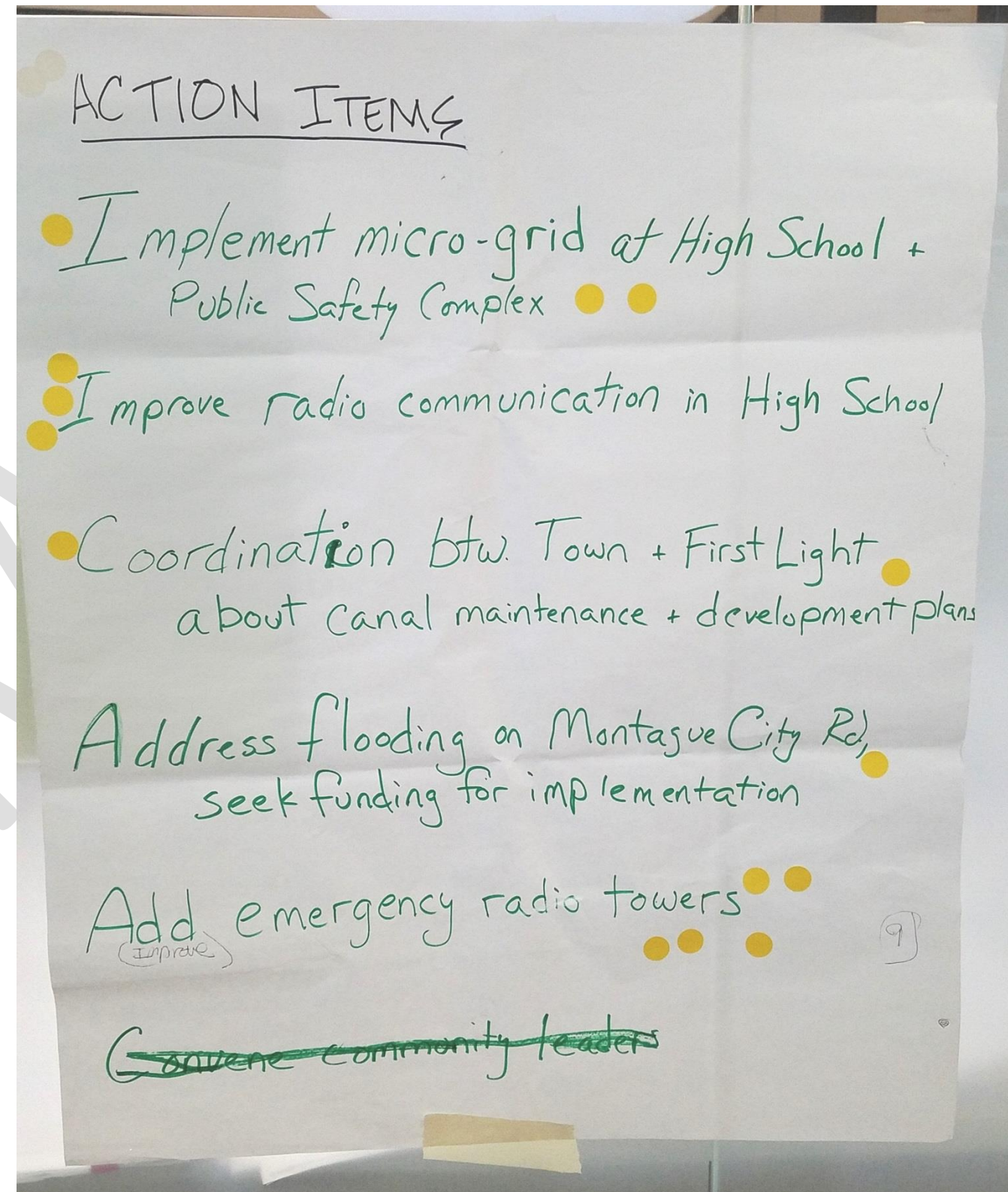
- Support/strengthen neighborhood groups
- Strengthen relationships btw. low income groups + government
- Lake Pleasant - Become a Fire Wise community + improve awareness + participation in Code Red
- Explore creation of communication plan for homeless population
- Increase Town ability to communicate with non-English populations
- Compile ^{list of} social service agencies

EXERCISE OUTPUTS (CONT.)


Recommendation Prioritization (2 of 3)



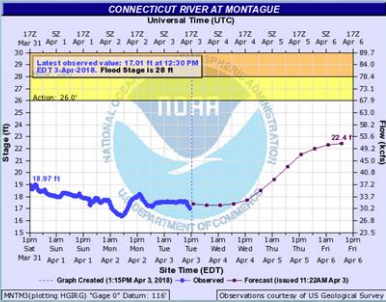
Recommendation Prioritization (3 of 3)




WORKSHOP PRESENTATION



Community Resilience Building Workshop



Town of Montague



April 4, 2018

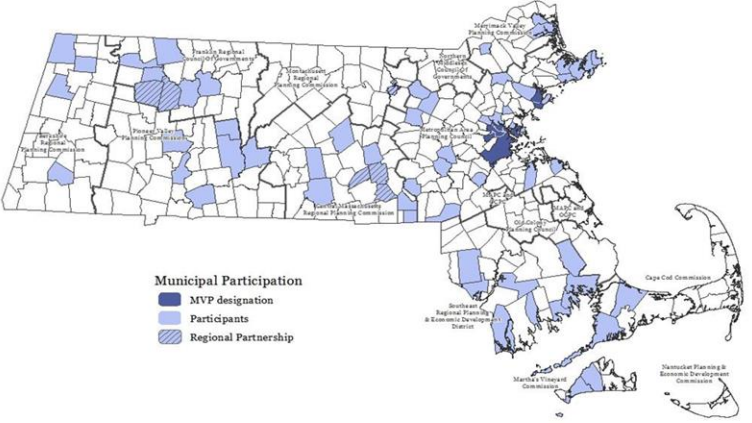
Agenda



- Welcome and Introductions
- Municipal Vulnerability Preparedness Grant Program
- Discuss Impacts of a Changing Climate
- Workshop Agenda (see hand-out)
- Next Steps

MVP Program Launched 2017

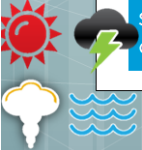
\$1.1M Awarded



Build Resilience and Preparedness - to more frequent and intense weather events.

Improve pre-event planning, response & recovery, and long-term actions.

A prepared and resilient town will be able to maintain functions, protect its residents and emerge stronger and better prepared for future storm events and a changing climate.



Workshop Process and Outcomes

- Review climate data to provide context for all participants
- Identify and map vulnerabilities and strengths:
 - Infrastructure
 - Societal
 - Environment
- Develop and prioritize actions and clearly delineated next steps


Massachusetts' Changing Climate

- **Changing weather**
 - Higher temperatures
 - Shorter winters
 - More frequent & intense storms
 - Droughts
- **Amplifies existing risks**
 - Community and regional infrastructure
 - Local and regional economies
 - Public health
 - Natural resources and our environment

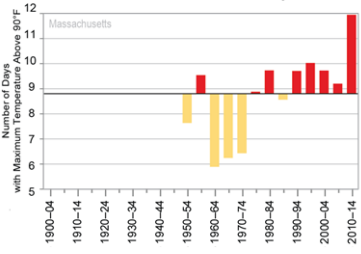
Goal for Building Resilience to a Changing Climate:

Protect life, property, natural resources and the economy

Higher Temperatures



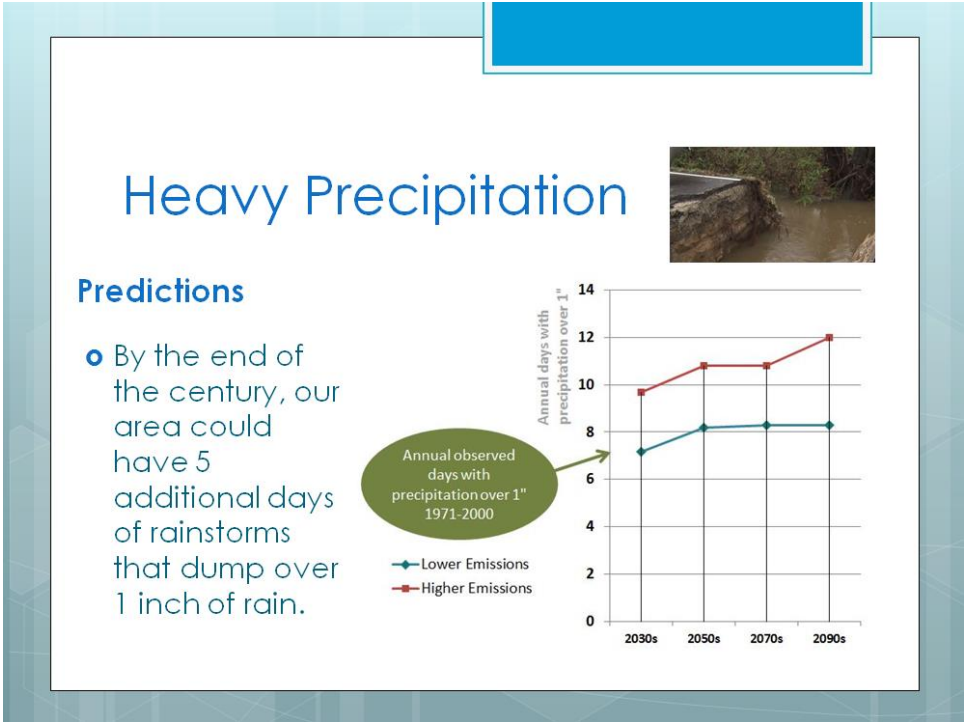
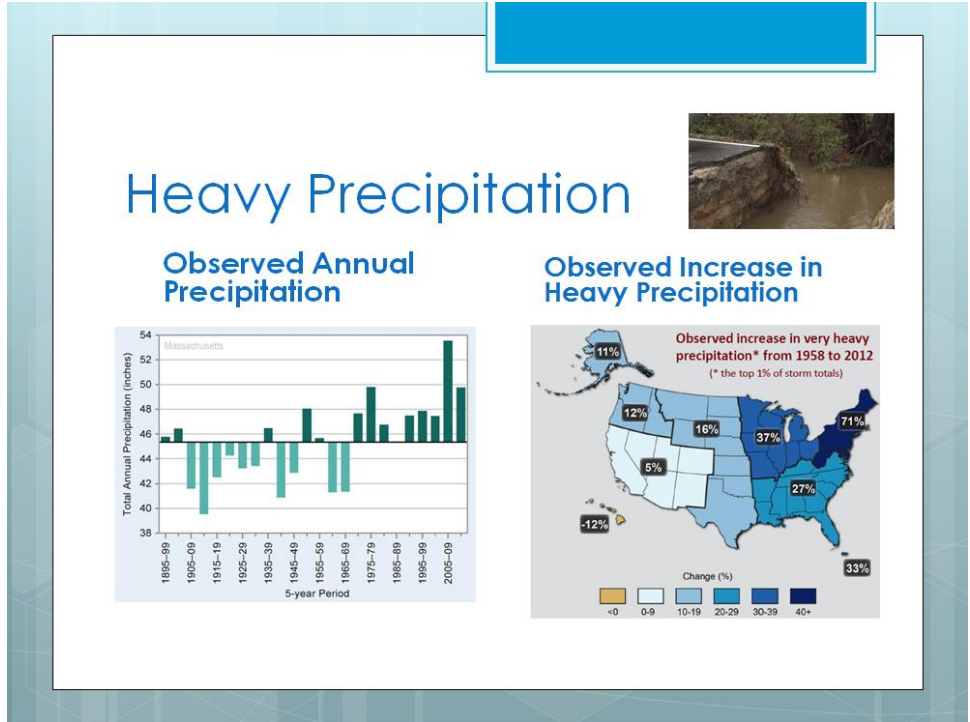
Change in Observed Number of Extreme Heat Days (>90 degrees)



Heat Waves

- Number of days >90° are predicted to increase.
- By 2050 - 6 to 25 more days
- By 2100 - 9 to 60 more days

WORKSHOP PRESENTATION (CONT.)



Extreme Weather Events

- Tropical storms
- Tornadoes
- Thunderstorms
- Snow storms
- Drought

The frequency, intensity, duration and geographic extent of these extreme storms is likely to increase.

Images showing: Tropical storm, Tornado, Snow storm, Drought.

Greenfield: 2.59"
Orange: 2.78"

News Flash! October 30, 2017

Heavy rains bring flash flood warnings and high winds knock out power to thousands. Roads flood

Montague Police Department advised that Lake Pleasant Road between Adams and Walnut streets is closed because of crews working on power lines. Earlier, Turners Falls Fire Department recommended avoiding the area near Lake Pleasant Road, near Millers Falls Road, because crews were working on down power lines.

Pictures by Recorder Staff/Paul Franz, 10/31/2017 Online edition <http://www.recorder.com/Road-closures-and-power-outages-Monday-morning-from-flooding-and-wind-13422424>

Recent Severe Storms

2008 Whately Microburst

Click to add text

Images showing: Microburst aftermath.

Recent Severe Storms

2008 Ice Storm

Images showing: Ice storm aftermath.

WORKSHOP PRESENTATION (CONT.)

2017 Conway Tornado



Recent Severe Storms
2011 Tropical Storm Irene




Snowtober!!! 2011 Historic Nor'easter



Montague Multi-Hazard Mitigation Plan 2014

- Inventoried *historic* hazard events – frequency, magnitude and damages
- Vulnerability assessment for flooding was prepared based on damages from *past* events and location in 100 year floodplain
- Prioritized all hazards and included action items for each hazard

2014 Multi-Hazard Mitigation Plan
Hazard ID & Vulnerability Assessment



Potential Hazards Identified for Montague
Dam Failure
Severe Winter Storm/Ice Storm
Earthquake
Hurricane
Wind Storms, Microbursts, etc.
Tornado

A changing climate is exposing us to greater risk.

Drought
Man-made Hazards
Temperature Extremes


Action Items for most of these hazards were also developed

Workshop Agenda

- Identify Past, Current and Future Hazards
- Determine Top Priority Hazards
 - Which 4 hazards pose the greatest threat to the town currently and in the future?
- Brainstorm resiliency actions for Infrastructure, Societal and Environmental vulnerabilities.
 - Examples:
 - Upgrade culverts, flood-proof drinking water supplies
 - Evacuation drills and extreme weather communications protocols to protect vulnerable populations
 - Protect wetlands and floodplains to improve flood resiliency
- Determine top priority Resiliency Actions for Montague

WORKSHOP PRESENTATION (CONT.)

Infrastructure



A changing climate is exposing us to greater risk.

What is it?

- Roads
- Power grid
- Drinking Water
- Wastewater Treatment
- Communications
- Housing
- Emergency Response
- Schools



Vulnerabilities

- Increase in Precipitation and Extreme Storm Events
- Damages from Flooding, Wind Storms, Snow/Ice Storms


Expected Impacts from Higher Temperatures

Infrastructure

- Energy
 - Increased demand will strain energy infrastructure
 - Disrupt service (potential for widespread brownouts or blackouts)
- Transportation
 - More frequent maintenance required to address:
 - deterioration of asphalt roads
 - buckle railroad tracks
 - thermal expansion of bridges



Societal (Montague Residents)



A changing climate is exposing us to greater risk.

What is it?

- Availability of health care services
- Access to lifelines (food/water, emergency response personnel, etc.)
- Support networks that connect and maintain the supply of goods and services to vulnerable populations.

Vulnerabilities



- Vulnerable populations
 - Elderly
 - Low/moderate income
 - Special needs
 - Languages spoken

Effects of Climate Change on Town Residents (societal)

A changing climate is exposing us to greater risk.

- Heat-Related Illness and Death
- Danger from Storms & Flooding
- Insect-Borne Diseases
- Allergies & Pollen
- Waterborne Disease & Algal Blooms
- Vulnerable populations
- Shelters & services

Health Impacts from a changing climate are magnified by individual health issues and circumstances of vulnerable populations



Environment



A changing climate is exposing us to greater risk.

Natural Resources

- Connecticut & Millers Rivers
- Coldwater streams
- Forests
- Floodplains
- Montague Plains
- Wetlands
- Aquifers

Vulnerabilities

- Flooding
- Erosion
- Impacts to water quality and quantity
- Loss of species diversity
- Invasive pests and plants
- Wetland soils become less absorptive
- More stormwater runoff, less groundwater recharge

Let's Get Started!

- Complete Workshop
- Compile Information in a Summary Report
- Follow-up Meeting with the Town
- Review of Funding Sources