

2021 Massachusetts Envirothon Current Issue Problem

Water Management and Climate Change

Background (For more extensive background see <https://massenvirothon.org/areas-of-learning/current-issue/2021-current-issue/>)

We often take water resources for granted. However, decisions about water – how we protect it, how we share it – are some of the most important we make as a society. Our decisions about water management will become more and more consequential as climate change accelerates.

Our communities and economy depend on the natural water cycle in our watersheds, aided by engineered infrastructure, to provide the quality and quantity of water we need to support a variety of uses, and the healthy biodiverse ecosystems that underpin us. We are most familiar with our daily direct use of water for drinking, cleaning, and waste management. But we also rely on water resources indirectly for agriculture and forestry to produce food and fiber, for landscape management, and as a source of aesthetic and recreational benefits.

It is not an exaggeration to say that climate change is shifting the foundations of our economic and social systems. Fortunately, public policy (and government initiatives like Massachusetts' Municipal Vulnerability Preparedness (MVP) program) are beginning to recognize the climate crisis and the importance of considering sustainability and resilience as goals in our planning.

- **Sustainability** requires that we manage natural resources to meet the needs of the present without compromising the ability of future generations to meet their own needs. Sustainability involves three key goals: ecological health, economic well-being, and social justice.
- **Resilience** is a term in natural and social science referring to the capacity of a system to cope with change. It's a factor in ecosystem dynamics, human communities, and individual psychology. The Massachusetts Municipal Vulnerability Preparedness (MVP) project defines **climate resilience** as “the ability of a community to address the needs of their built, social, and natural environments to anticipate, cope with, and rebound stronger from events and trends related to climate change hazards.”

Even before the climate crisis, managing water resources in Massachusetts was a growing challenge. The quality and quantity of our inland and coastal water resources have been experiencing stress from growing population, increasing consumption and waste, new contaminants, and sprawling development with increasing areas of impervious surfaces.

Climate change is exacerbating these stresses and adding uncertainty. Emerging water-related markers of climate change in our communities include:

- Changing precipitation patterns
- Stronger storms
- Increased precipitation overall
- Increased precipitation intensity that can cause more runoff and flooding, and less groundwater recharge
- Prolonged periods of drought

Management of water resources requires a mix of natural systems management, engineering, and education – on large and small scales.

As we plan for water resource management in an era of changing climate, we should be alert for innovative opportunities for ecologically sound, economically viable, socially just development related to water resources.

The Problem

Your task is to create a video presentation that may be used beyond the Envirothon, if you choose. The key question your team should answer in your presentation is:

What is the most critical next step our community should take to increase resilience in water resource management as climate change accelerates?

In your presentation you should:

Provide an overview of water resources in your community and the wider watershed.

- Describe key natural and engineered water infrastructure. Be sure to use maps!
- Include water supply, wastewater, stormwater, and the roles water plays in the wider ecosystem and landscape.
- Highlight the impact of climate change

Introduce at least three people who are engaged in water resource management, their work and their perspectives

- Introduce the key problems and opportunities they see in water resource management
- Describe ongoing efforts, new initiatives, small or large scale projects, and plans and ideas you have encountered that are relevant to building resilience in water management, particularly with respect to climate change

Identify the most important opportunity you see for building resilience in water resource management in your community, as climate change accelerates.

- Propose the next step to be taken, and what will be needed for your community to take it. Are there obstacles?
- Who should be involved and why?
- Explain why this step is important for increasing resilience

Some tips for your presentation

How it works:

- The Current Issue Presentation score is 20% of your team's total Envirothon score.
- Judges will score your team based on the clarity and quality of your research and findings, as evident in your video presentation and a discussion with a panel of judges. Judges will NOT score you on your video production techniques or skills. (We will be offering separate recognition for high quality videos).
- Your meeting with the judges: The presentation host will open the Zoom meeting that includes five members of your team and five judges. Together, you will view the video, then there will be 20 minutes for judges' questions and discussion with you. Your coach will be able to observe but not participate.
- You can involve as many team members as you want in making the video presentation. Up to five (but no more than five) members of your team may be involved in the meeting with judges. (These five members will be the ones who will participate in the NCF Envirothon this summer if you win the overall Massachusetts competition). The discussion will be recorded, so other team members will be able to observe at a later time.
- The judges' job is to listen, ask good questions, assess your work, and give you feedback on your research and your recommendations. Scoring will be based on the content of your video presentation and the discussion that follows.
- The average of judges' scores will be your score for purposes of the competition.
- All the judges are asked to give you helpful comments. Copies of the score and review sheets are sent to your coach.

Show the judges how you know what you know, and how you came to your conclusions. Tell them about where you visited, who you talked to, what documents you researched, what activities you participated in. **Emphasize the people and their perspectives on the issues.**

You may have encountered surprising stories about people, ecosystems, water infrastructure, and resilience in your community. Share them!

Use visual aids and examples. Photographs, charts and graphs, samples, and quotes can help you make your points and distinguish your presentation from others. **Your Envirothon map** should play a key role in your presentation.

Revise and edit your presentation. ONLY team members should be involved in making the video. This should be your work alone! However, you can show drafts and early video versions to a variety of audiences, and use their questions and suggestions to make your presentation as clear and concise as possible. This will also help you practice for the Q & A session with judges.

Consider how your team can best share responsibility for answering judges' questions in the Zoom session.

You are ready! Relax and enjoy your conversation with the judges.