

Attaining Ambient Water Quality Standards

More frequent and intense storms are likely to degrade rivers, streams, and coastal water quality. Managers of natural resources, water resources and water quality compliance will face challenges as the climate changes. Key vulnerabilities include:

- More frequent and intense storms may increase runoff of sediment and pollutants from land, leading to erosion into rivers and streams, which degrades water quality.
- These effects, combined with higher water temperatures, may threaten ecosystem health and fisheries.

Adaptation in Action

Tropical Storm Irene washed out an estimated 1,000 transportation culverts in Vermont in 2011. The state and local municipalities decided to rebuild many of these culverts to a standard that reduces current and future vulnerability. Replacing undersized culverts with larger culverts promotes resilience to current levels of flooding and provides adaptive capacity to deal with more frequent and intense storms. The resizing of undersized culverts, combined with actions to promote more natural stream flow, further reduces levels of sedimentation and erosion and allows for greater fish passage. Vermont's Natural Resource Adaptation Report identifies culvert re-design as an adaptation strategy to protect cold-water fisheries and water quality. By taking future climate risks into account, namely the expected increase of precipitation and storms in the Northeast, Vermont is not only promoting resilience to current threats but also adapting to future conditions.



Upgrading transportation culverts will help Vermont prevent washed out roads and runoff into rivers and streams (seen above, after Hurricane Irene).

Maintaining Air Quality and Public Health

Increased temperatures can affect air quality (e.g., ground-level ozone), which can have impacts on public health. More frequent and intense hot weather also poses risks to public health. Public health officials, emergency responders, and community leaders will face challenges to protect public health, especially to the elderly, very young children, those with pre-existing medical conditions and those in low income communities. Key vulnerabilities include:

- Higher levels of ground-level ozone affect people with respiratory and heart conditions.
- More frequent heat waves can increase heat stress and result in death.

Adaptation in Action

Heat waves are the leading weather-related cause of death in the United States. New York City (NYC) assessed its vulnerability to the health impacts of heat waves under current and future climatic conditions. To promote resilience to current and future heat waves, NYC is increasing the use of cooling centers and supporting outreach to share life-saving information with particularly vulnerable people. NYC is also using green infrastructure, reforestation and reflective or cool roofs to reduce the urban heat island effect.



By painting roofs with white or reflective paint, New York City is reducing the urban heat island effect.

For a comprehensive view of projected climate changes in your region, consult:

- *Climate Change Impacts in the United States: The Third National Climate Assessment*
- *EPA's Climate Change Adaptation Resource Center*

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