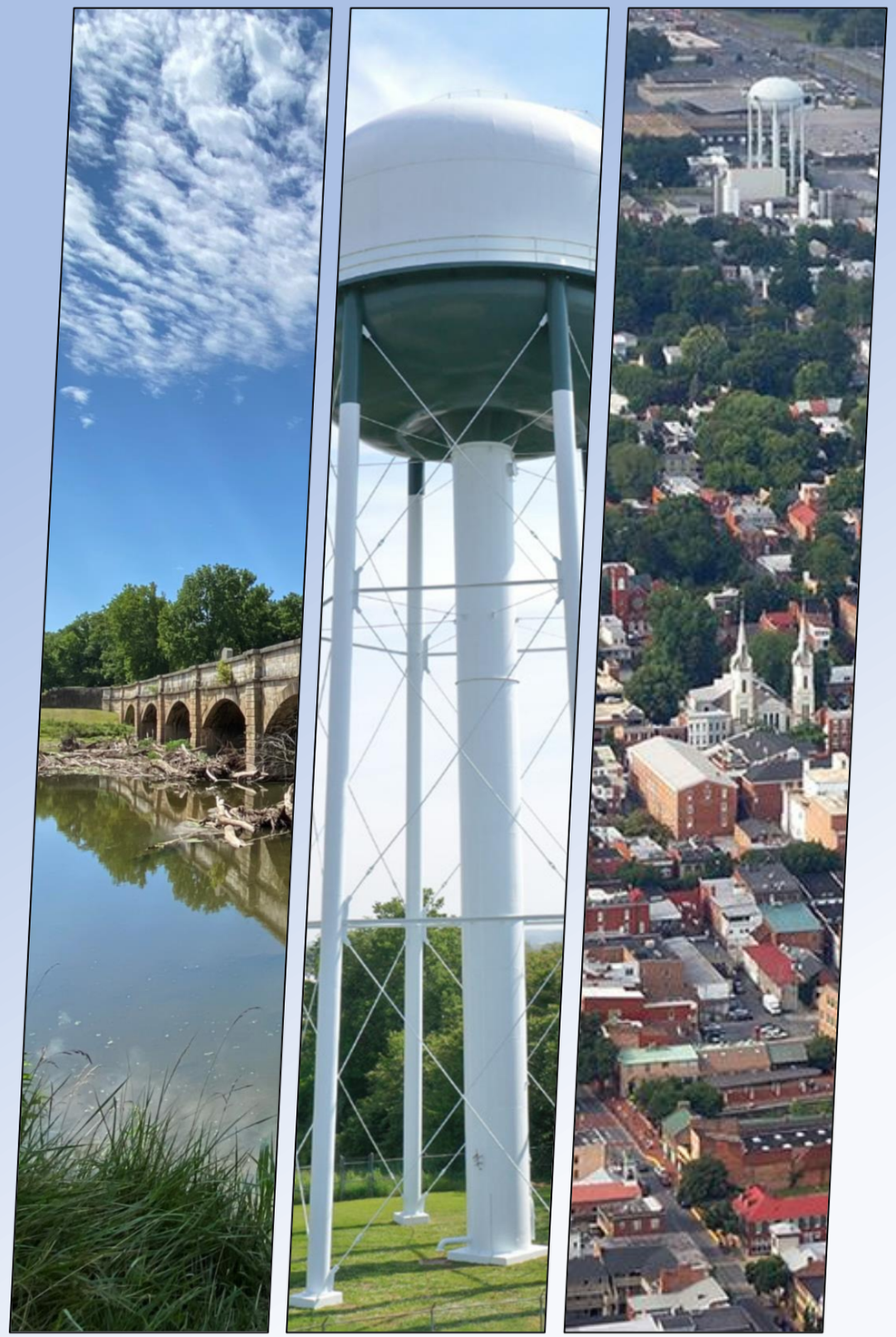

Frederick County Water Resources Element

Frederick County Planning Commission

March 20, 2024

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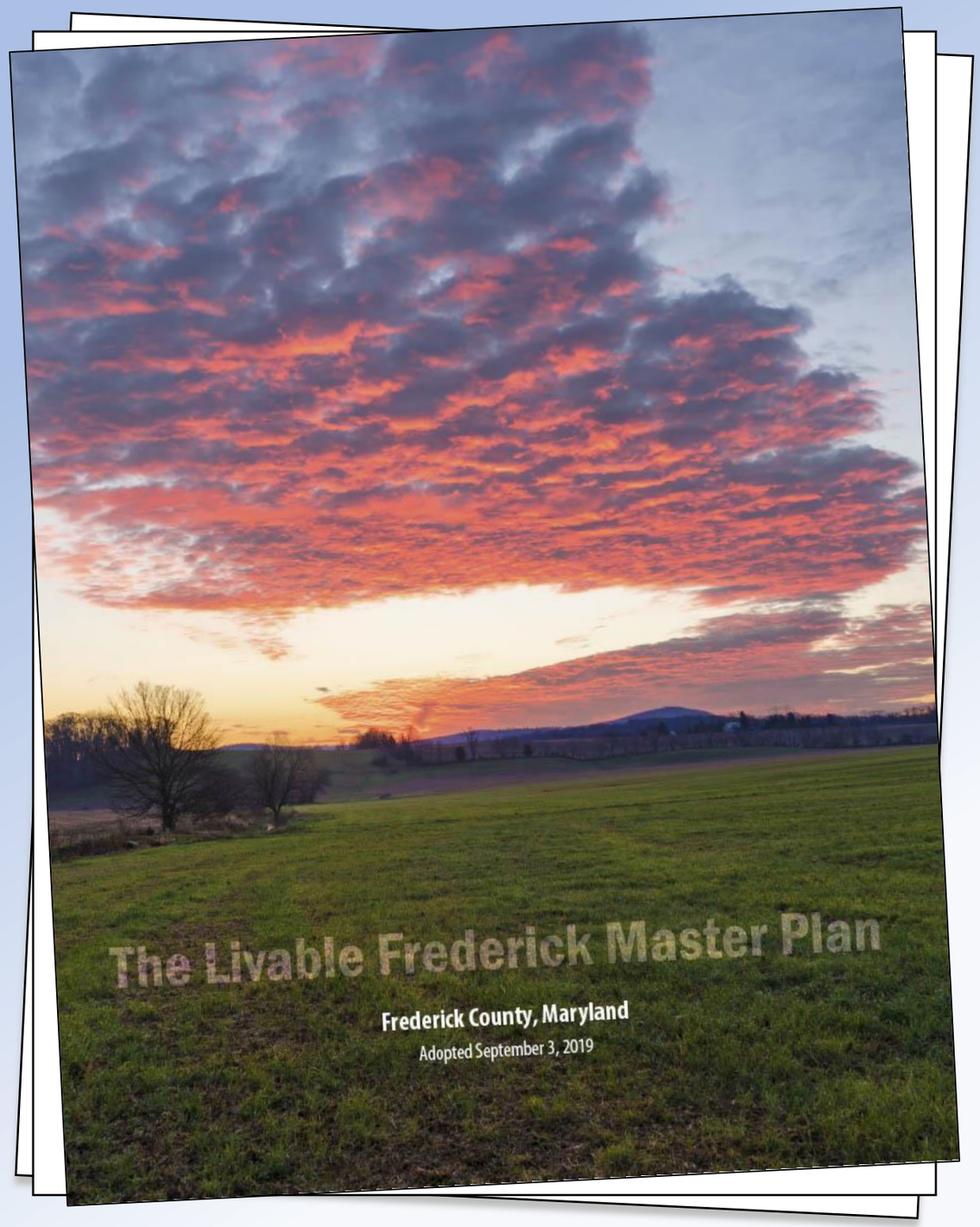

LFMP & Equity

The LFMP Vision Statement emphasizes a need to ensure that all residents can lead fulfilling lives, are free from poverty, and that we value a healthy environment.

Supporting Initiative 1.2.1.3.18

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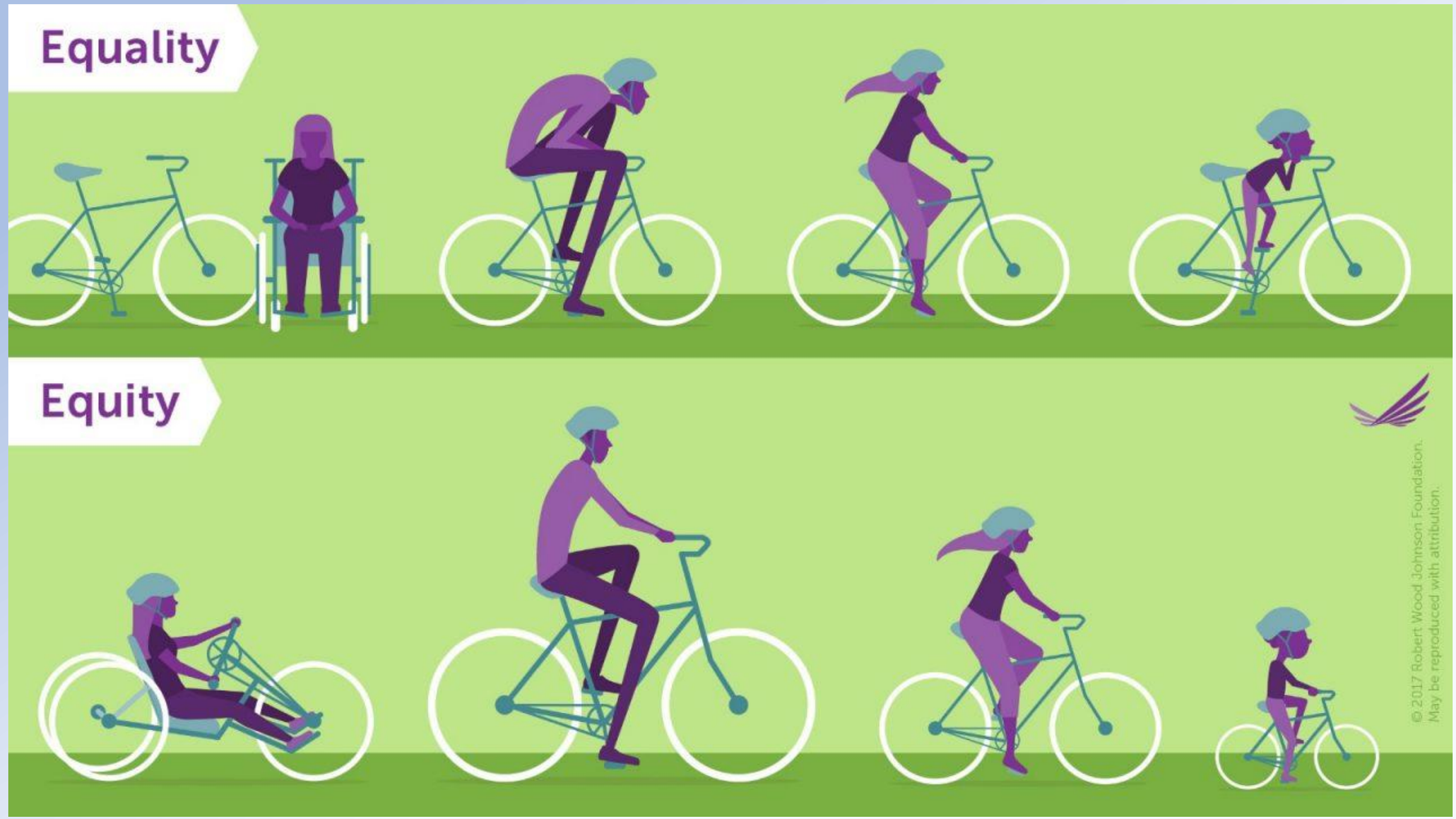

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Image Source: https://www.rwjf.org/en/insights/blog/2022/11/we-used-your-insights-to-update-our-graphic-on-equity.html”

Drinking Water

Wastewater

Stormwater

Equity

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Water Equity

… is achieved when all communities have access to safe, clean, affordable drinking water and wastewater services; are resilient in the face of floods, drought, and other climate risks; have a role in decision-making processes related to water management in their communities; and share in the economic, social, and environmental benefits of water systems.

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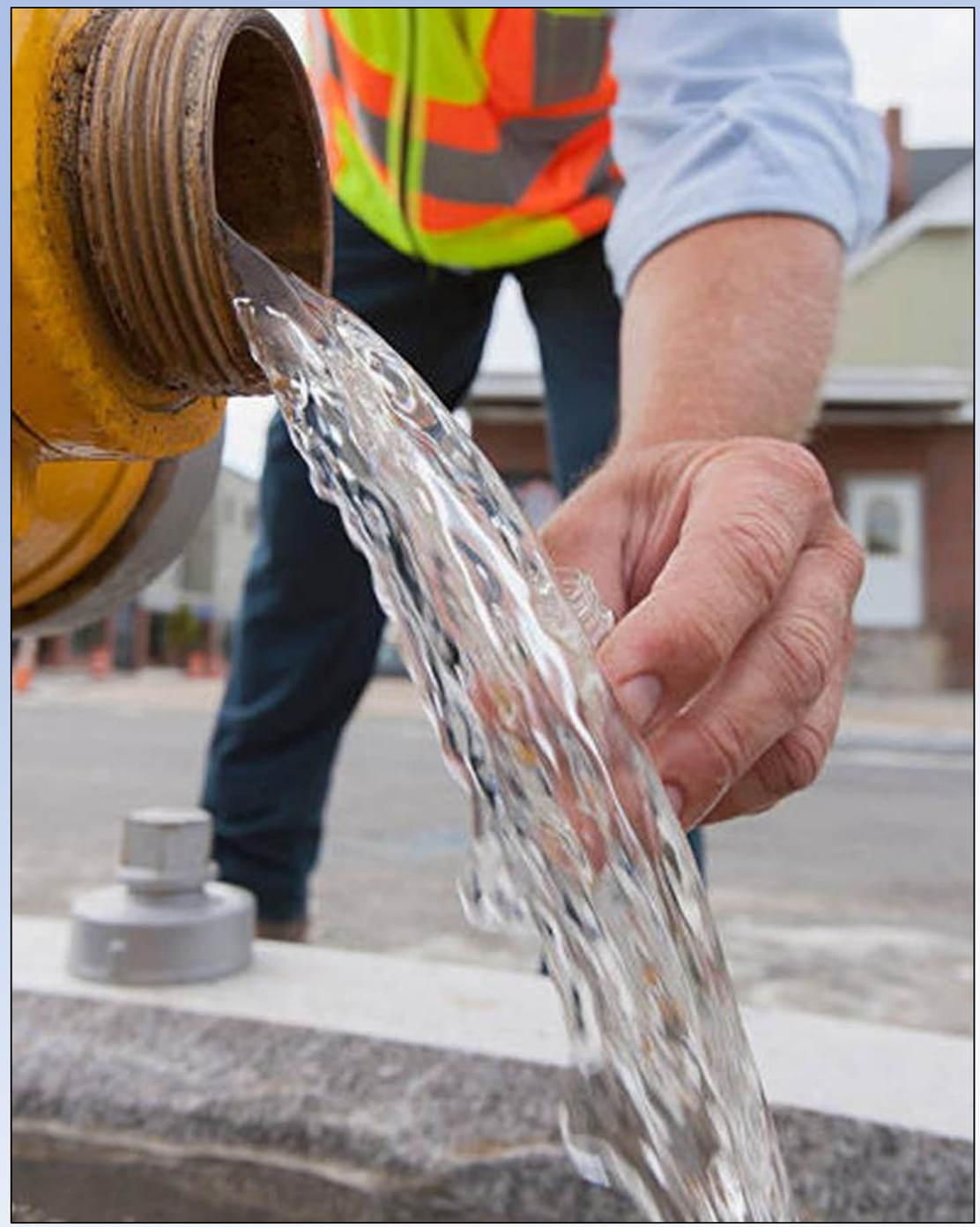
Image Source: https://USWaterAlliance.org



Transitioning Costs

Over the next 20 years, Maryland's water expenses could total $14.64 billion, with $12.788 billion of that total being allocated to distribution and transmission infrastructure (US EPA, DWINSA, September 2023).

Federal share of capital spending in the water sector fell from 63% in 1977 to 9% of total capital spending in 2017, two-thirds of public spending for capital investment in water infrastructure since the 1980s has been made by state and local governments (ASCE, 2021 Report Card for America's Infrastructure).

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Equity and the Drinking Water Assessment

Current Programs

- Division of Water & Sewer Utilities "Inclining Block Rate Billing"
- Division of Water & Sewer Utilities Capacity Fee Payment Program and Capacity Fee Fund
- Maryland Low-Income Housing Water Assistance Program

Potential Recommendations

- Tiered Assistance Program or 'TAP' (City of Philadelphia)
- Improve Affordability Data
- Workforce Development and Career Pipelines in Underserved Communities
- Neighborhood Revitalization (South Frederick Corridors Plan)
- Continue to incorporate Equity into Planning & Assessment

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Drinking Water

Wastewater

Stormwater

Equity

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Public Wastewater Treatment Costs & Equity

Wastewater treatment plant age, technology, physical location

Repairs and upgrades can cost in the millions to 10s of millions of dollars and result in the need for assistance or rate increases

Many of the same recommendations for achieving equity in drinking water assessment may apply to wastewater

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Private Wastewater Treatment Costs & Equity

Nationally, fifty-two percent of households with on-site systems live at or below the median income level (US EPA, Report to Congress, July 2021)

Installation, repair, and maintenance costs can vary greatly and are borne entirely by system owners in most cases

Grants available utilizing fees from the Bay Restoration Fund, but applications outstrip funds each year

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Private Wastewater Treatment Costs & Equity

Maryland WholeHome Program from the Maryland Department of Housing and Community Development

Regionalization in locations where there are concentrations of failing systems (Sabillasville, Hyattstown and Lewistown)

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Drinking Water

Wastewater

Stormwater

Equity

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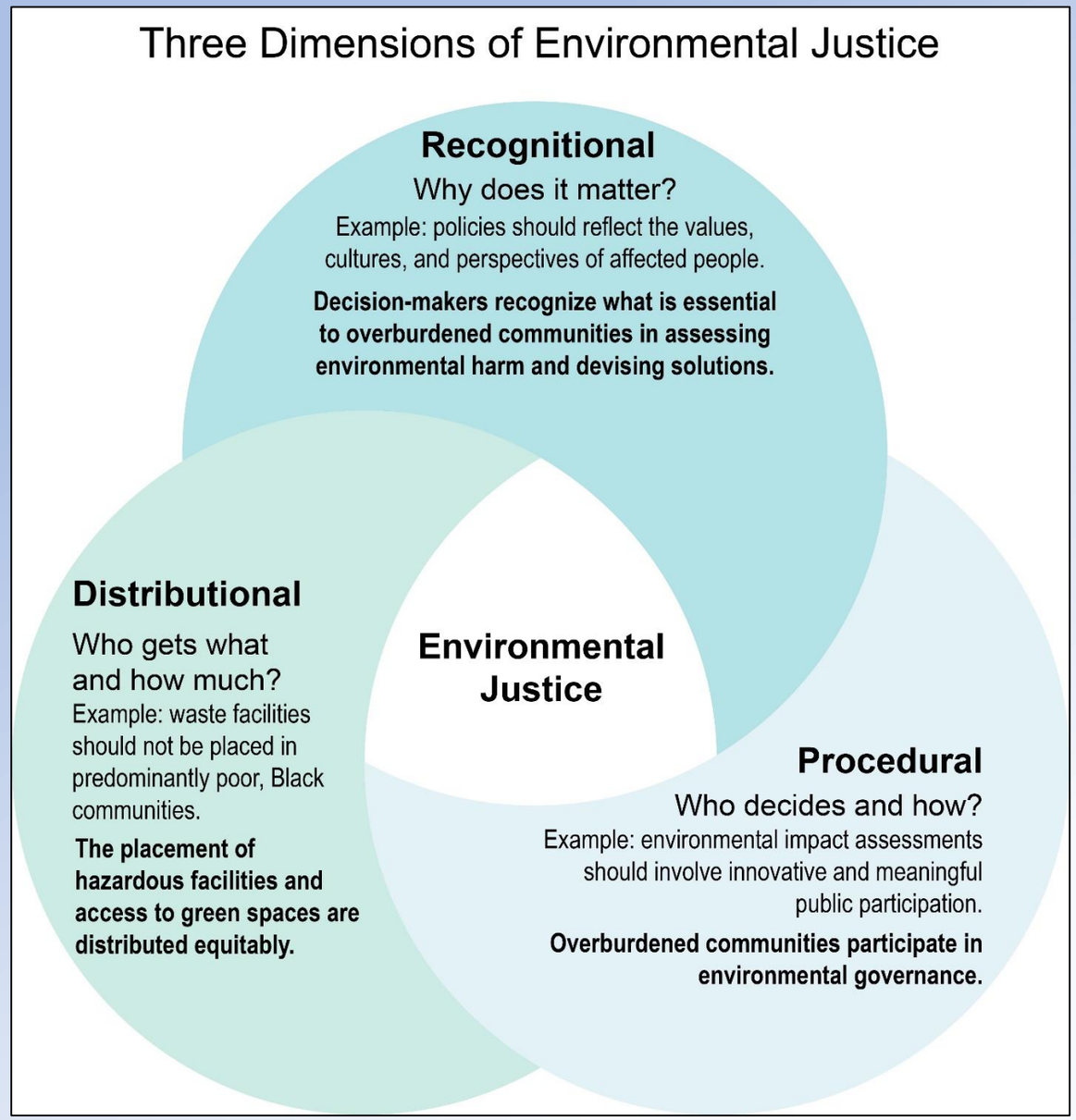

Fifth National Climate Assessment, Figure 20.1 https://nca2023.globalchange.gov/chapter/20#fig-20-1

Environmental Justice

Environmental justice recognizes groups of people are disproportionately impacted by environmental hazards.

MDE's Environmental Justice definition includes:

Underserved Community: A census tract where…

- at least 25% are low-income;
- or at least 50% are nonwhite;
- or at least 15% have limited English proficiency

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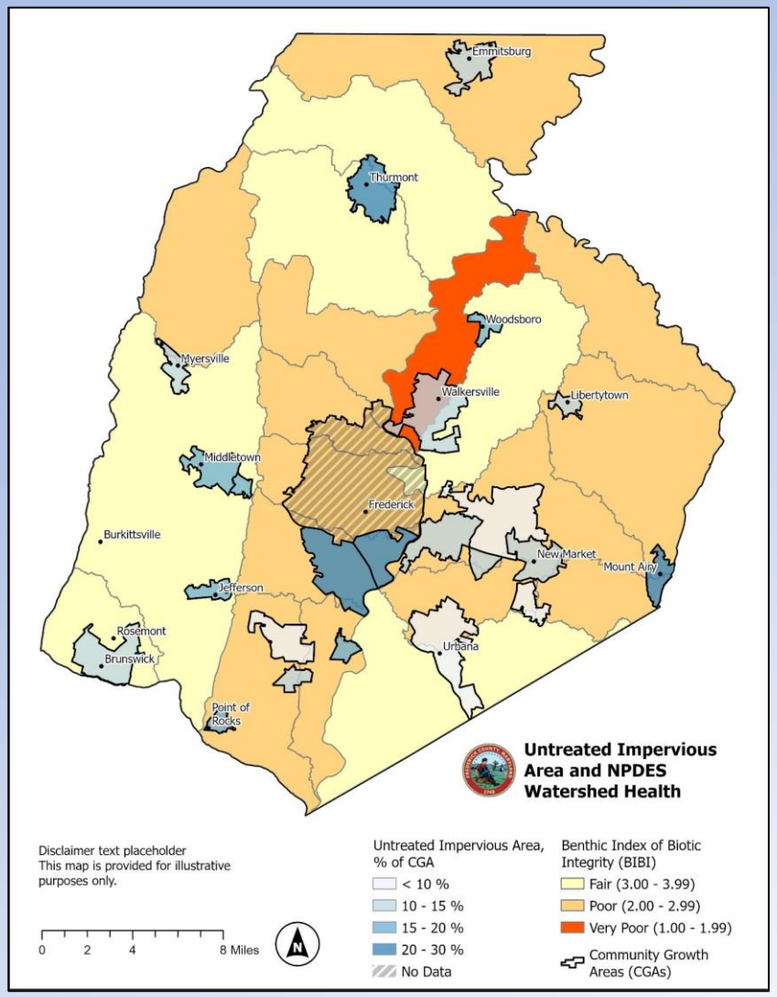
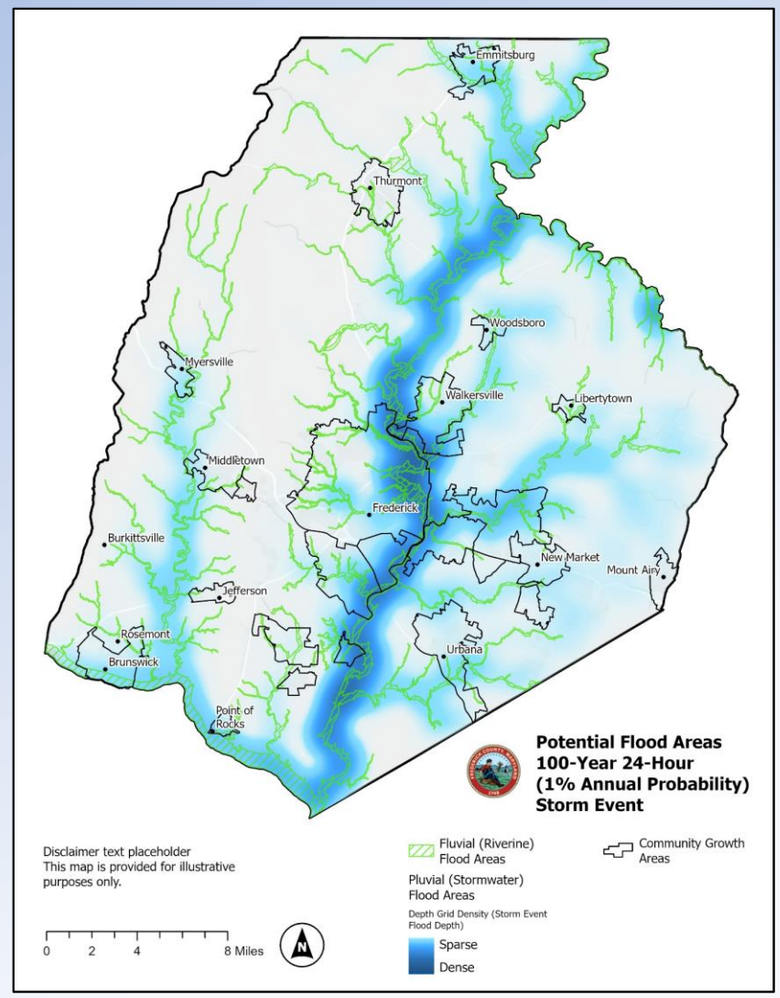


Map 3: Untreated Impervious Surface and NPDES Watershed Health



Map 5: Potential Fluvial & Pluvial Flood Areas

Environmental Justice

11 Census tracts in Frederick County are in the top 50% percentile statewide; located in the City of Frederick and surrounding unincorporated area.

WRE looks at potential trends in these areas for the current conditions analysis.

Similar analysis will be done for future conditions and implementation suggestions.

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Equity and Redevelopment of the South Frederick Corridors

FC5 – Develop a coordinated, area-wide plan for stormwater management based upon new or updated watershed plans for the lower Ballenger Creek and Monocacy Direct Southwest Watersheds.

FC6 – Institute a system for creating shared community stormwater management facilities.

FC7 – Develop a concept plan for integrating stormwater management facilities and accessible green infrastructure in the South Frederick Corridors.

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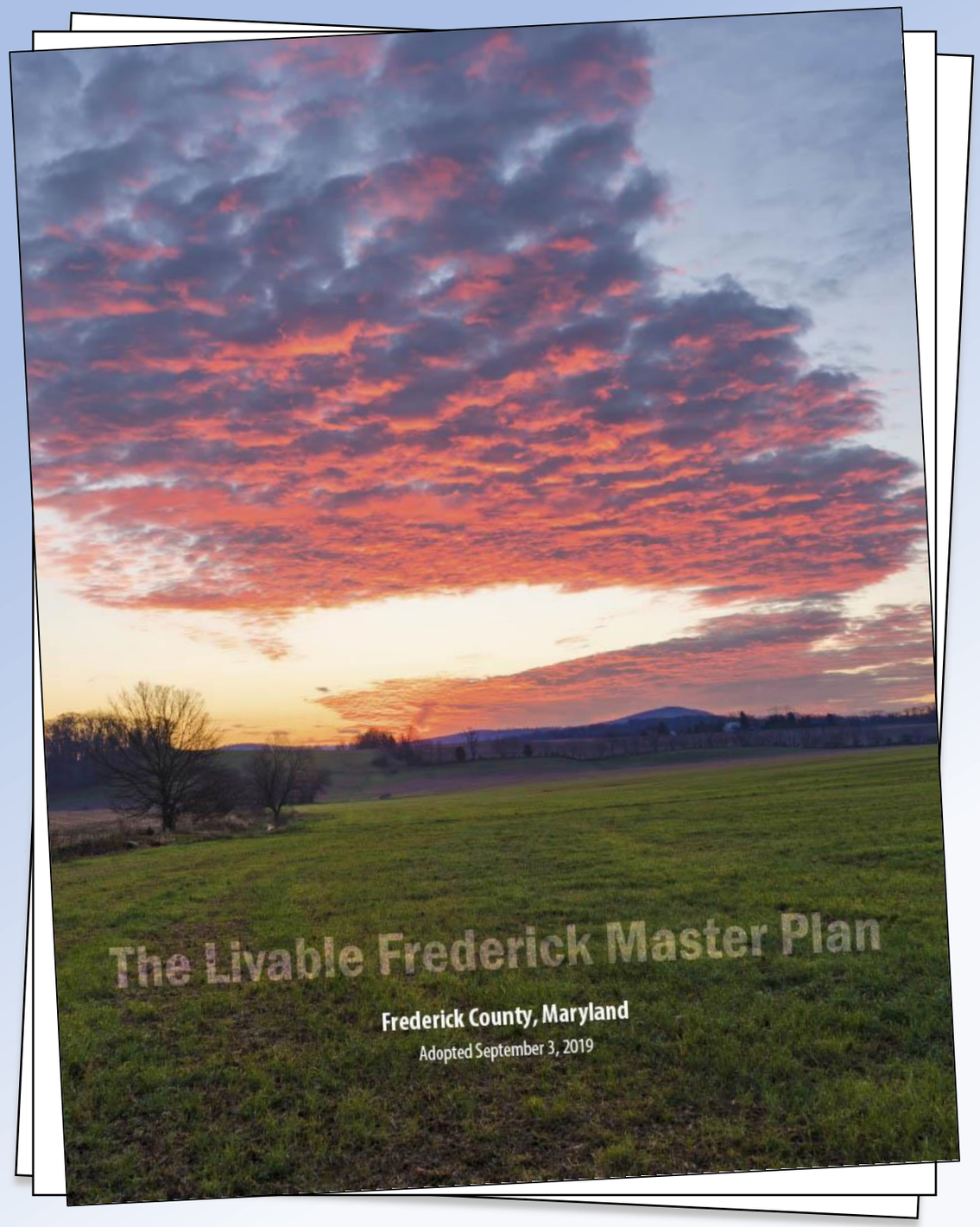

LFMP & Climate

Goal 4.4.1 - Climate Resiliency

Initiative 4.4.1.1 - Hazard Planning

Initiative 4.4.1.3 - Stormwater Impacts

Supporting Initiative 4.4.1.3.2

Supporting Initiative 4.4.2.3.8

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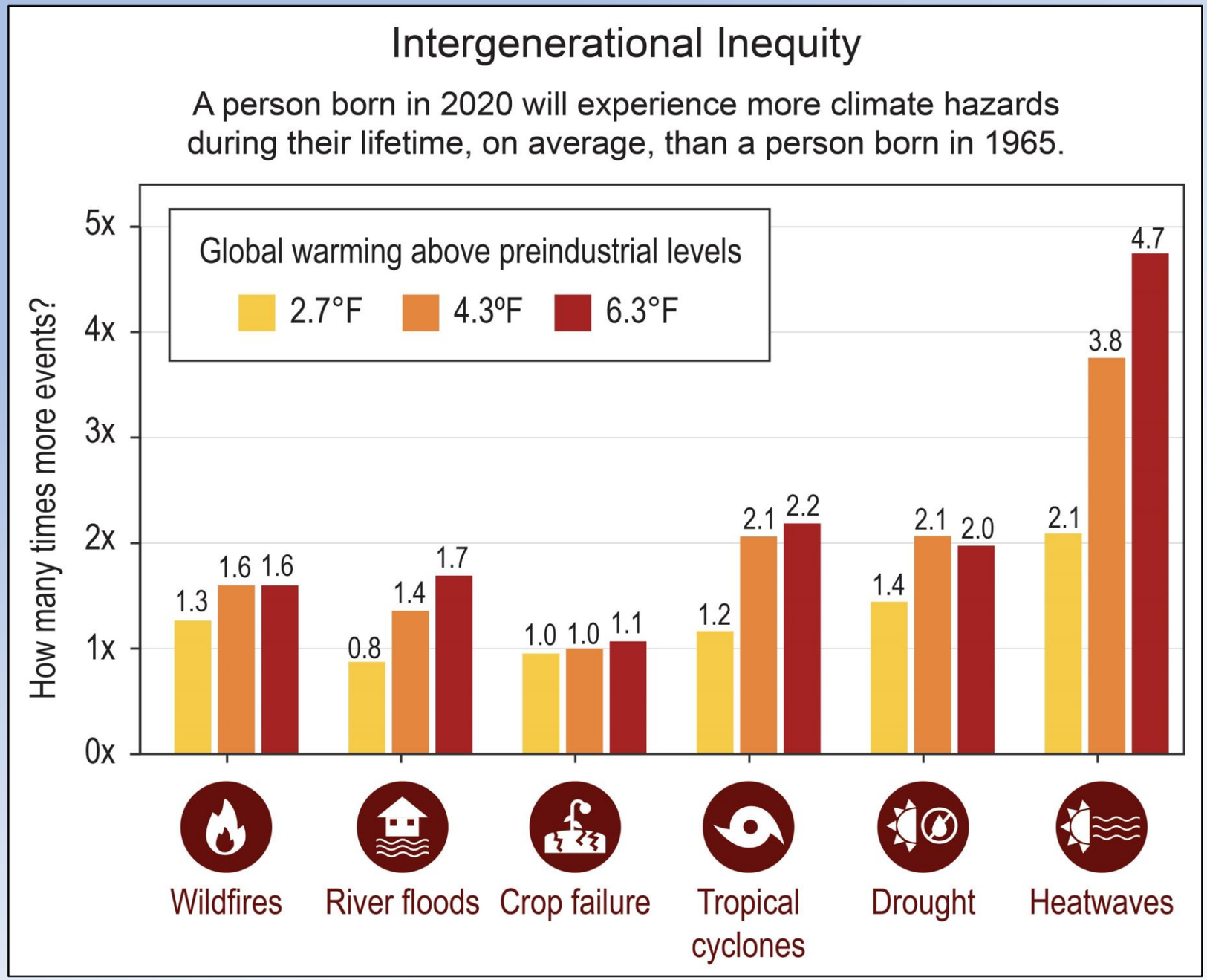

Fifth National Climate Assessment, Figure 15.4
https://nca2023.globalchange.gov/chapter/15/

We live in a changing climate

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Drinking Water

Wastewater

Stormwater

Climate

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Table 4.4. Presidentially Declared Disasters for Frederick County

Disaster Number	Incident Type	Incident Date	Programs Declared*			
			IH	IA	PA	HM
DR-309	Flooding, Severe Storm	8/17/1971		✓	✓	✓
DR-341	Flooding, Heavy Rains (Tropical Storm Agnes)	6/23/1972		✓	✓	✓
DR-489	Flooding, Heavy Rains	10/4/1975		✓	✓	✓
DR-522	Severe Storms, Flooding	10/14/1976		✓	✓	✓
DR-601	Severe Storms, Tornadoes & Flooding	9/14/1979		✓	✓	✓
EM-3100	Severe Snowfall & Winter Storm	3/13/1993			✓	✓
DR-1016	Severe Winter Weather & Ice Storm	2/8/1994			✓	✓
DR-1081	Severe Snowstorm (Blizzard of '96)	1/6/1996			✓	✓
DR-1094	Severe Storms, Flooding	1/19/1996		✓	✓	✓
DR-1139	Severe Storms, Flooding (Tropical Storm Fran)	9/6/1996		✓		✓
DR-1324	Severe Winter Storm	1/25/2000			✓	✓
EM-3179	Severe Snowstorm	2/14/2003			✓	✓
DR-1492	Flooding, Severe Storms, Wind (Hurricane Isabel)	9/18/2003	✓	✓	✓	✓
EM-3251	Sheltering, Evacuation (Hurricane Katrina)	8/29/2005			✓	
DR-1910	Severe winter storms and snowstorms	2/5/2010			✓	✓
EM-3335	Hurricane (Irene)	8/26/2011			✓	
EM-3349	Hurricane (Sandy)	10/26/2012			✓	
DR-4091	Hurricane (Sandy)	10/26/2012	✓		✓	✓
DR-4261	Severe winter storms and snowstorms	1/22/2016			✓	✓
DR-4374	Severe Storms, Flooding	5/15/2018			✓	
EM-3430	COVID-19	1/20/2020			✓	
DR-4491	COVID-19 Pandemic	1/20/2020		✓		

*IH = Individual Housing IA = Individual Assistance PA = Public Assistance HM = Hazard Mitigation

Source: FEMA Declared Disasters (as of August 2021).

Economic Impacts

United States experiences a billion-dollar weather or climate disaster every three weeks.

Between 2018 and 2022, eighty-nine events resulting in damages over 1-billion dollars were recorded nationally, with more than 2/3 being storms, floods, and droughts.

The Frederick County Hazard Mitigation and Climate Adaptation Plan lists 22 presidentially declared disasters that have affected the County since 1962.

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Data: 5th National Climate Assessment. U.S. Global Change Research Program, Washington, DC, USA. (https://nca2023.globalchange.gov/).
Image: *Hazard Mitigation and Climate Adaptation Plan | Frederick County MD - Official website*. (n.d.). https://frederickcountymd.gov/8228/Hazard-Mitigation-and-Climate-Adaptation

Potential Impacts to Water Supplies

Flooding

Damage to treatment and conveyance infrastructure

Floodwater infiltration of potable water supplies

Harmful algal blooms (HABs) or infiltration into groundwater aquifers (GWUDI)

Drought

Strain groundwater supplies

Limit agricultural productivity

Increase irrigation demand (in conjunction with higher temps)

Reduce streamflow and surface water supplies

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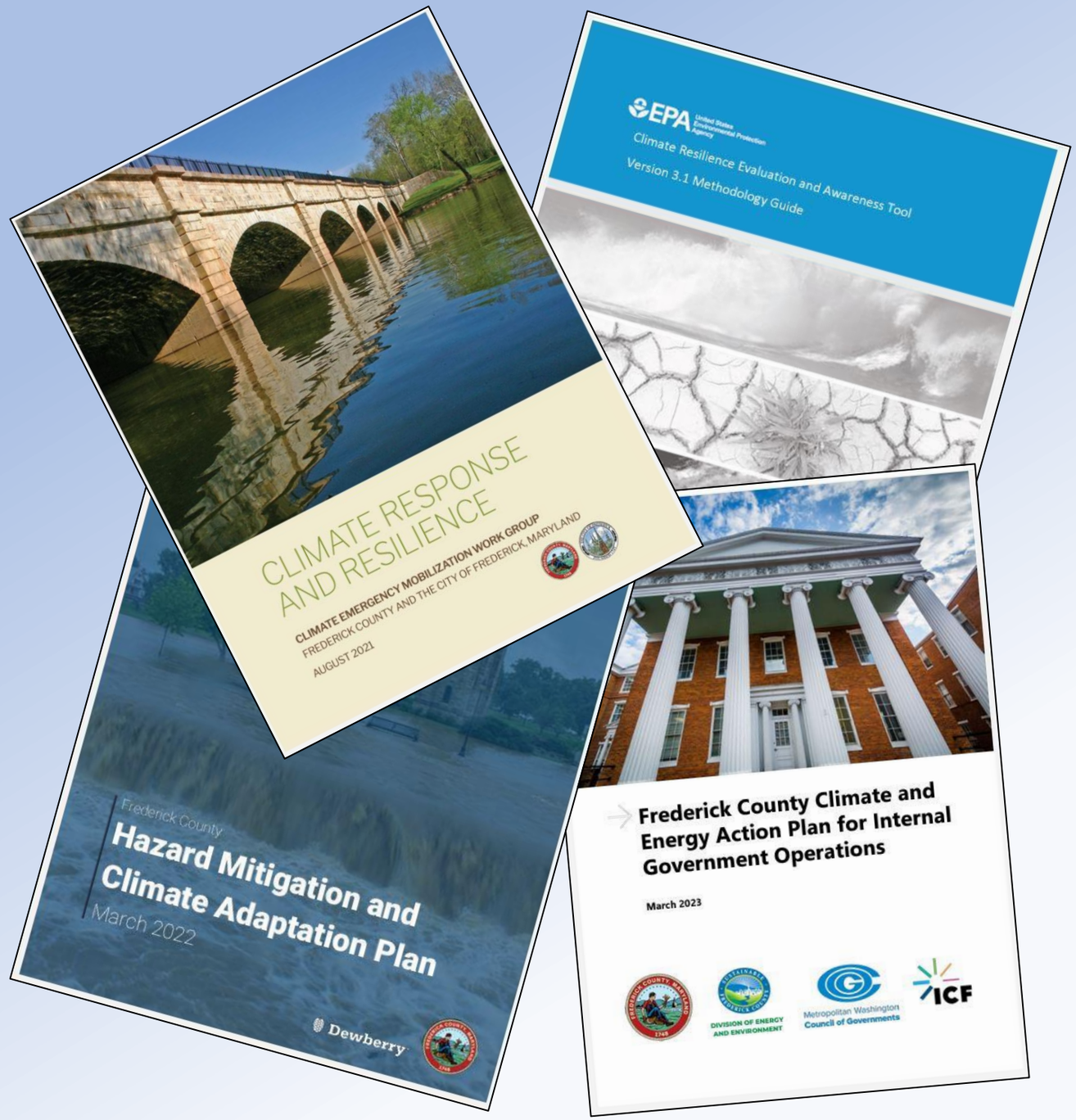

Potential Sources of Recommendations

Climate Response and Resilience Report

Hazard Mitigation and Climate Adaptation Plan

Climate and Energy Action Plan for Internal Government Operations

EPA Climate Resilience Evaluation and Awareness Tool (CREAT)

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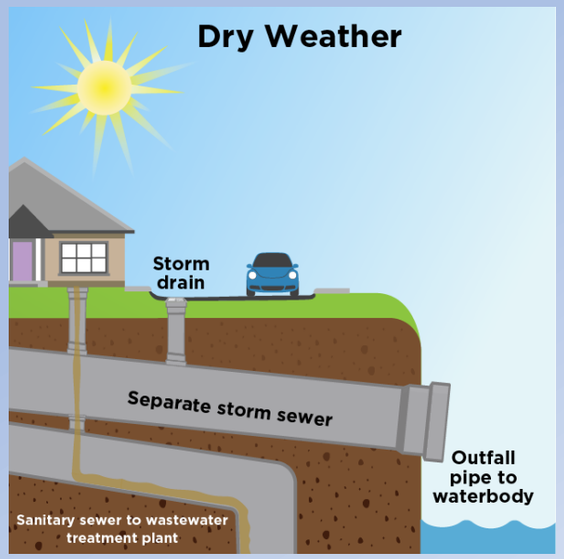

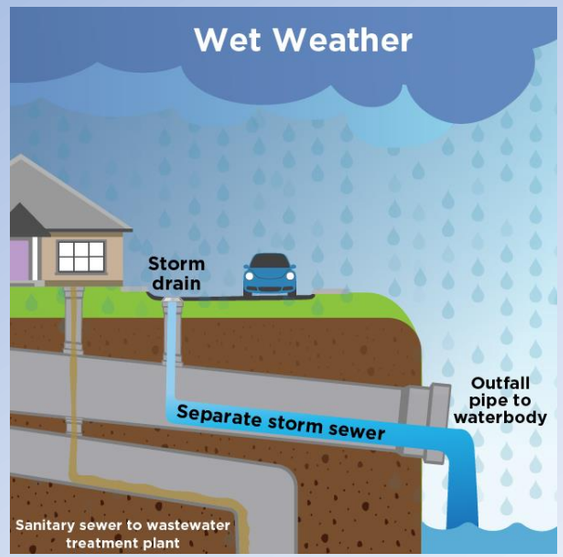

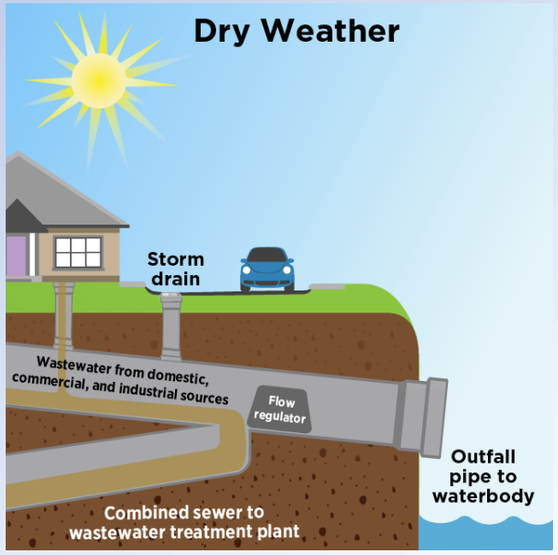

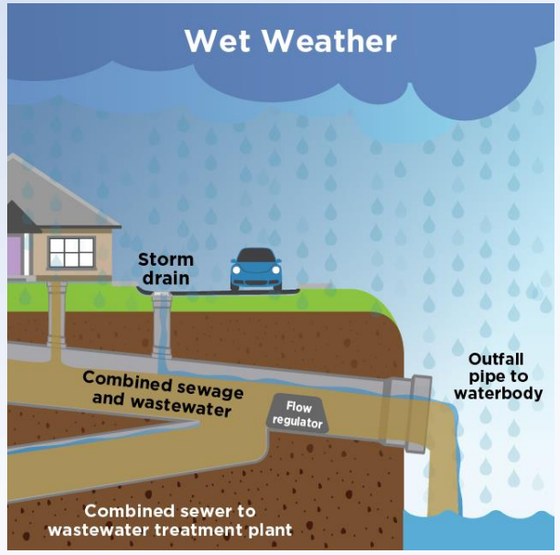

Public Wastewater & Climate Change

Sanitary Sewer Overflows (SSOs) and Combined Sewer Overflows (CSOs) are tracked by MDE

No Combined Sewer Systems in Frederick County

Studies reveal that there are a variety of methods for improving resiliency, and that impacts from prior storms are a strong motivating factor.

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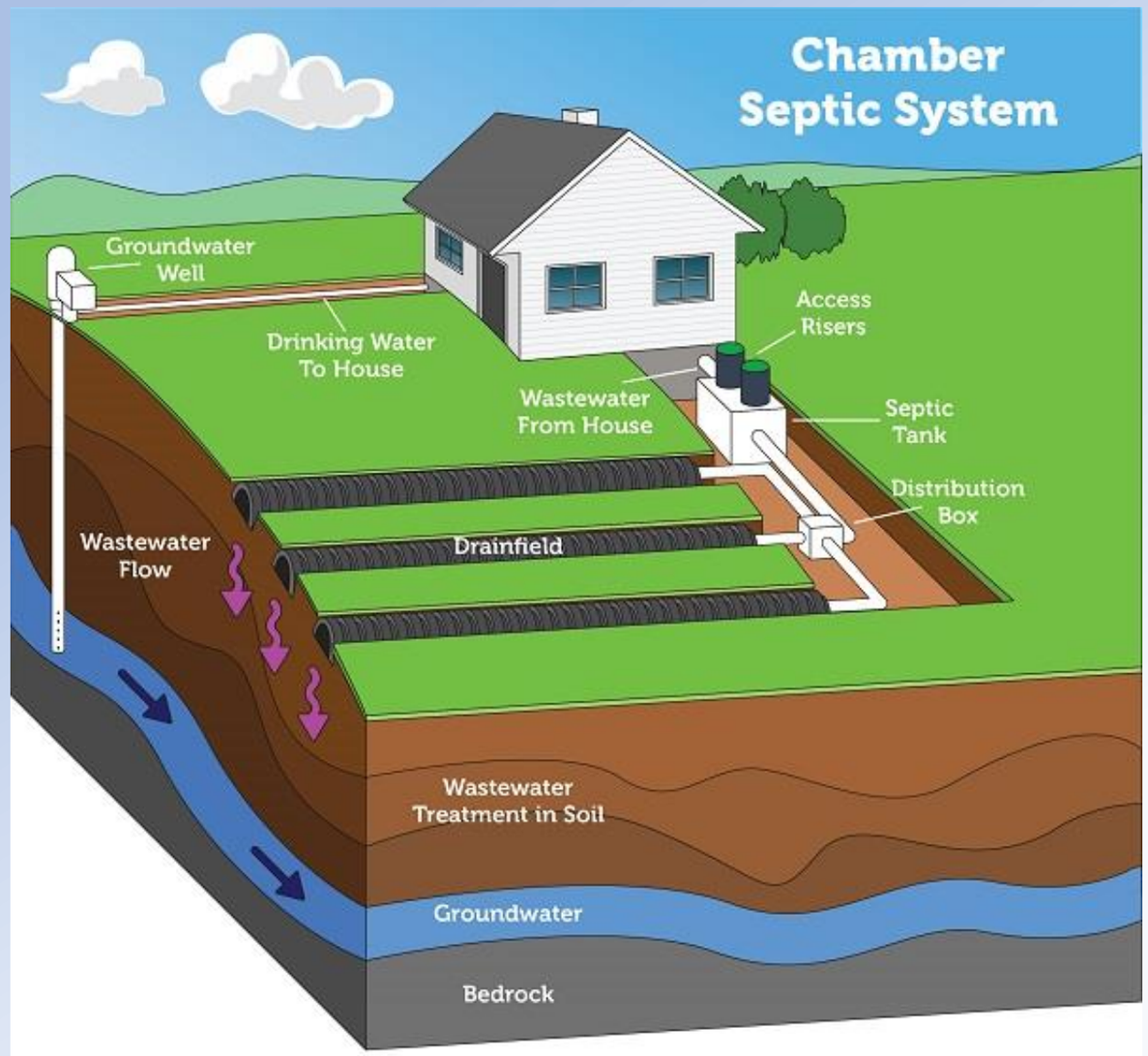
Images: *Combined Sewer Overflow Basics | US EPA*. (n.d.). US EPA. https://www.epa.gov/npdes/combined-sewer-overflow-basics



Please note: The ends of the chamber system lines are open for illustrative purposes only. In reality, and when properly installed, these lines are closed at the end. Septic systems vary. Diagram is not to scale.

Private Wastewater & Climate Change

University of Maryland Extension released a video entitled, “All this rain – does it harm my septic system?”

Potential mitigation methods include rain barrels, rain gardens, permeable paving, berms, swales, and French drains*

*Provided adequate separation is maintained from drain field

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Images: *Types of Septic Systems | US EPA. (n.d.). US EPA. https://www.epa.gov/septic/types-septic-systems*

Drinking Water

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Stormwater

Climate

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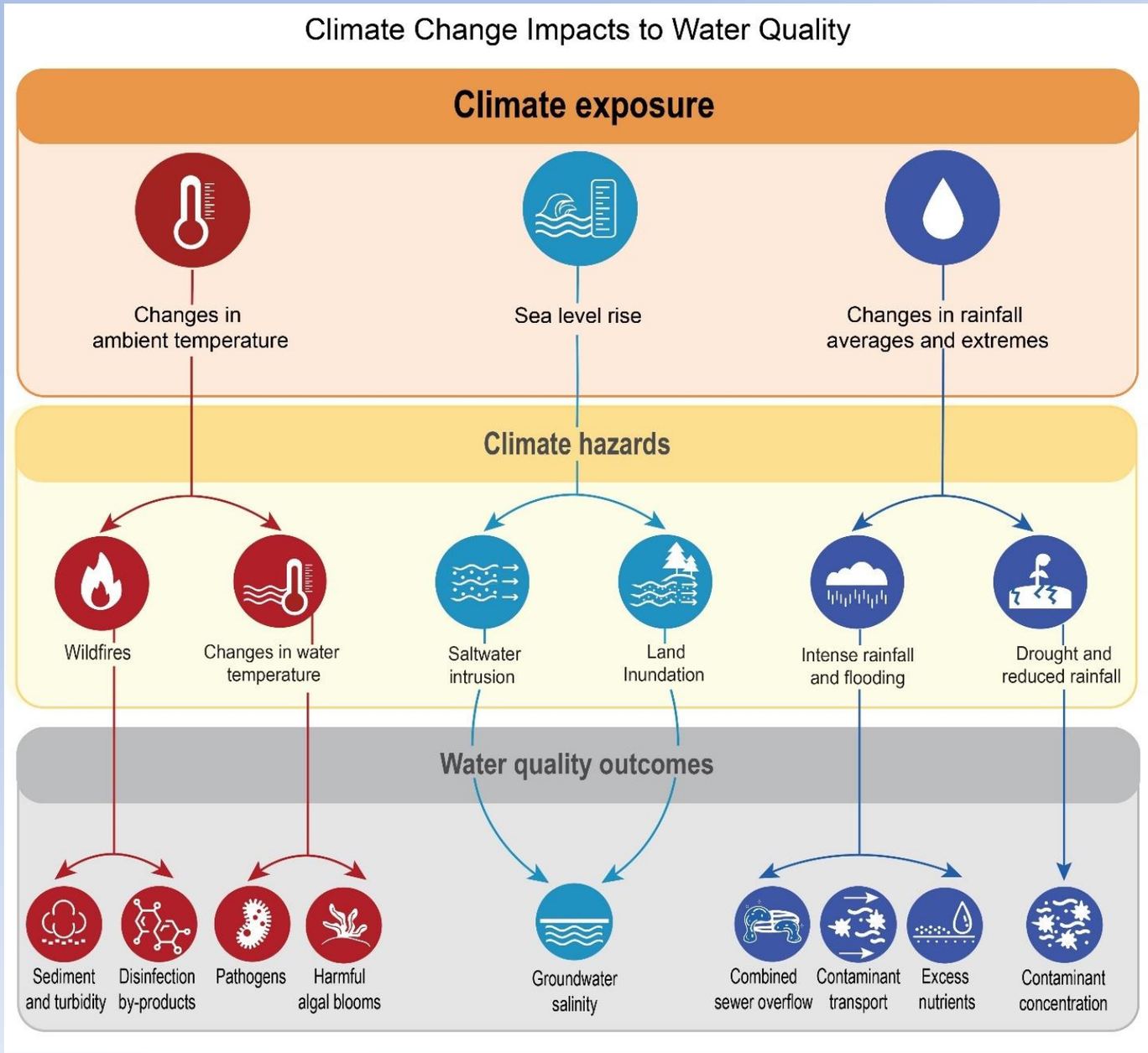

Fifth National Climate Assessment, Chapter 4 Water, Figure 4.2
https://nca2023.globalchange.gov/chapter/4/

Stormwater & Climate Change

Increasing frequency and extremes of high temperature days, drought, and precipitation influence stormwater management and receiving waters.

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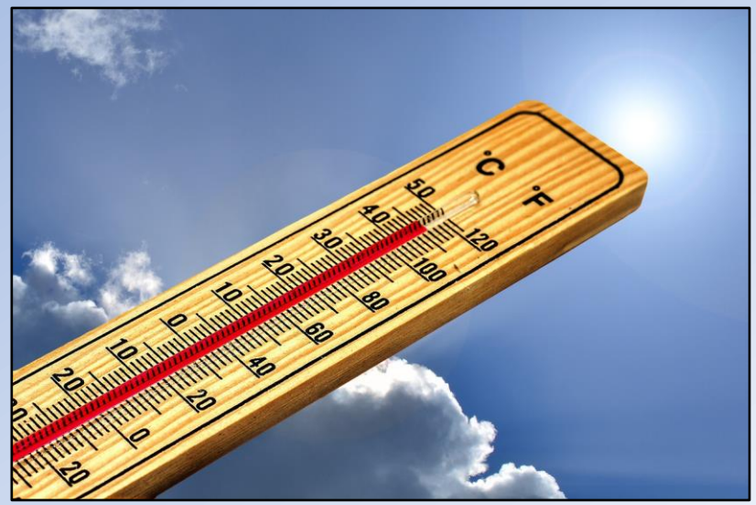
Stormwater and Suitable Receiving Waters & Climate Change

Photo by Markus Spiske on Unsplash



https://pixabay.com/illustrations/thermometer-summer-hot-heat-sun-4767443/

https://pixabay.com/photos/river-flood-rain-disaster-risk-4353093/

Heat

- Increased stream temperature

Drought

- Increased water temperature
- Concentrated pollutants
- Higher risk of flash flooding when precipitation returns

Precipitation & Flooding

- Increased intensity storms stress stormwater conveyance systems and natural practices

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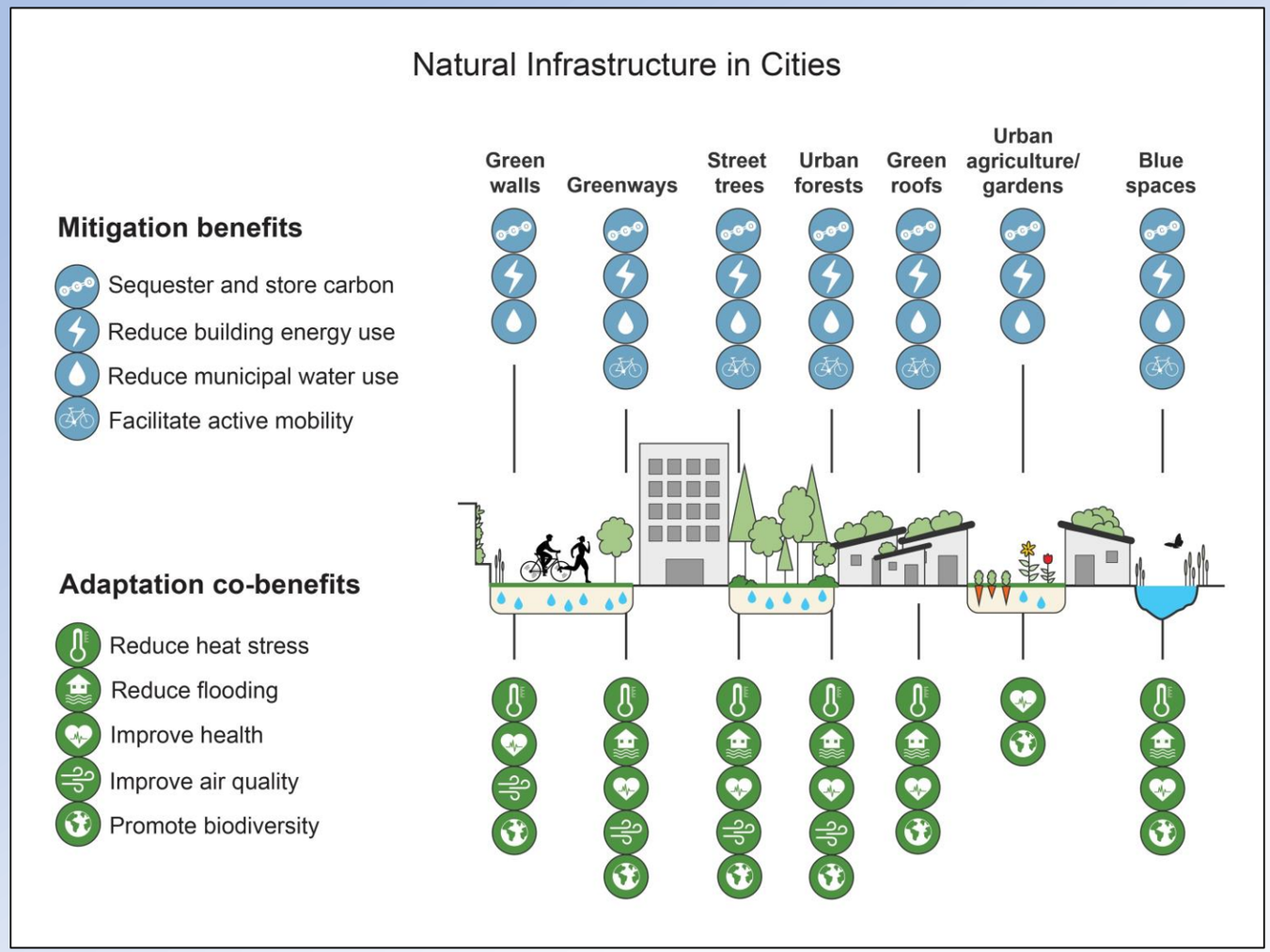
Stormwater and Suitable Receiving Waters & Climate Change



Fifth National Climate Assessment, Figure 12.7
https://nca2023.globalchange.gov/chapter/12/

Mitigation means taking efforts to reduce contributing factors to climate change.

Adaptation means responding to changes in the environment that are already taking place or are expected to take place.

There are many potential mitigation and adaptation actions related to heat, drought, and precipitation/floods and these actions have other co-benefits on quality of life and our environment.

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