

★ CELEBRATING 10 YEARS ★

JERSEY WATERWORKS CONFERENCE 2024

DECEMBER 13 ★ THE COLLEGE OF NEW JERSEY ★ EWING

The Power of Collaboration: Towards a One Water Future

www.jerseywaterworks.org info@jerseywaterworks.org

#njwater24



✦ CELEBRATING 10 YEARS ✦

JERSEY WATERWORKS CONFERENCE 2024

DECEMBER 13 ✦ THE COLLEGE OF NEW JERSEY ✦ EWING

Advancing Green Infrastructure: Navigating NJ PACT REAL Updates



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1.25 AICP CM CREDITS | 1.3 CPC CREDITS

Keeping it “REAL”:

Protecting Against Climate Threats

Advancing Green Infrastructure & Nature Based Solutions

Jersey Water Works Conference

December 13, 2024

Jim Waltman

Executive Director

The Watershed Institute



Our Mission



Keeping water clean, safe and healthy.

We work to protect and restore our water and natural environment through conservation, advocacy, science and education.

The Watershed Institute is a 501(c)(3) nonprofit.

Contributions are tax deductible and greatly appreciated

www.thewatershed.org

Our Pillars

Conservation



Advocacy



Science



Education



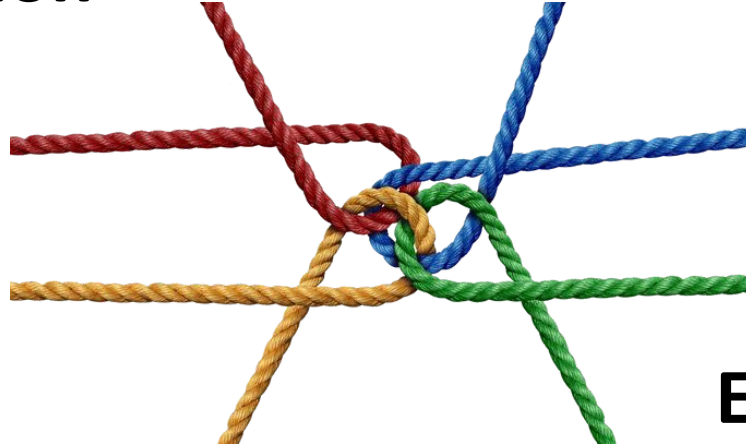
Our Pillars

Conservation

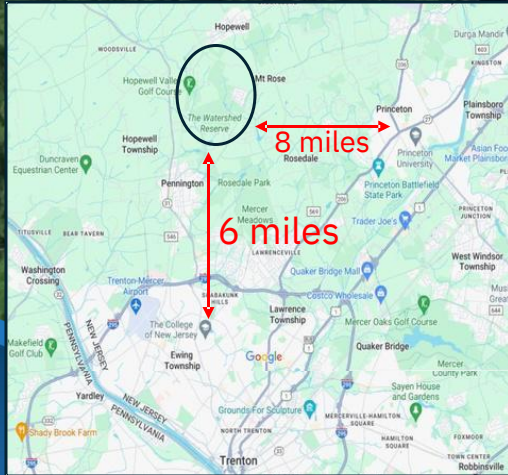
Advocacy

Science

Education



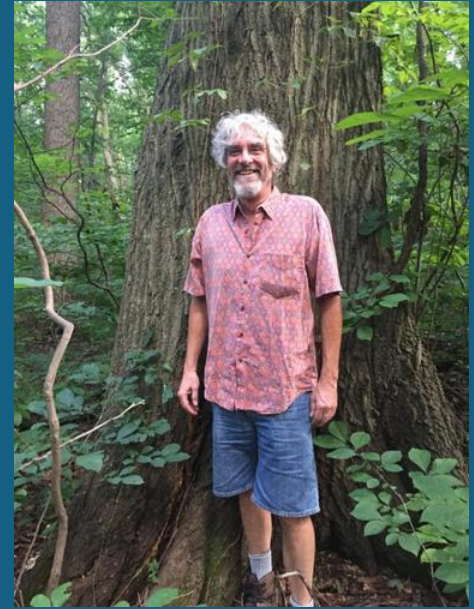
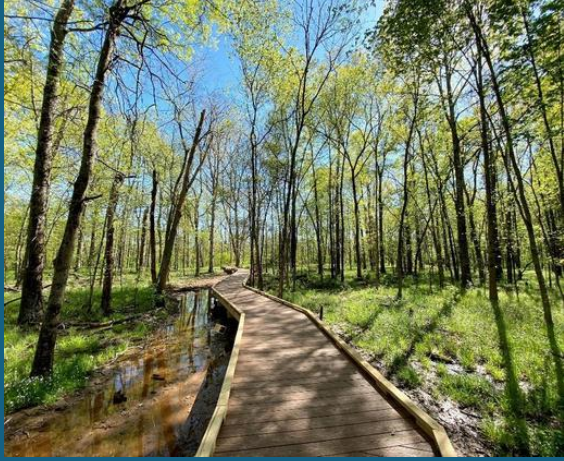
Our Home: A model of Green Stormwater Infrastructure



The
Watershed
Institute

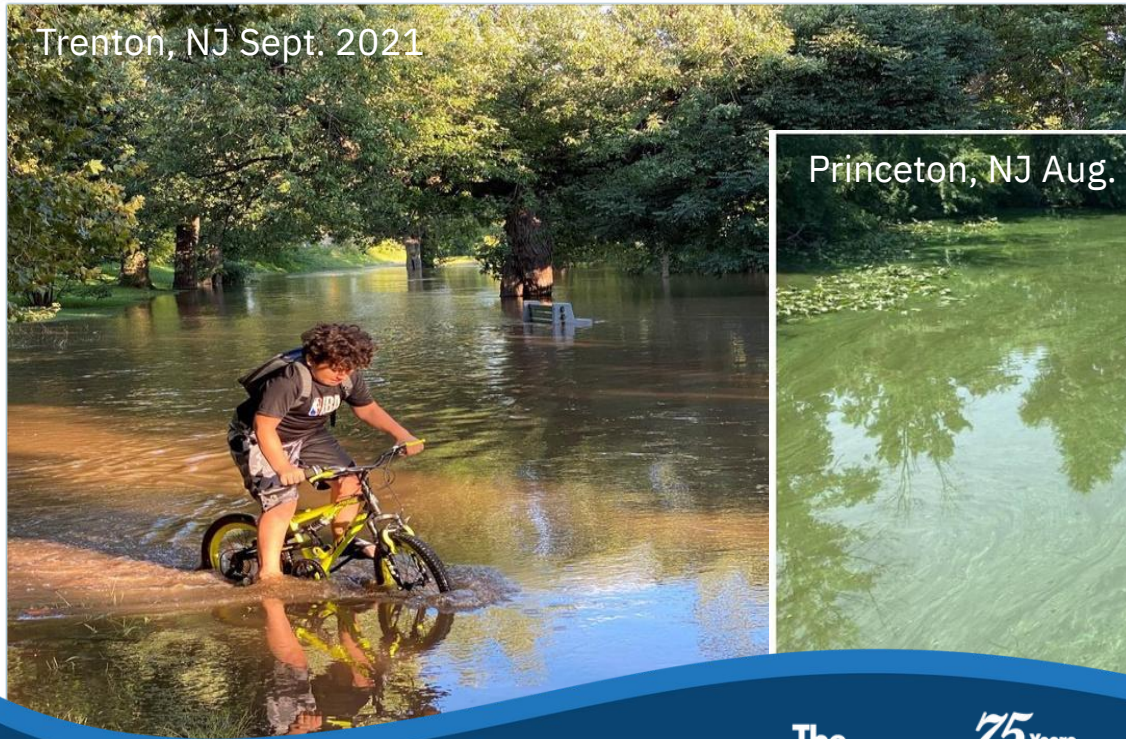
75 Years

Our Home



Manifestations of Climate Change

Trenton, NJ Sept. 2021



Princeton, NJ Aug. 2024

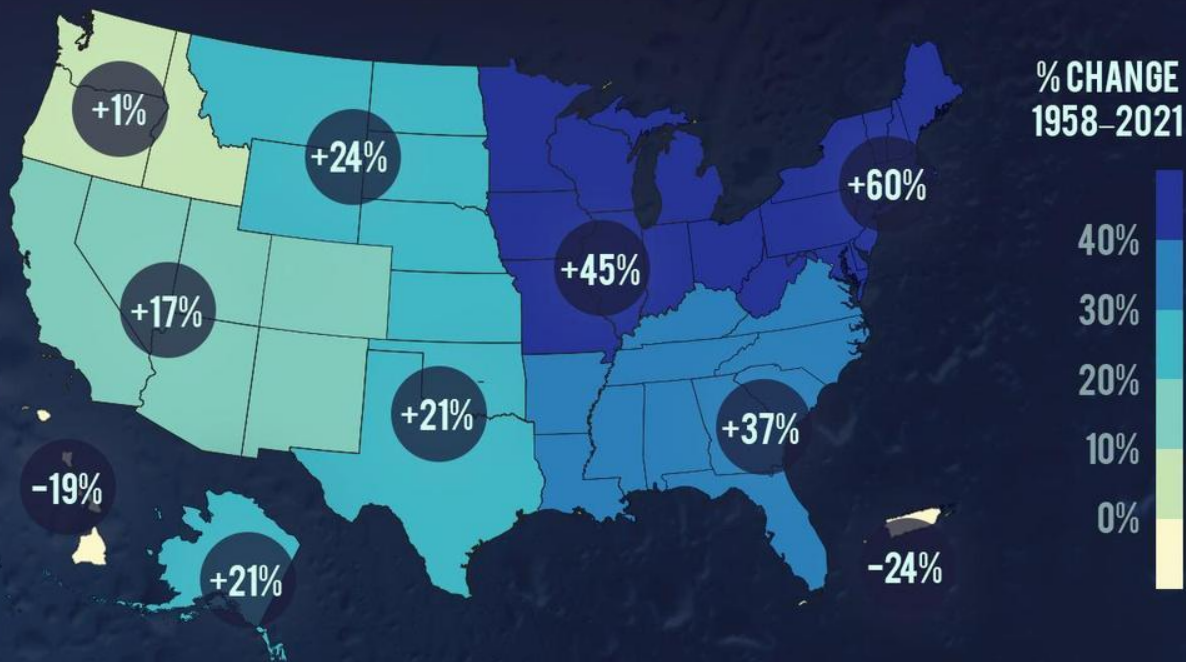


Hopewell, NJ Sept. 2024



HEAVIER DOWNPOURS

Change in precipitation on heaviest 1% of days



Change in total precipitation falling on the heaviest 1% of days, 1958–2021.
Source: USGCRP, 2023: Fifth National Climate Assessment.

CLIMATE  CENTRAL

**OCEAN AT THE DOOR:
NEW HOMES AND THE
RISING SEA**

2019 EDITION

July 31, 2019

Research brief by
Climate Central

Portfolio Analysis



Between 2010 and 2017, more new homes were built in areas that will be in flood zones by 2050 than were built outside of flood zones.



NEW JERSEY AFFORDABLE HOUSING AT RISK: THREATS FROM COASTAL FLOODS AND SEA LEVEL RISE



New Jersey currently has **1,640 units** (~1%) of its affordable housing stock exposed to a coastal flood risk event in a typical year, the highest number in the nation.



By 2050, **6,825 units** are projected to be at risk of coastal flooding, or **3.7%** of the state's affordable housing stock. This is a **316%** increase compared to the number of units at risk in 2000.



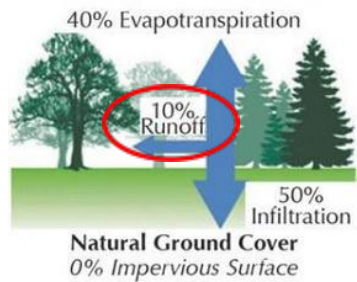
5 cities in New Jersey are ranked among the top 20 cities nationwide with the most affordable housing units at risk in 2050.



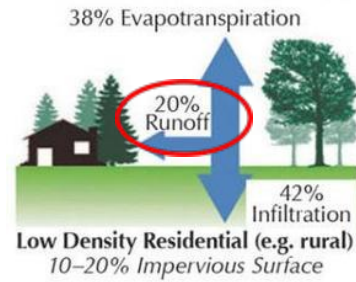
In 2050, **at least a third** of the affordable housing units in Atlantic City and Camden could experience flood-risk events **at least 4 times a year**.

More impervious surfaces = more polluted stormwater runoff

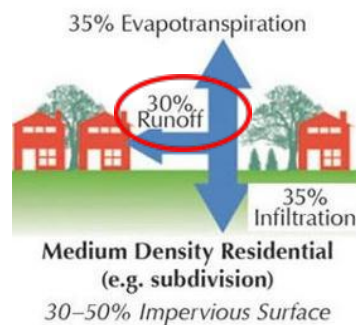
“Natural” Watershed



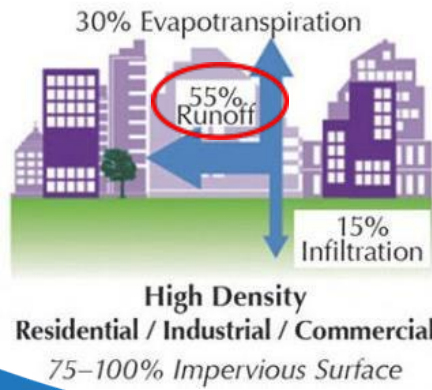
Low Density Residential



Medium Density Residential



Urban Watershed



- Increased impervious surfaces
- Reduction in Tree Cover
- Less Evapotranspiration
- Less Groundwater
- “Recharge” More Runoff
- Hotter Streams



► INTENSIFYING RAINFALL & FLOODING IN NEW JERSEY

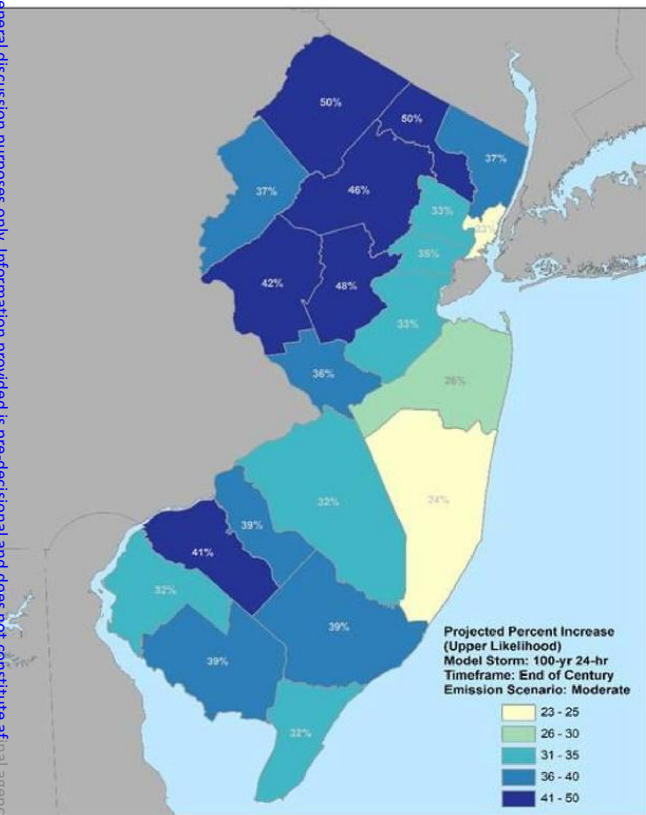
- The data presently used to analyze flood potential in waterways and in the design of stormwater infrastructure is outdated and includes data only through 1999.
- The precipitation expectations that presently guide state policy, planning and development criteria do not accurately reflect current precipitation intensity conditions.



- ▶ Higher temperatures increase the energy in storms and allow the atmosphere to hold more water, which increases the potential for more intense precipitation and flooding
- ▶ By the end of the 21st century, heavy storm events are projected to occur 200 to 500% more often and with more intensity than in the 20th century
- ▶ Major flood events hit New Jersey in 2000, 2004, 2005, 2006, 2007, 2010, 2011, 2012, 2016, and 2021

NEW JERSEY'S INCREASING TEMPERATURES & PRECIPITATION





More Rain=
More
Stormwater

Runoff

More Runoff=
Increased Riverine
Flow

More Flow=
Higher Flood
Elevations

CURRENT PRECIPITATION

Since 1999:

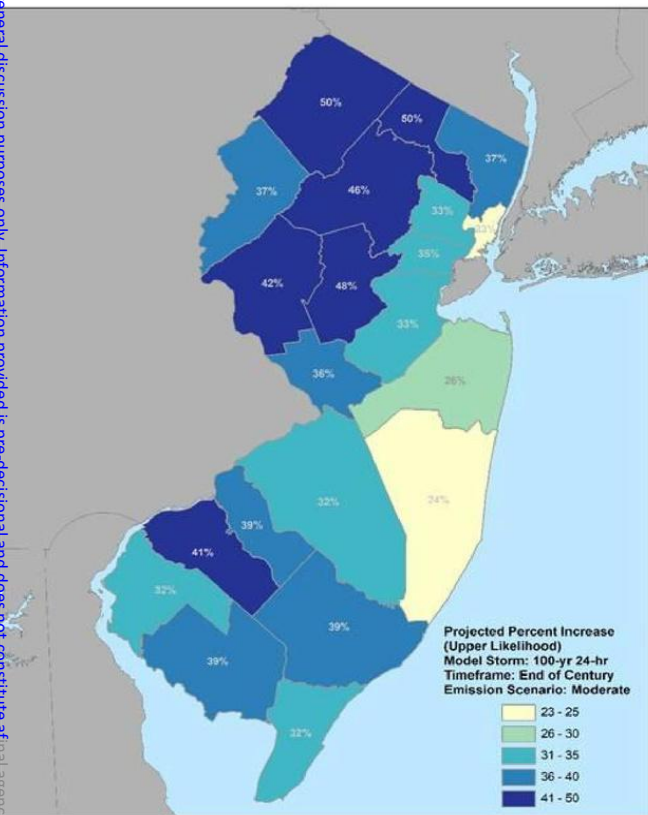
- The 2-year storm has increased as much as 5%
- The 10-year storm has increased as much as 7%
- The 100-year storm has increased as much as 15%

Future PRECIPITATION

Over the coming decades:

- The 2-year storm is likely to increase as much as 24%
- The 10-year storm likely to increase as much as 27%
- The 100-year storm likely to increase as much as 50%





More Rain=
More
Stormwater

Runoff

More Runoff=
Increased Riverine
Flow

More Flow=
Higher Flood
Elevations

CURRENT PRECIPITATION

Since 1999:

- The 2-year storm has increased as much as 5%
- The 10-year storm has increased as much as 7%
- The 100-year storm has increased as much as 15%

Future PRECIPITATION

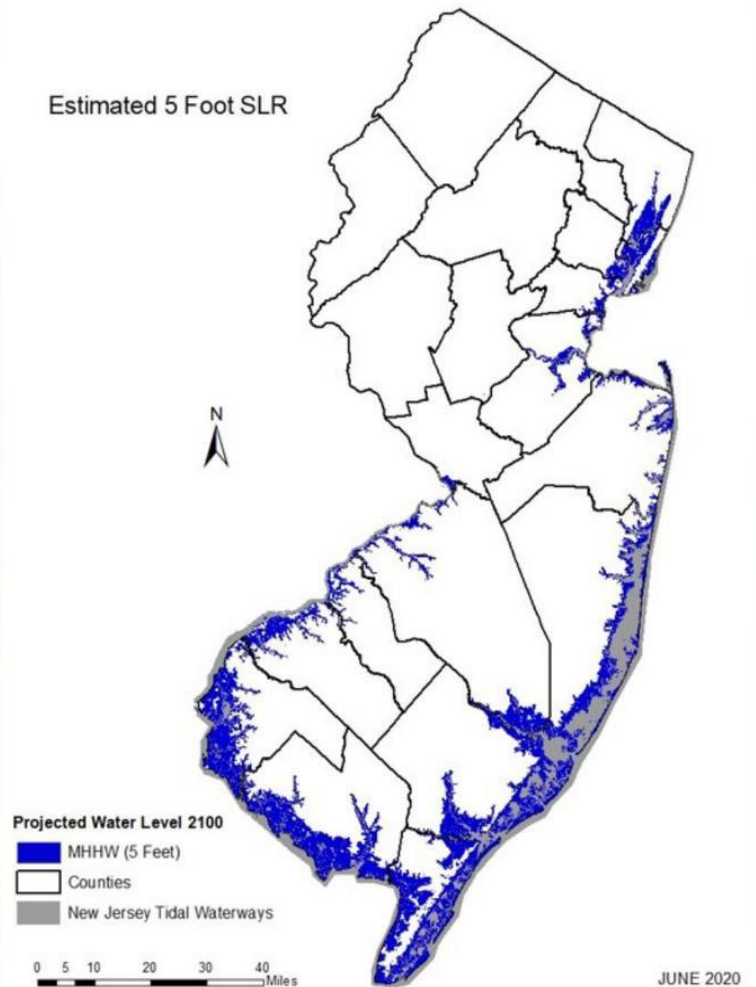
Over the coming decades:

- The 2-year storm is likely to increase as much as 24%
- The 10-year storm likely to increase as much as 27%
- The 100-year storm likely to increase as much as 50%



Fixing Data Gaps to Protect Coastal Investments

For general discussion purposes only. Information provided is pre-decisional and does not constitute a final agency decision or action.



Sea Level Rise =
More land regularly or
permanently inundated

More Inundation =
Higher flood
elevations

Higher Elevations =
More recurring
flood damage

- Existing flood standards are based on outdated historical trends that do not account for sea-level rise and attendant storm surge.
- Roads and buildings built today are likely to be serviceable in 2100.
- Reliance on incomplete and inaccurate data leads to inadequate risk assessment and substandard design criteria for buildings and infrastructure.



Coastal Inundation & Flood Damage

Rutgers University's Science and Technical Advisory Panel (STAP) Report indicates a 50% probability that sea level rise will exceed 3.3 feet and a 17% probability that sea level rise will exceed 5.1 feet by 2100 assuming moderate emissions.

Sea-level rise:

Table ES-1: New Jersey Sea-Level Rise above the year 2000 (1991-2009 average) baseline (ft)*

		2030	2050	2070			2100			2150		
				Emissions								
Chance SLR Exceeds				Low	Mod.	High	Low	Mod.	High	Low	Mod.	High
Low End	> 95% chance	0.3	0.7	0.9	1	1.1	1.0	1.3	1.5	1.3	2.1	2.9
Likely Range	> 83% chance	0.5	0.9	1.3	1.4	1.5	1.7	2.0	2.3	2.4	3.1	3.8
	~50 % chance	0.8	1.4	1.9	2.2	2.4	2.8	3.3	3.9	4.2	5.2	6.2
	<17% chance	1.1	2.1	2.7	3.1	3.5	3.9	5.1	6.3	6.3	8.3	10.3
High End	< 5% chance	1.3	2.6	3.2	3.8	4.4	5.0	6.9	8.8	8.0	13.8	19.6

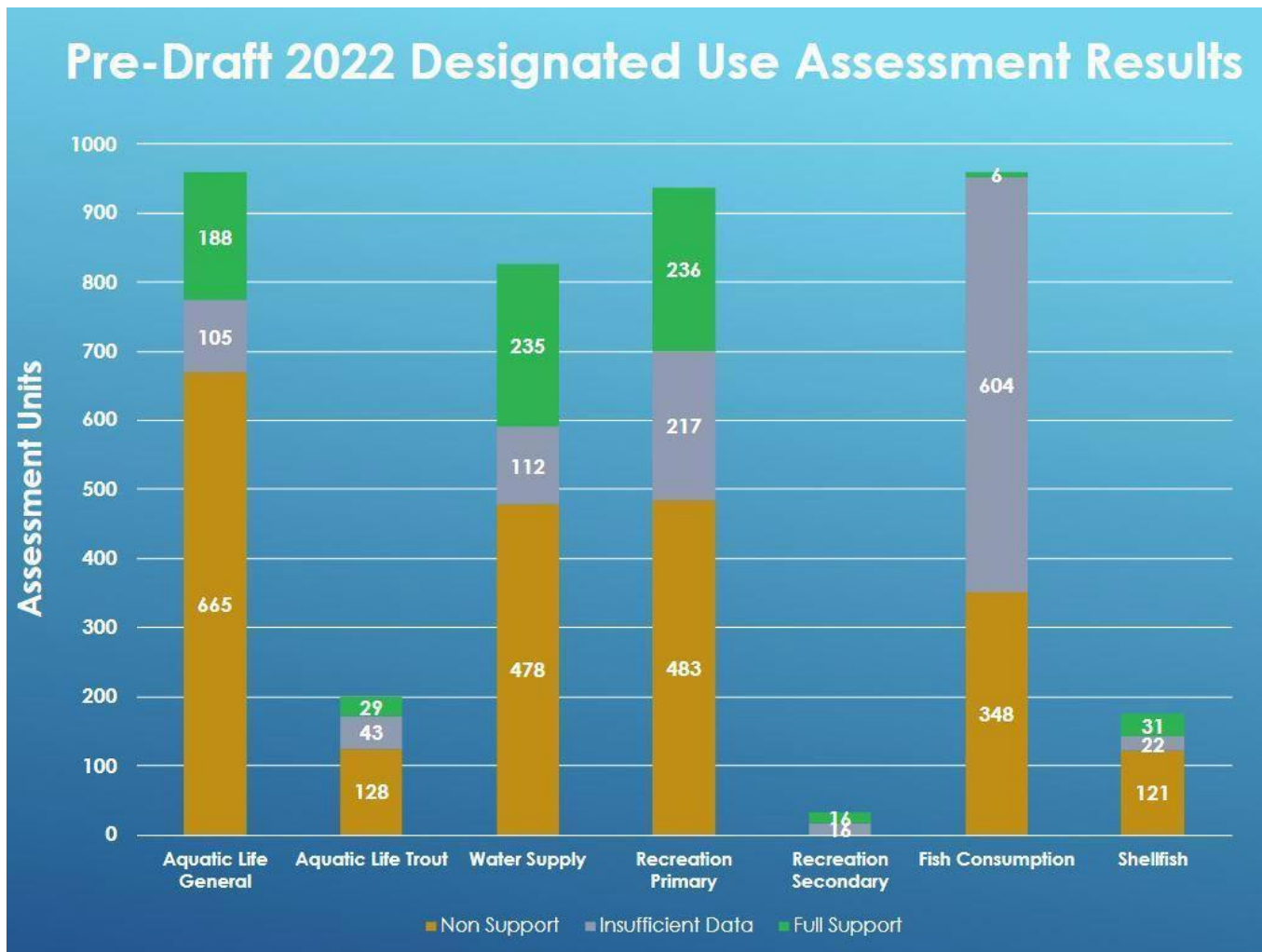
*2010 (2001-2019 average) Observed = 0.2 ft

<https://njclimateresourcecenter.rutgers.edu/resources/nj-sea-level-rise-reports/>



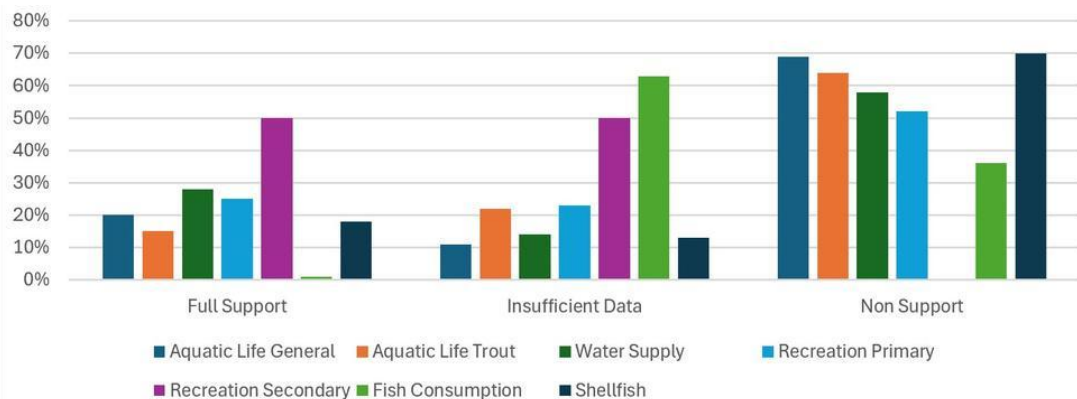
Water Quality

Draft 2022 Integrated Water Quality Assessment Report



Water Quality

Assessment	Aquatic Life General	Aquatic Life Trout	Water Supply	Recreation Primary	Recreation Secondary	Fish Consumption	Shellfish
Full Support	20%	15%	28%	25%	50%	1%	18%
Insufficient Data	11%	22%	14%	23%	50%	63%	13%
Non Support	69%	64%	58%	52%	0%	36%	70%



Draft 2022 Integrated
Water Quality Assessment
Report

Warm Water + Nutrients = Harmful Algal Blooms--HABs (cyanobacteria)



Friday, July 29, 2022 www.princetonpacket.com The Princeton Packet 7A

Watershed Institute warns residents about increased HABs statewide

By ANDREW HARRISON
Staff Writer

The Watershed Institute is warning the public about the public health risk of harmful algal blooms, which have already impacted Millstone River and Lake Carnegie.

According to the organization, the harmful algal blooms (HABs) are a serious public health risk that are currently present in the Cranbury Brook, Millstone River, Lake Carnegie and other lakes and ponds statewide.

The Watershed noted that exposure to HABs and even incidental ingestion of water containing HAB-related toxins can cause serious health effects including rashes, allergy-like reactions, flu-like symptoms, gastroenteritis, respiratory irritation and eye irritation, liver toxicity and neurological effects.

"Children and pets are particularly vulnerable because they ingest more water in relation to their weight. HABs are not caused by true algae, but by cyanobacteria that, in many ways, resemble and behave like algae," said Steve Tuorto, Watershed science director and Erin Stretz, assistant science director, in a release on July 26.

They further said that "these cyanobacteria naturally occur in fresh water and can proliferate to unhealthy levels in sunlight and hot weather, forming dense mats resembling pea soup or spilled paint."

"Elevated levels of nutrients from polluted stormwater runoff and hot temperatures create the perfect conditions for HABs to thrive," Tuorto and Stretz said. "The New Jersey Department of Environmental Protection (DEP) has developed a color-coded health alert index to provide the public with guidance on suitable recreational activities in freshwater lakes and other water bodies impacted by HABs."

In addition, the Watershed Institute has published its 2022 StreamWatch Bacteria and HAB Data Map, according to the Watershed Institute.

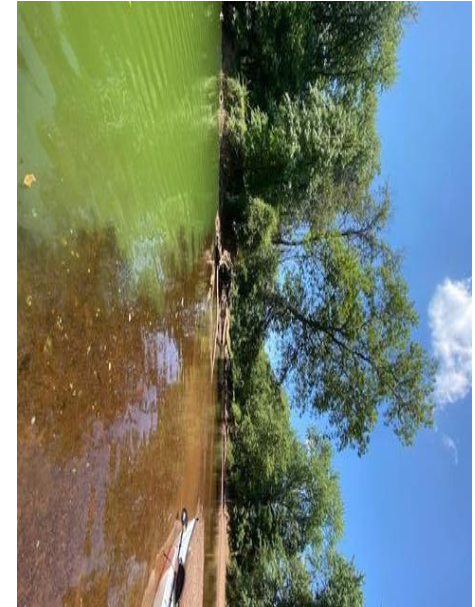
Monitoring is being used to keep an eye on several hot spots and to identify other bacteria problems quickly. Volunteers can opt to participate in one or more five-week monitoring sessions during the summer.

For more information about StreamWatch and HABs, visit www.thewatershed.org.

Millstone River impacted by harmful algal blooms on July 26
Photo courtesy of Seth Sidransky/The Watershed Institute

Sign warning public about HAB bloom
Photo courtesy of Seth Sidransky/The Watershed Institute

Millstone River on July 26
Photo courtesy of Seth Sidransky/The Watershed Institute





FIRST LAW OF HOLES

If you're in one, stop digging

Gov. Murphy's EO 100, January 2000

“Integrate climate change considerations, such as sea level rise, into its regulatory and permitting programs, including but not limited to, land use permitting, water supply, stormwater and wastewater permitting and planning, air quality, and solid waste and site remediation permitting.”

An aerial photograph of a coastal town, likely in New Jersey, showing a mix of residential houses, some with swimming pools, and a waterfront area with docks and boats. The town is built on a slight rise, and the water is visible in the foreground.

NJ PACT Protecting Against Climate Change

NJ Protecting Against Climate Threats (NJPACT)

Key Strategies:

- **Use best available science to forecast increasing precipitation, expanding flood plains, rising sea levels and attendant storm surge.**
- **Advance policies that go beyond maintaining the status quo and seek to reverse existing environmental harm.**
- **Encourage nature-based solutions by working with nature to protect our communities and our resources.**

Solutions that only address yesterday's problems will fail to meet tomorrow's challenges.

Inland Flood Protection Rule

Future Precipitation Change Factors			
County	2-Year Design Storm	10-Year Design Storm	100-Year Design Storm
Atlantic	1.22	1.24	1.39
Bergen	1.20	1.23	1.37
Burlington	1.17	1.18	1.32
Camden	1.18	1.22	1.39
Cape May	1.21	1.24	1.32
Cumberland	1.20	1.21	1.39
Essex	1.19	1.22	1.33
Gloucester	1.19	1.23	1.41
Hudson	1.19	1.19	1.23
Hunterdon	1.19	1.23	1.42
Mercer	1.16	1.17	1.36
Middlesex	1.19	1.21	1.33
Monmouth	1.19	1.19	1.26
Morris	1.23	1.28	1.46
Ocean	1.18	1.19	1.24
Passaic	1.21	1.27	1.50
Salem	1.20	1.23	1.32
Somerset	1.19	1.24	1.48
Sussex	1.24	1.29	1.50
Union	1.20	1.23	1.35
Warren	1.20	1.25	1.37

Use this to adjust 1999 rainfall to 2100

48% increase!

Require new developments to mitigate stormwater runoff anticipated in 2100

Inland Flood Protection Rule

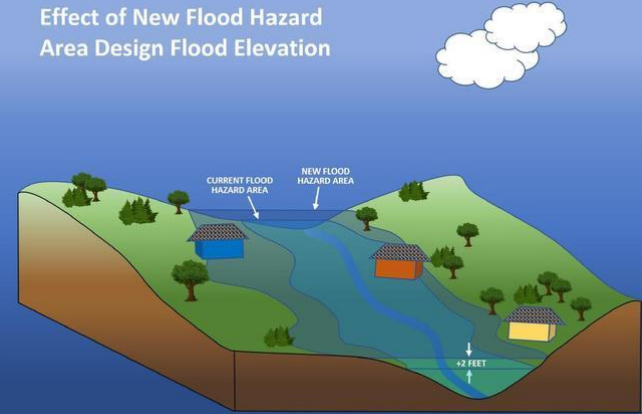
Effect of New Flood Hazard
Area Design Flood Elevation



Effect of New Flood Hazard
Area Design Flood Elevation



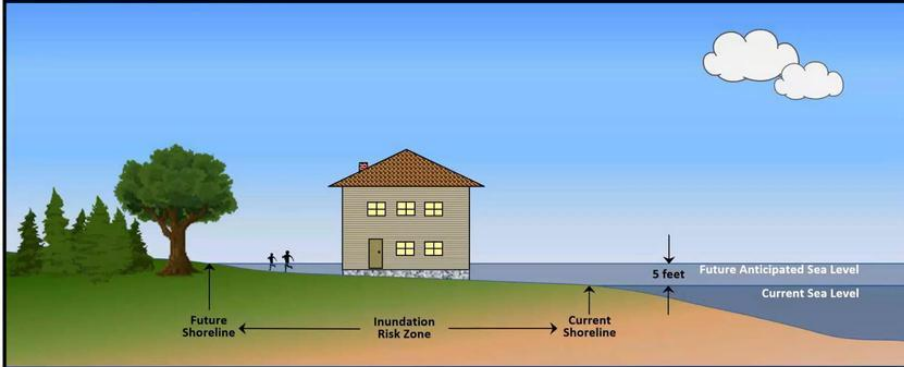
Effect of New Flood Hazard
Area Design Flood Elevation



Discourage new developments in areas anticipated to be flooded in 2100

Resilient Environments and Landscapes Rule

Inundation Risk Zone

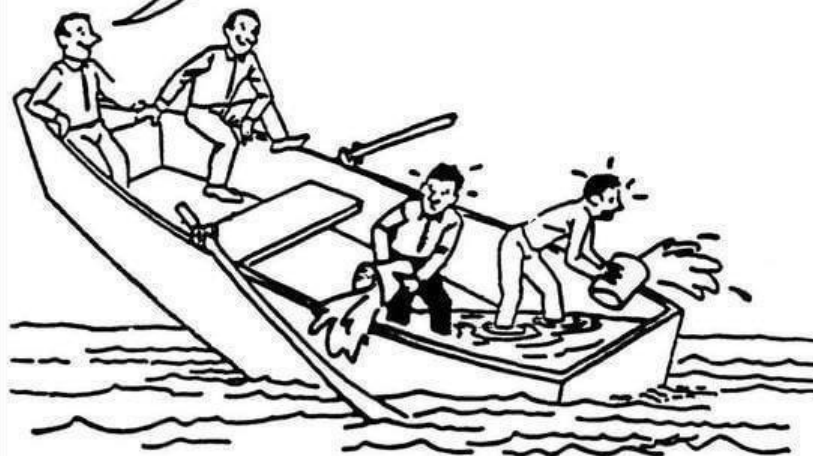


Inundation Risk Zone and Future Flood Elevation



Discourage new developments that would put people in harms way due to flooding in 2100

I'm sure glad the
hole isn't in our end...



Regulations that only minimize impacts from new development will never address our existing environmental problems.

We need to use redevelopment as an opportunity to address problems caused by existing development that occurred before modern environmental rules.

Restorative Provisions of REAL Rule

- Redefine “major development” to include reconstruction of one-quarter acre or more of “regulated motor vehicle surface” or “regulated impervious surface.”
- Require water quality treatment for *redevelopment* of motor vehicle surfaces, even if there is no net increase in impervious surface.
- Require that major developments incorporate additional measures to address TMDLs, which are designed to address water quality impairments.

- **Require reduction of runoff volumes from new developments and redevelopment to ensure a portion of stormwater volume will not be discharged offsite.**
- **Repeal existing general permits for “in-kind” replacement of bridge and culverts, providing an opportunity to ameliorate the adverse impacts of these existing structures.**
- **Require removal of existing impervious surface, where practicable, within 25 feet of wetlands and top of bank during redevelopment to promote restoration and more closely align with the FHACA rules.**



Keeping Water Clean, Safe & Healthy since 1949

THANK

NEW JERSEY'S REGULATORY RESPONSE TO A CHANGING CLIMATE

NJPACT REAL
NJ Protecting Against Climate Threats
Resilient Environments and Landscapes
13 December 2024

Water Quality and Quantity **Amendments to the Stormwater** **Management Rules**



Resilient Environments and Landscapes (REAL)

Webpage <https://dep.nj.gov/njreal/>



Department of Environmental Protection



Resilient Environments and Landscapes

Home 

Overview

Protecting Against Climate Threats

Underlying Science

Myths and Facts

Webinars

New Jersey's Flood Indicator Tool

Public Hearings



Resilient Environments and Landscapes - NJ PACT

Resilient Environment And Landscapes (REAL) Reforms

To address the unavoidable impacts of climate change, such as sea-level rise, extreme weather, and chronic flooding, NJDEP is pursuing targeted regulatory reforms that will modernize the land use rules and focus on increased resilience throughout the State.

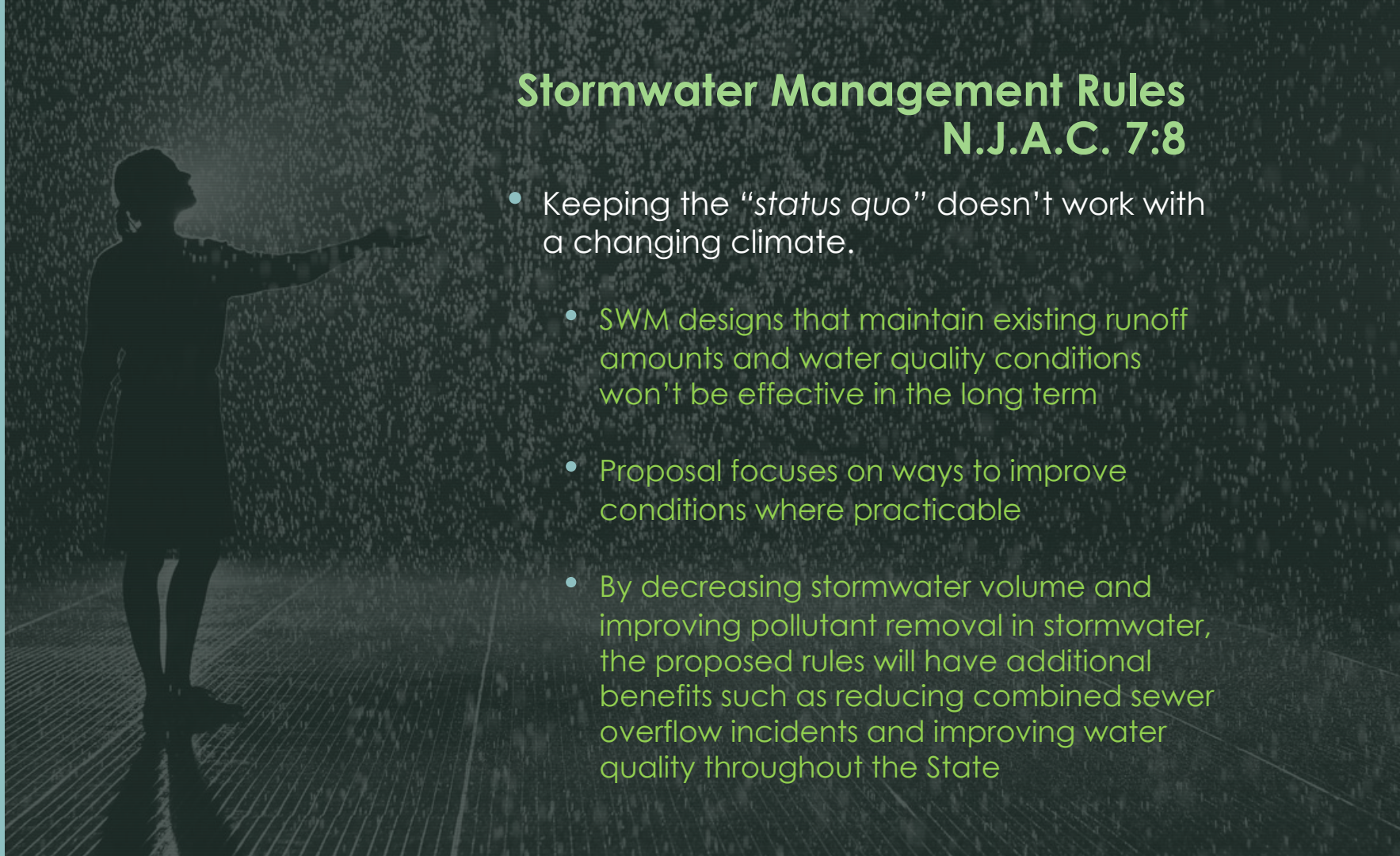


Quick Overview:

- ▶ Developed in response to Governor Murphy's 2020 EO
- ▶ 50+ stakeholder sessions since 2020
 - Industry groups
 - Federal, State and local government agencies
 - Environmental groups
 - Insurance and investment agencies
- ▶ **Proposal amends:**
 - FHACA Rules
 - Stormwater Management Rules
 - Coastal Zone Management Rules
 - Freshwater Wetlands Protection Act Rules
 - All other NJDEP rules that reference flooding
- ▶ **Purpose:**
 - Address impacts of sea level rise
 - Improve land and water resource protection

Stormwater Management Rules N.J.A.C. 7:8

- Keeping the “*status quo*” doesn’t work with a changing climate.
 - SWM designs that maintain existing runoff amounts and water quality conditions won’t be effective in the long term
 - Proposal focuses on ways to improve conditions where practicable
 - By decreasing stormwater volume and improving pollutant removal in stormwater, the proposed rules will have additional benefits such as reducing combined sewer overflow incidents and improving water quality throughout the State



N.J.A.C. 7:8-1.2: Definitions

Major Development

“Major development” means an individual “development,” as well as multiple developments that individually or collectively result in:

- 1. The disturbance of one or more acres of land since February 2, 2004
- 2. The creation of one-quarter acre or more of “regulated impervious surface” since February 2, 2004
- 3. The creation of one-quarter acre or more of “regulated motor vehicle surface” since March 2, 2021
- 4. The reconstruction of one-quarter acre or more of “regulated motor vehicle surface” or “regulated impervious surface” since [effective date of the rules]
- 5. A combination of 2, 3, and 4 above that totals an area of one-quarter acre or more. The same surface shall not be counted twice when determining if the combination area equals one-quarter acre or more

*Existing text in white

*Proposed new text in orange

N.J.A.C. 7:8-1.2: Definitions Disturbance

- Amending the definition of “disturbance” to clarify that certain maintenance/repair activities are not subject to these rules. Examples include:
 - Milling & repaving, and patching broken pavement
 - Repairing or replacing sidewalks, median barriers, curbs, inlets, and guiderails
 - Repairing or replacing traffic, utility and ITS structures on poles, such as overhead signage and traffic signals
 - Geotechnical and archeological investigation activities; installation of one or more monitoring wells; construction of a gauge, weir, or similar device
 - Removal of accumulated sediment and debris from a channel.

N.J.A.C. 7:8-1.2: Definitions Reconstruction

- Provide a definition of “reconstruction” to clarify the modifications to an existing structure that will constitute a major development.
 - As proposed: Reconstruction means “the replacement, rebuilding, or restoration of a lawfully existing structure.”

N.J.A.C. 7:8-3.4

Characterization and Assessment of the Regional Stormwater Management Planning Area

N.J.A.C. 7:8-4.2

Municipal Stormwater Management Plan and Elements

- Require **climate resilience planning** in municipal stormwater management plans and regional stormwater management plans.
 - A municipality or regional planning agency would be required to evaluate climate change impacts on stormwater management, including, but not limited to: **sea level rise, increased flooding frequency and extent, increased rainfall and intensity.**
 - The municipality would identify areas and stormwater management infrastructure **vulnerable to flooding and/or sea level rise**, as well as measures, such as green infrastructure, that can be utilized to mitigate the impacts.

N.J.A.C. 7:8-5.2(i)

Stormwater Management Measures for Major Development

- To facilitate the use of small-scale green infrastructure BMPs, the proposal eliminates the minimum size requirement for the orifice diameter from the intake to the outlet of a stormwater management basin, as long as the design of the flow control device in the outlet is proven to prevent clogging and remain functional.



N.J.A.C. 7:8-5.5

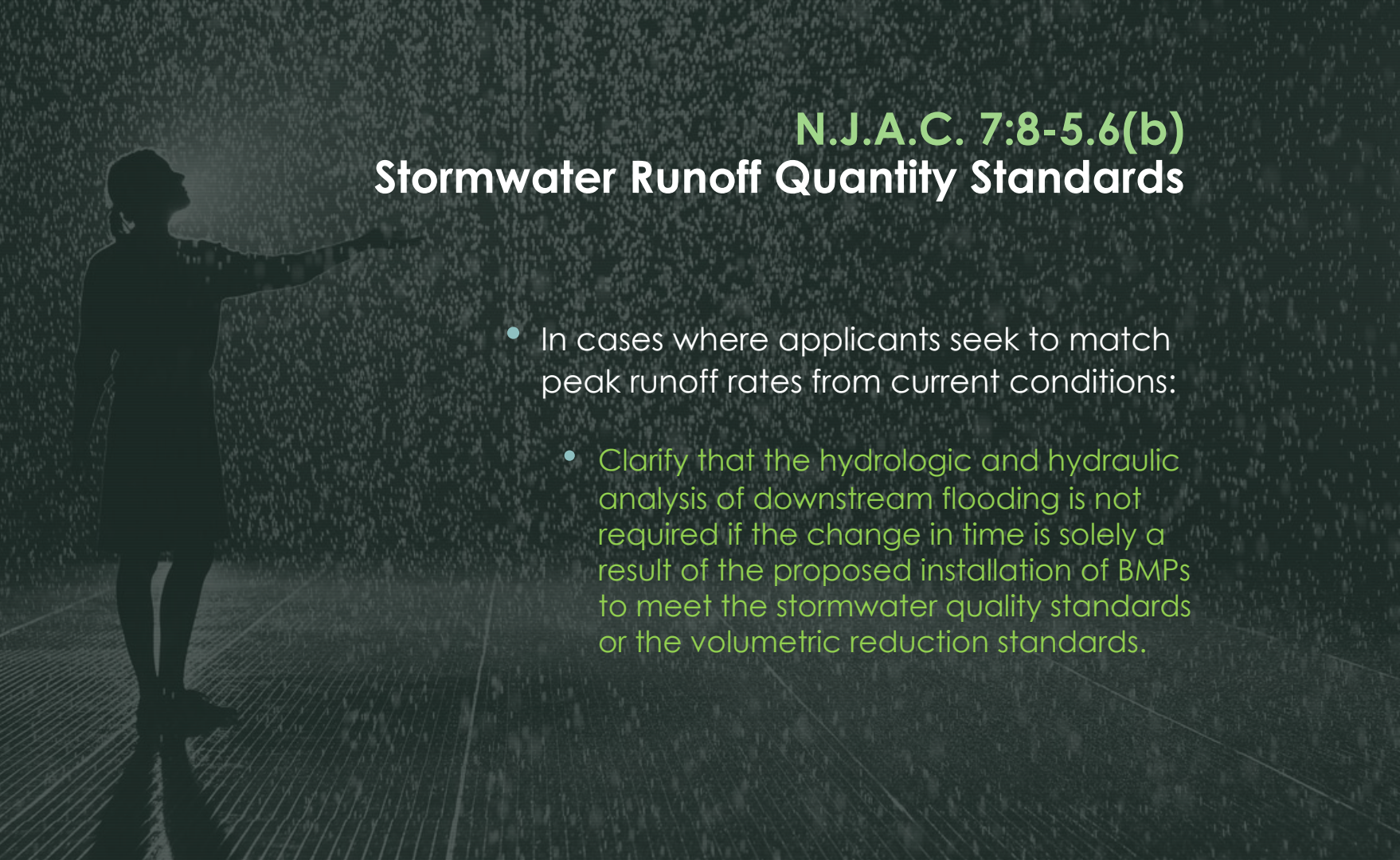
Stormwater Runoff Quality Standards

- Require water quality treatment for redeveloped motor vehicle surface, even if there is not a net increase of $\frac{1}{4}$ acre.
- Currently no water quality treatment is required unless motor vehicle surface is increased by $\frac{1}{4}$ acre.
- Missed opportunity to improve water quality and undo impairments caused by historic development.
- This is of particular importance given the State's commitment to environmental justice.
- Many overburdened communities have developed along with motor vehicle surfaces and have experienced degraded water quality from unmanaged runoff as a result.

N.J.A.C. 7:8-5.5(j)

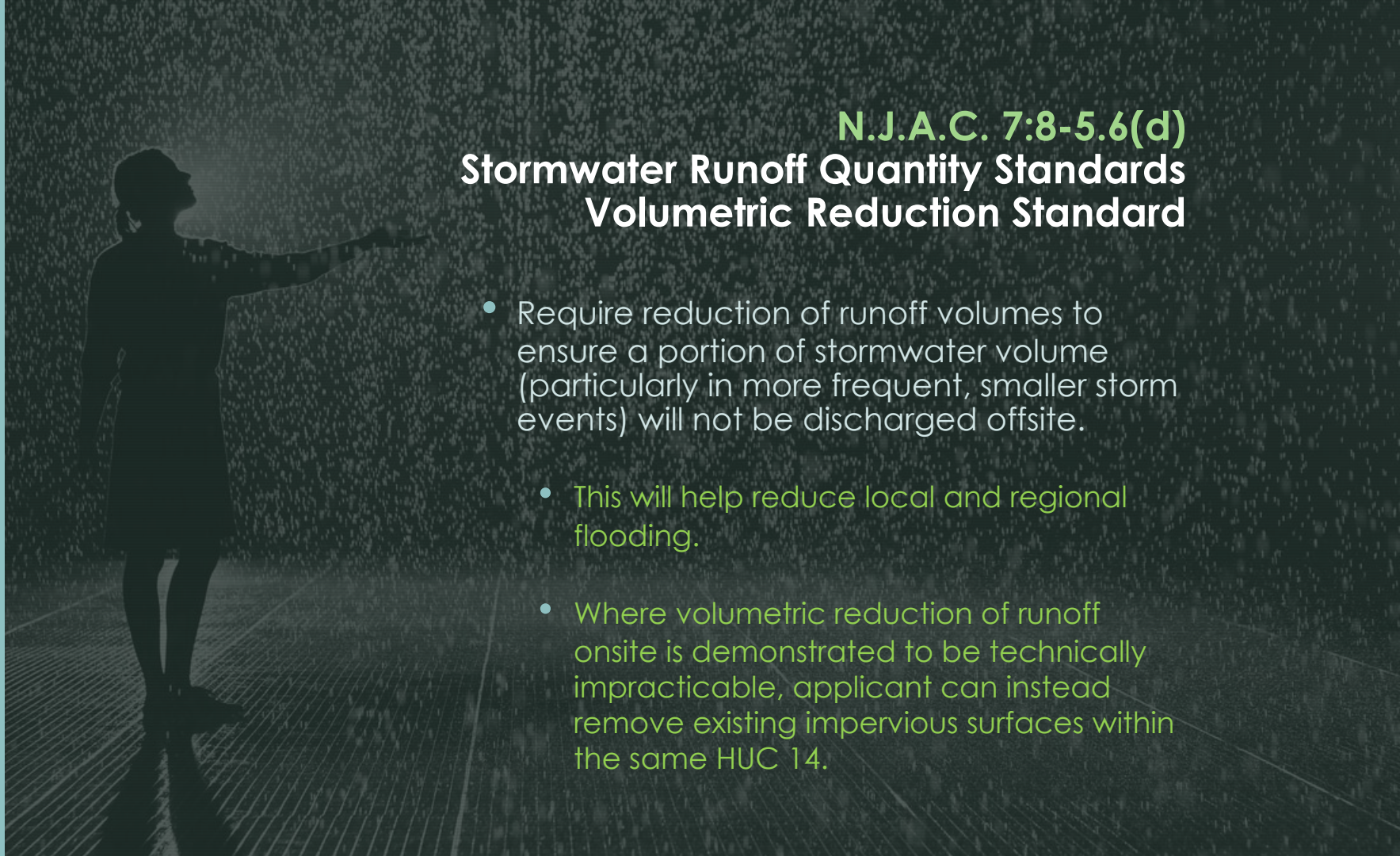
Stormwater Runoff Quality Standards

- Incorporate additional measures from the NJPDES rules into Water Quality Design and Performance Standards
 - For example, municipalities located in a watershed that have established, approved, or adopted Total Maximum Daily Load (TMDLs), the proposal requires that major developments incorporate additional measures to address the established, approved, or adopted TMDLs.
 - The TMDL represents the assimilative or carrying capacity of a waterbody, taking into consideration point and nonpoint sources of pollutants, natural background levels of pollutants, and surface water withdrawals.
 - A TMDL quantifies the amount of a pollutant a waterbody can accommodate without violating water quality standards.
 - Additionally, it allocates that loading capacity to known point sources in the form of Waste Load Allocations (WLAs) and to nonpoint sources in the form of Load Allocations (LAs) and includes a margin of safety and optional consideration for reserve capacity.



N.J.A.C. 7:8-5.6(b) Stormwater Runoff Quantity Standards

- In cases where applicants seek to match peak runoff rates from current conditions:
 - Clarify that the hydrologic and hydraulic analysis of downstream flooding is not required if the change in time is solely a result of the proposed installation of BMPs to meet the stormwater quality standards or the volumetric reduction standards.

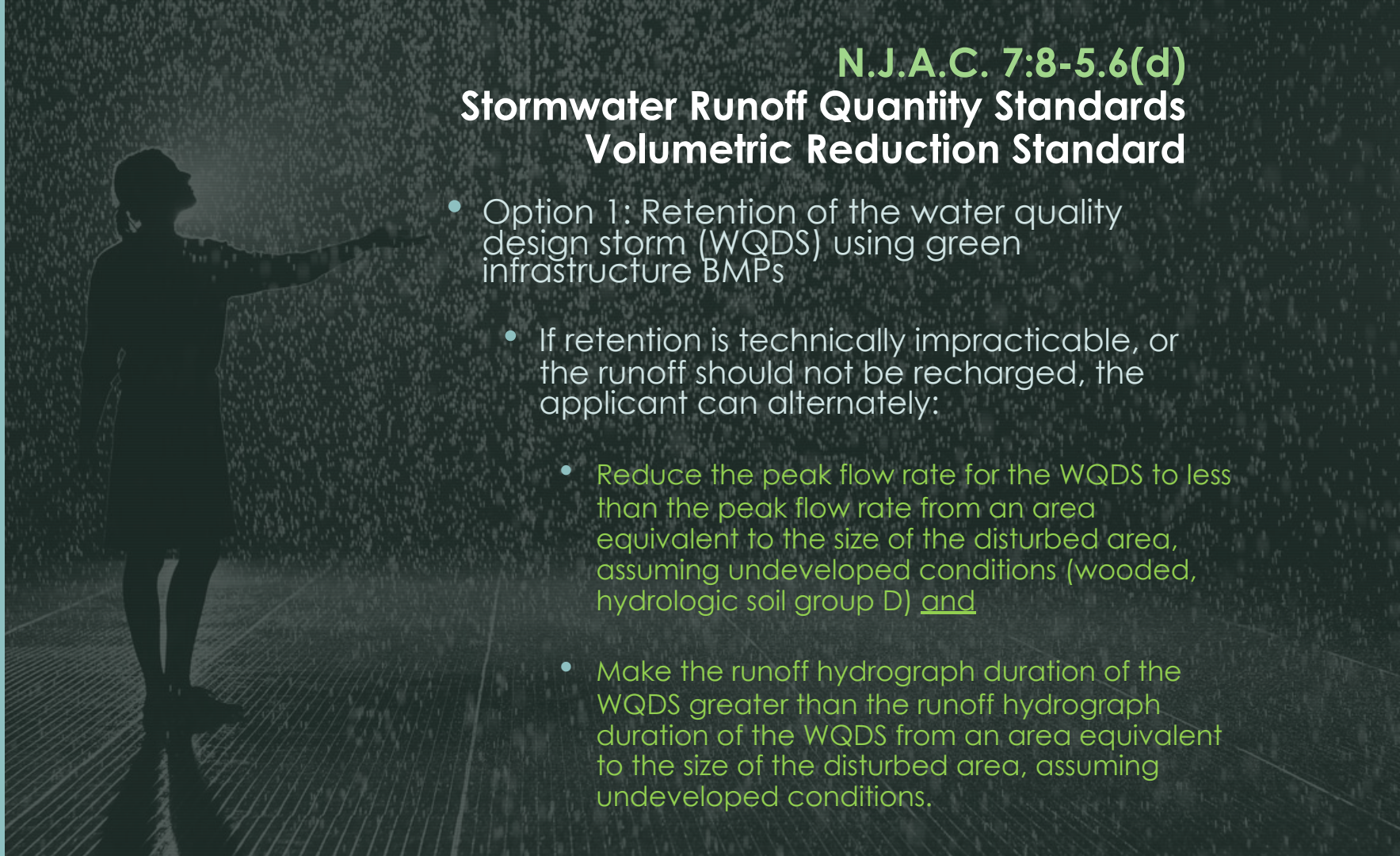


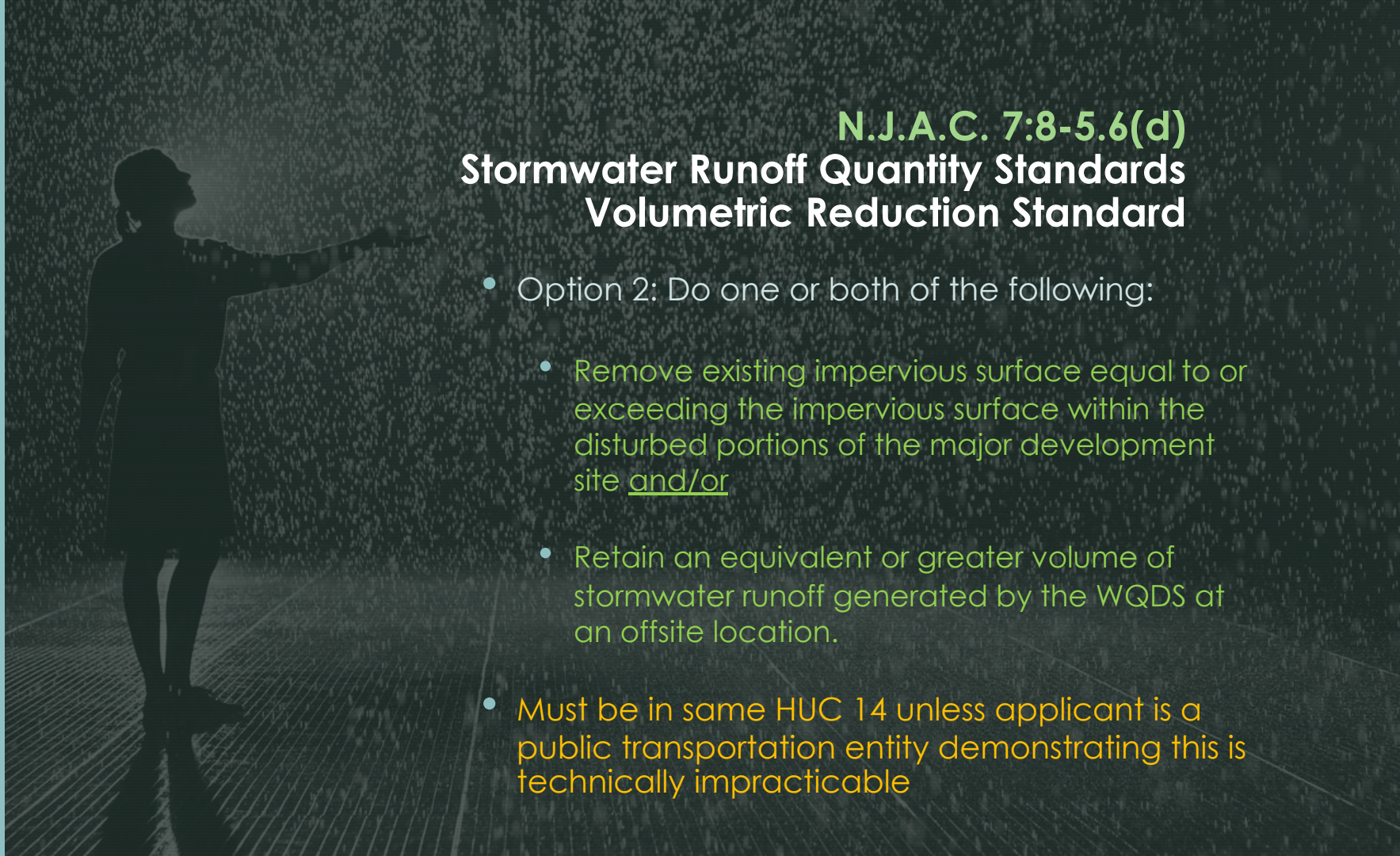
N.J.A.C. 7:8-5.6(d) Stormwater Runoff Quantity Standards Volumetric Reduction Standard

- Require reduction of runoff volumes to ensure a portion of stormwater volume (particularly in more frequent, smaller storm events) will not be discharged offsite.
 - This will help reduce local and regional flooding.
 - Where volumetric reduction of runoff onsite is demonstrated to be technically impracticable, applicant can instead remove existing impervious surfaces within the same HUC 14.

N.J.A.C. 7:8-5.6(d) Stormwater Runoff Quantity Standards Volumetric Reduction Standard

- Option 1: Retention of the water quality design storm (WQDS) using green infrastructure BMPs
 - If retention is technically impracticable, or the runoff should not be recharged, the applicant can alternately:
 - Reduce the peak flow rate for the WQDS to less than the peak flow rate from an area equivalent to the size of the disturbed area, assuming undeveloped conditions (wooded, hydrologic soil group D) and
 - Make the runoff hydrograph duration of the WQDS greater than the runoff hydrograph duration of the WQDS from an area equivalent to the size of the disturbed area, assuming undeveloped conditions.





N.J.A.C. 7:8-5.6(d) Stormwater Runoff Quantity Standards Volumetric Reduction Standard

- Option 2: Do one or both of the following:
 - Remove existing impervious surface equal to or exceeding the impervious surface within the disturbed portions of the major development site and/or
 - Retain an equivalent or greater volume of stormwater runoff generated by the WQDS at an offsite location.
- Must be in same HUC 14 unless applicant is a public transportation entity demonstrating this is technically impracticable



Contact Information:

**Municipal Stormwater Engineering Unit
Bureau of NJPDES Stormwater Permitting
Division of Watershed Protection and Restoration**

**501 East State Street
PO Box 420, Mail Code 501-2A
Trenton, NJ 08625-420
Tel: 609-633-7021
dep.nj.gov/stormwater/**

**Bureau Email Address:
dwq-bnpc-stormwatermanagement@dep.nj.gov**

**REAL Webpage:
<https://dep.nj.gov/njreal/>**



NJ PACT REAL: Sea level rise, Inundation Risk Zones, Coastal Flood Hazard Areas, Nature-based solutions

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Overview

- Main provisions of the rules as it relates to flood resilience
- Why do we need the NJ real rules?
- Opportunities and benefits of land use protection rules in New Jersey
- Forward looking steps for the state

New Climate Adjusted Flood Elevation (CAFE) in coastal flood hazard areas

Current flood elevation (BFE) or FEMA's 100-year flood elevation in coastal flood hazard areas

+ 5 ft

+ 1 ft of freeboard

Implications?

- Flood zone jurisdictional area moving further inland
- Residential and critical infrastructure first floors must be raised 6 FT above BFE
- Commercial uses raised 6FT*
- Roadways to be raised 6 FT*

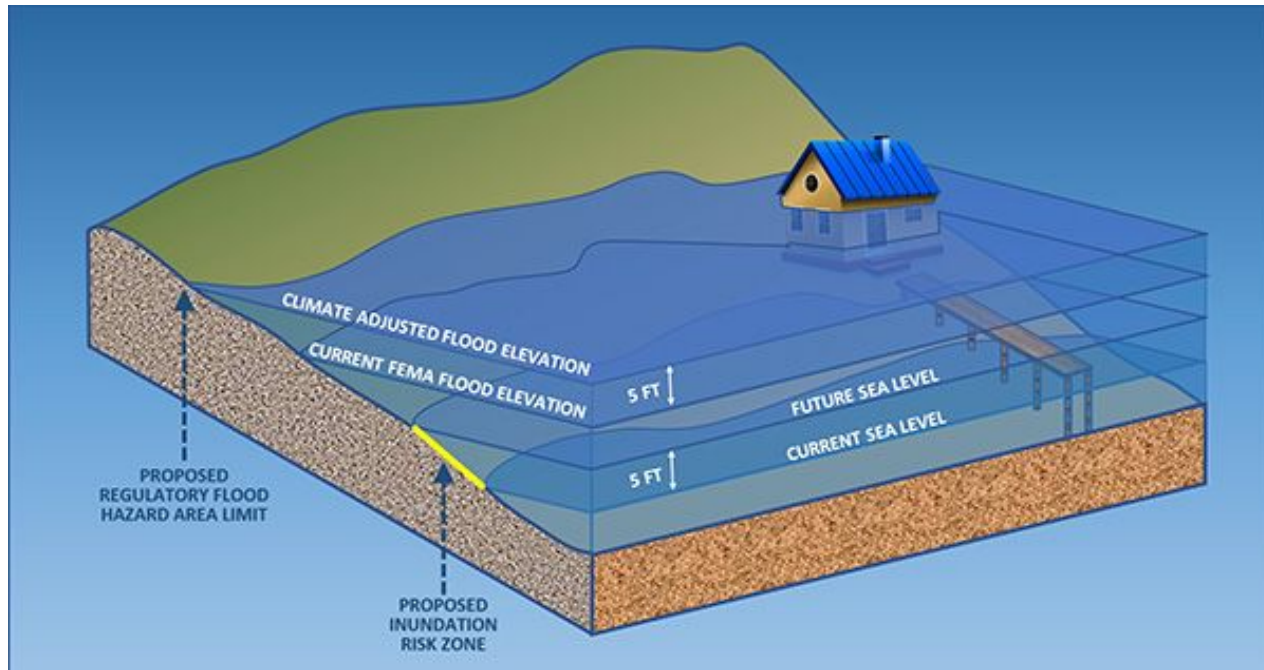
Inundation Risk Zone (IRZ)

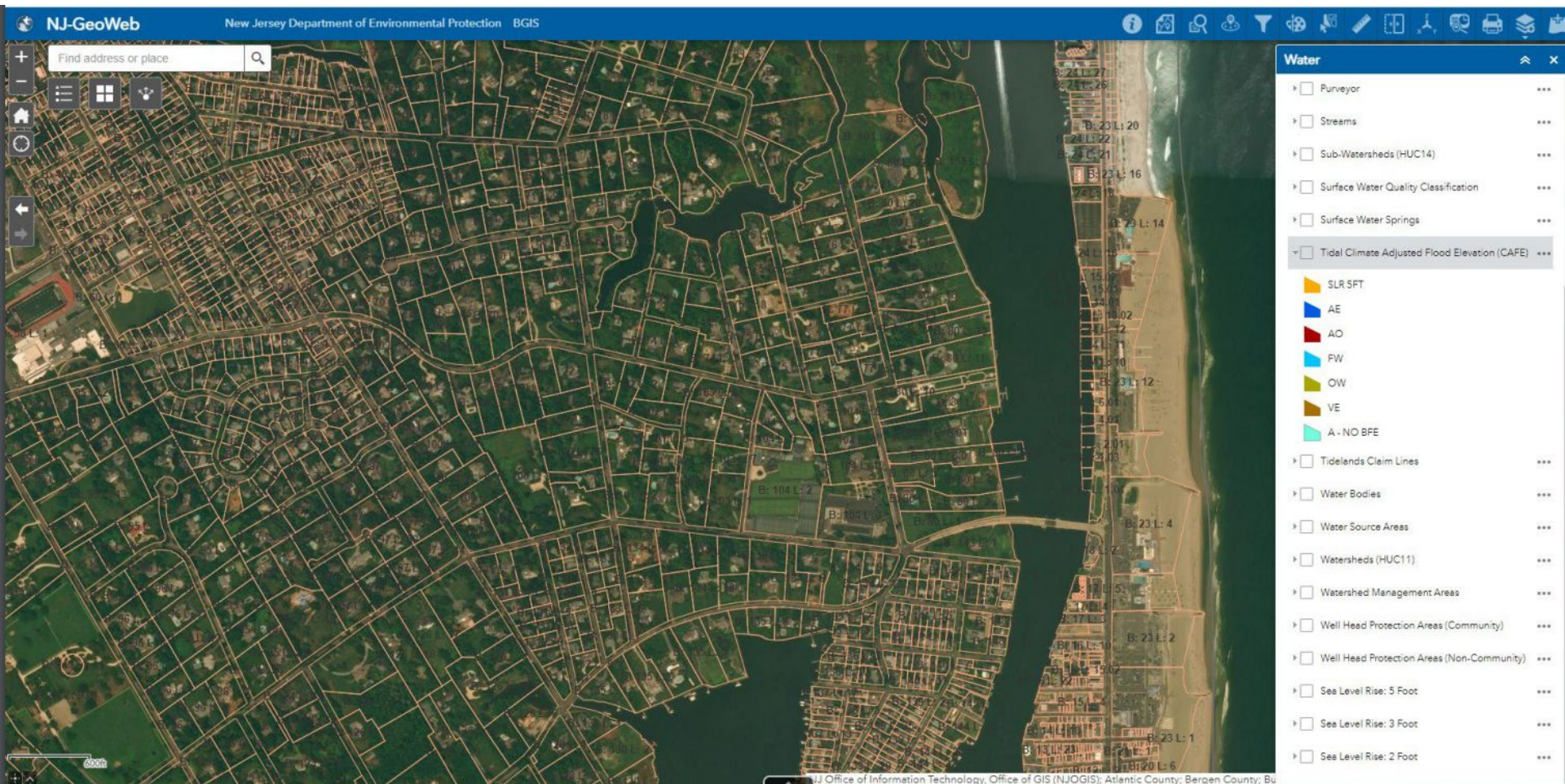
Refers to land that is above sea level today but, in the future, will be under permanent standing water all the time due to SLR or twice a day during high tides

Includes **all land that lies within 5 feet vertically** of the MHHW (mean higher high water) elevation

Standards for **proposed new or improved buildings** apply to:

- Residential buildings
- Critical buildings and infrastructure





Find address or place



Water

► ☐ Purveyor

► ☐ Stream

☐ Sub-Watersheds (HUC14)

► ☐ Surface Water Quality Classification

▶ ☐ Surface Water Springs

☑ Tidal Climate Adjusted Flood Elevation (CAFE) ...

SLR 5FT

4

F

 A - NO BFE

► ☐ Tidelands Claim Lines

► ☐ Water Bodies

▶ ☐ Water Source Areas

► ☐ Watersheds (HUC11)

- Watershed Management Areas

▶ ☐ Well Head Protection Areas (Community)

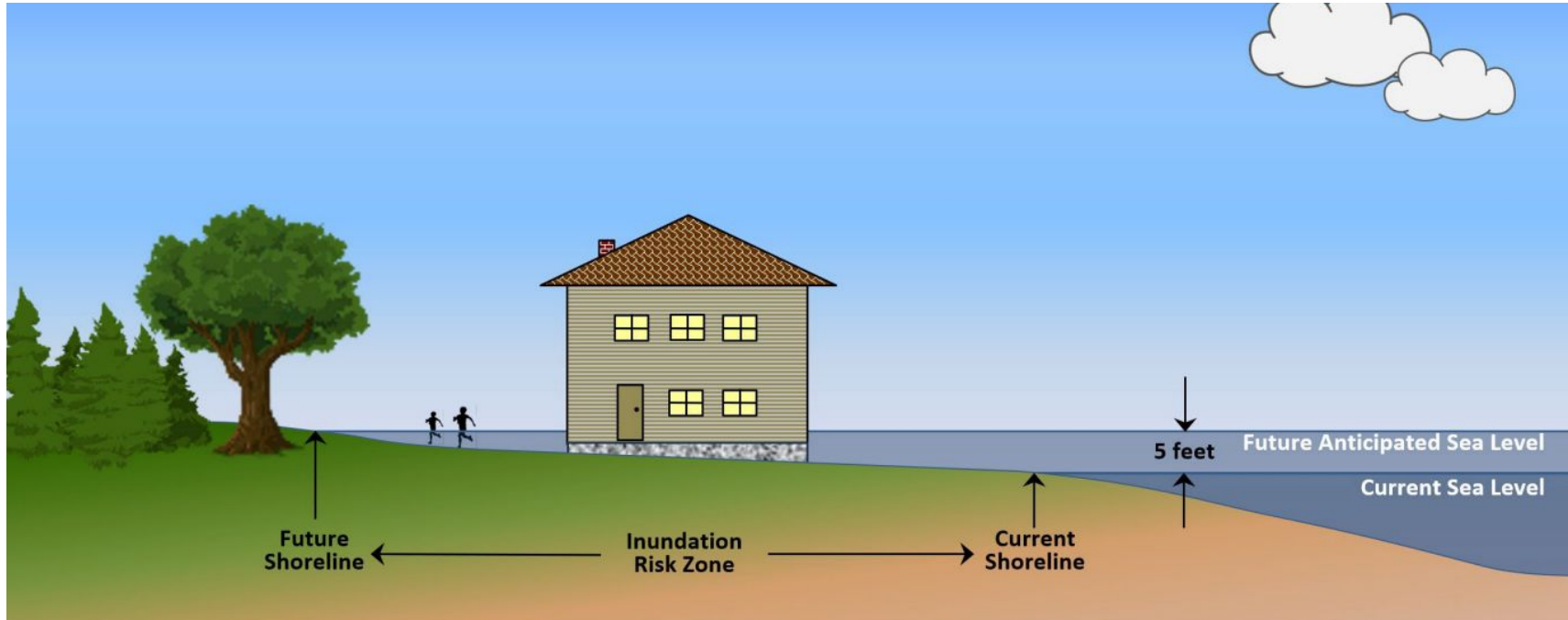
▶ ☐ Well Head Protection Areas (Non-Community) ***

▶ ☐ Sea Level Rise: 5 Foot

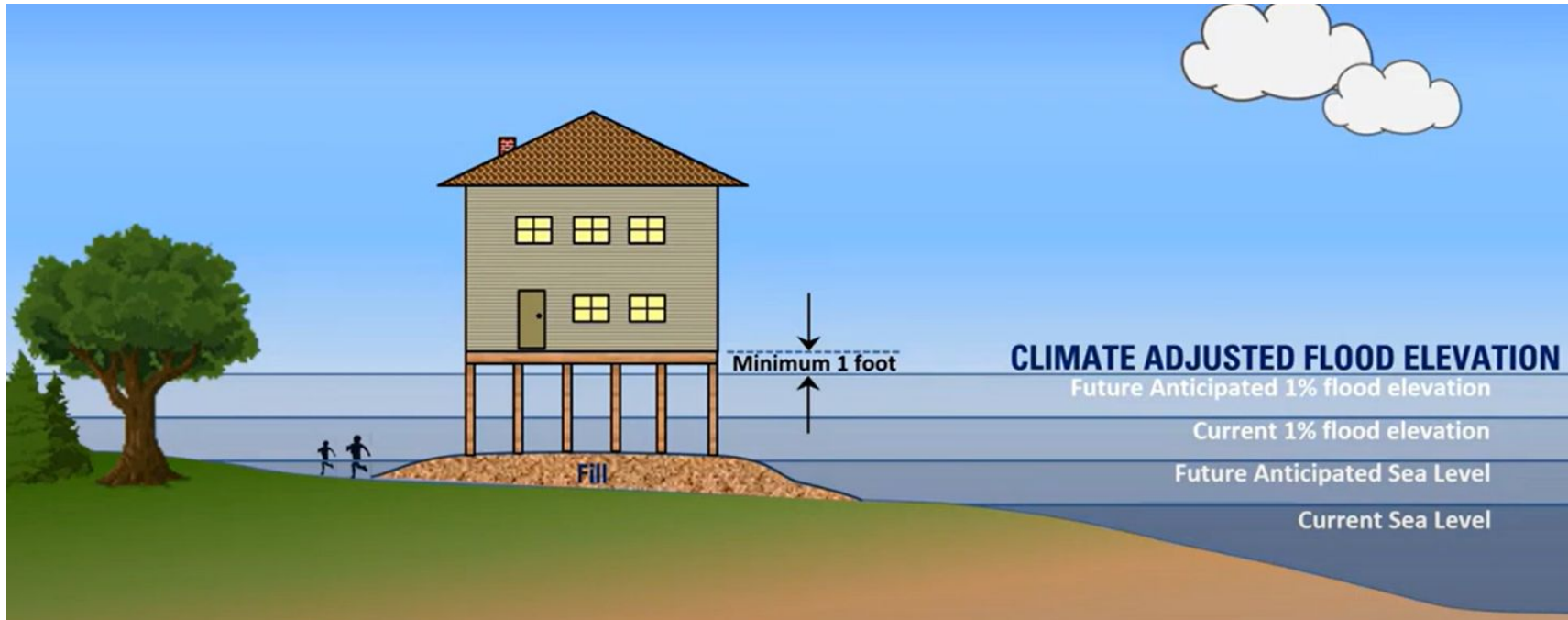
▶ ☐ Sea Level Rise: 3 Foot

▶ ☐ Sea Level Rise: 2 Foot

Residential building: scenario



Residential building: scenario



The need for land use planning tools in New Jersey

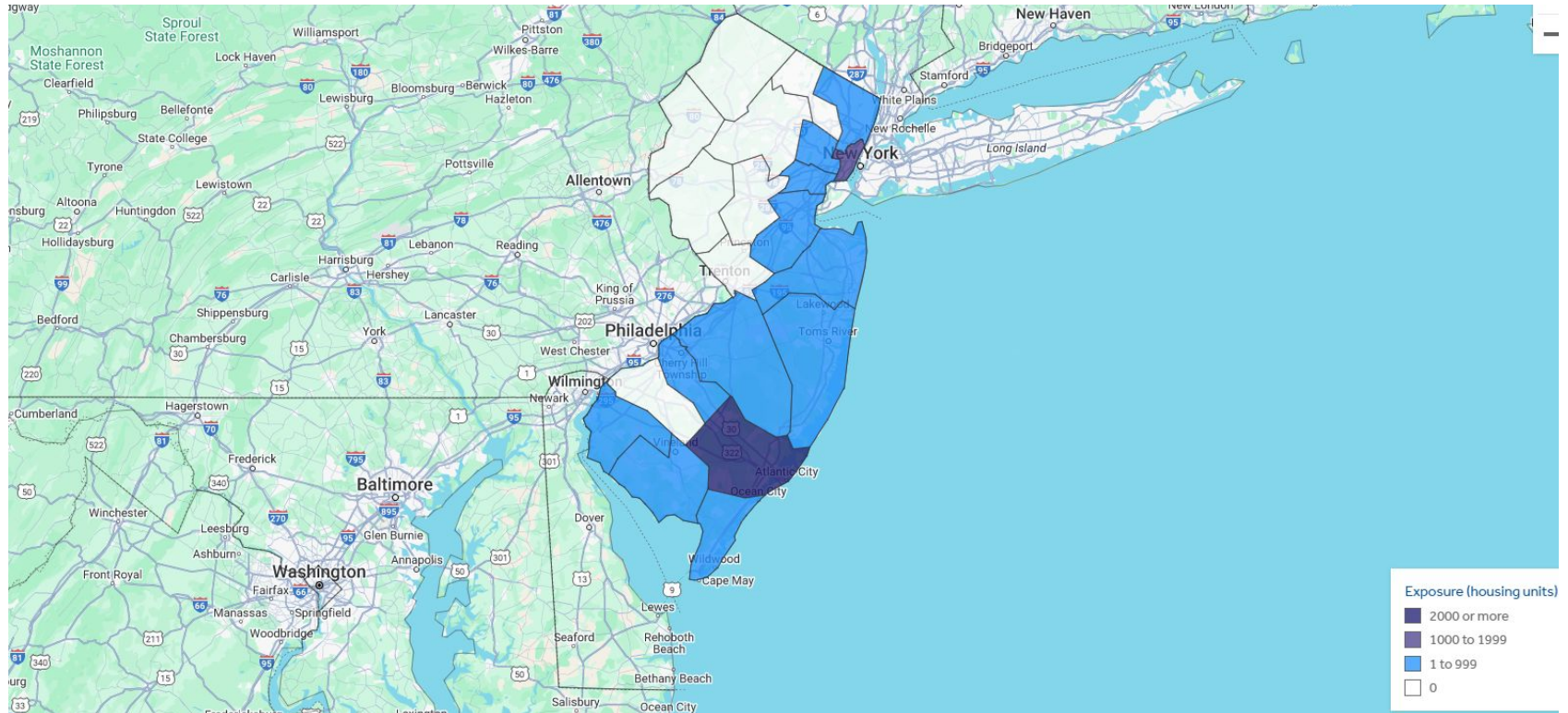


Photo Credit: Asbury Park Press

Housing growth in the New Jersey coastal risk zone has been 3.4 times higher than surrounding areas from 2001-2019

By 2050, New Jersey will have the highest affordable housing exposed to coastal flooding nationwide

Affordable housing units are at risk



Credit: Climate Central

Benefits and opportunities for New Jersey

- Less vulnerable homes and infrastructure, more resilient communities
- Multiple benefits to both communities and nature
 - Avoided losses
 - More transparent housing market
 - Lower NFIP premiums
 - Increased resilience of land and water resources
 - Improved water quality, especially in urban areas
- More stable local economies

Looking ahead

- Additional guidance, support and simplification through visualization and detailed methods
- Greater staffing capacity and internal expertise to support adoption
- Community engagement and planning efforts
- Increased accessibility of rules at household level
- Foster social and environmental justice

Thank you!

The need for land use planning tools in New Jersey

- 3000+ newly built homes are in the 2050 floodplain in New Jersey
- Housing growth in the New Jersey coastal risk zone has been 3.4 times higher than surrounding areas from 2001-2019

Ocean City built more flood-exposed homes than any other city in the country

- By 2050, New Jersey will have the highest affordable housing exposed to coastal flooding (25%)
1,600+ units today □ 6800+ units by 2050 (X4 times)
- Many towns already taking action. The challenge is helping them do even more and to motivate and support the towns that are still concentrating buildings in floodplains