# Climate Resilient Stormwater Support

*Fall 2025 Project Update*

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Photo by Matt Rath / Chesapeake Bay Program

# Project Background

**Objective**: Create an integrated toolkit of guidance materials, web-based tools, and references for integrating climate considerations into stormwater planning, management and/or design, as well as enhancements to Chesapeake Bay modeling. Including:

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| Vulnerability Assessment Guidance | Future Precipitation Tool & User Guidance | Resilient Design Guidebook for Green Stormwater Infrastructure | Improved Modeling of Best Management Practices Climate Sensitivity |

**Timeline:** February 2024 – February 2029
**Funder:** U.S. EPA

Photo by Will Parson/Chesapeake Bay Program

EPA

# Project Background

**Objective**: Create an integrated toolkit of guidance materials, web-based tools, and references for integrating climate considerations into stormwater planning, management and/or design, as well as enhancements to Chesapeake Bay modeling. Including:

**1** Vulnerability Assessment Guidance

- Guides users in selecting the most appropriate approach (e.g., modeling, expert judgement) for vulnerability assessments.
- Ensures assessment methods align with needs and practical constraints and offers case studies and how-to guidance.

**Timeline:** November 2025

Photo by Will Parson/Chesapeake Bay Program

# Project Background

**Objective**: Create an integrated toolkit of guidance materials, web-based tools, and references for integrating climate considerations into stormwater planning, management and/or design, as well as enhancements to Chesapeake Bay modeling. Including:

**2**

**Future Precipitation Tool & User Guidance**

- Offers guidance for integrating climate projections into policy and project-level decisions.
- Features case studies and decision trees to help users choose scenarios, time periods, and risk thresholds suited to their objectives.

**Timeline:** Spring-Summer 2026

Photo by Will Parson/Chesapeake Bay Program

EPA

# Project Background

**Objective**: Create an integrated toolkit of guidance materials, web-based tools, and references for integrating climate considerations into stormwater planning, management and/or design, as well as enhancements to Chesapeake Bay modeling. Including:

**3**

Resilient Design Guidebook for Green Stormwater Infrastructure

- Provides a range of adaptation options for resilient stormwater BMP design, helping users connect identified vulnerabilities to specific, actionable solutions. Organized like a typical design manual, it enables navigation by infrastructure type.

**Timeline:** December 2026

EPA

# Project Background

**Objective**: Create an integrated toolkit of guidance materials, web-based tools, and references for integrating climate considerations into stormwater planning, management and/or design, as well as enhancements to Chesapeake Bay modeling. Including:

**4**

Improved Modeling of Best Management Practices Climate Sensitivity

- By applying advanced process-based and stormwater models, quantifies how the performance and pollutant removal efficiencies of key urban and agricultural BMPs may change under future climate conditions, supplying sensitivity factors to inform resilient design and management decisions.

**Timeline:** December 2025, February 2027

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EPA

# Vulnerability Assessment Guidance – Objectives

**Supports Agencies in:**

- Selecting the vulnerability assessment approach(es)

- Applying assessment results to planning and management

- Effectively scoping and organizing the assessment process

**Key Features:**

- Right-sized: Tailored to agency needs and intended use

- Actionable: Outputs that inform planning, investment, and adaptation

- Integrated: Assessment process directly connected to decisionmaking

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# Vulnerability Assessment Guidance – Overview

**Step-by-Step Approach:**

- Uses step-by-step guidance, flow charts and worksheets

**Tailored Recommendations:**

- Advice on matching assessment methods to agency capacity, resources, and timelines.

**Real-World Insights:**

- Case studies and lessons learned from scientific literature illustrate applications, challenges, and best practices.

- Provides datasets and resources to support implementing a vulnerability assessment

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# Vulnerability Assessment Guidance – Process

**Literature Review:**

- Semi-structured analysis of vulnerability assessments and hazard plans, prioritizing Chesapeake Bay and other flood-prone regions.

**Stakeholder Interviews:**

- 12 interviews with diverse agencies to capture real-world challenges, tools, and needs.

**Synthesis:**

- Combined findings to characterize assessment methods, identify key tools and frameworks, and analyze how agency context shapes vulnerability assessment.

# Vulnerability Assessment Guidance – Next Steps

**Guidance Document Pilot:**

• Partnering with a Mid-Atlantic stormwater agency to test and refine the vulnerability assessment tool in real-world conditions

**Pilot Steps:**

1. Agency reviews guidance with our team

2. Agency applies the guidance to develop a preliminary assessment plan

3. Agency provides input on usability and functionality; guidance is improved based on feedback

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# Vulnerability Assessment Guidance – Deliverables

**Technical Memorandum:**

- Complete earlier this year, describing our literature review and interview findings and initial synthesis

**Guidance Document:**

- Will be published and publicly available in November 2025

- Formatted as a PDF document

  - Includes decision tree, worksheet, data sources, and practical steps to select an approach and carry out a vulnerability assessment

- *Integration with products from other tasks may happen after November 2025*

Photo by Will Parson/Chesapeake Bay Program

# Project Team and Contact Information

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