

Environmental Resources

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New Jersey Department of Transportation Integrating Extreme Weather Resilience Into Transportation Asset Management

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FHWA Pilot Overview

New Jersey selected with five (5) other states, including Arizona, Kentucky, Massachusetts, Maryland, Texas to participate in a Pilot Program focused on extreme weather, climate risks, and asset management.



Aerial View of Study Area: I-80

New Jersey's Approach

- Focused on inland flooding as opposed to sea level rise & storm surges
- Considered precipitation as the extreme weather “stressor”
- Choose to focus on extreme weather “experiences” now (and in recent past) versus assessing impacts of long range projections



Passaic River fills street in Paterson, NJ – Hurricane Irene

New Jersey's Approach

- Original goal: determine how precipitation, could affect culverts as the “asset class” in Asset Management
- A focused study area was selected based on data that showed areas vulnerable to flooding – *Drainage Management System (DMS)*



I-80 Culvert (located at MP 57.35 on Westbound direction)

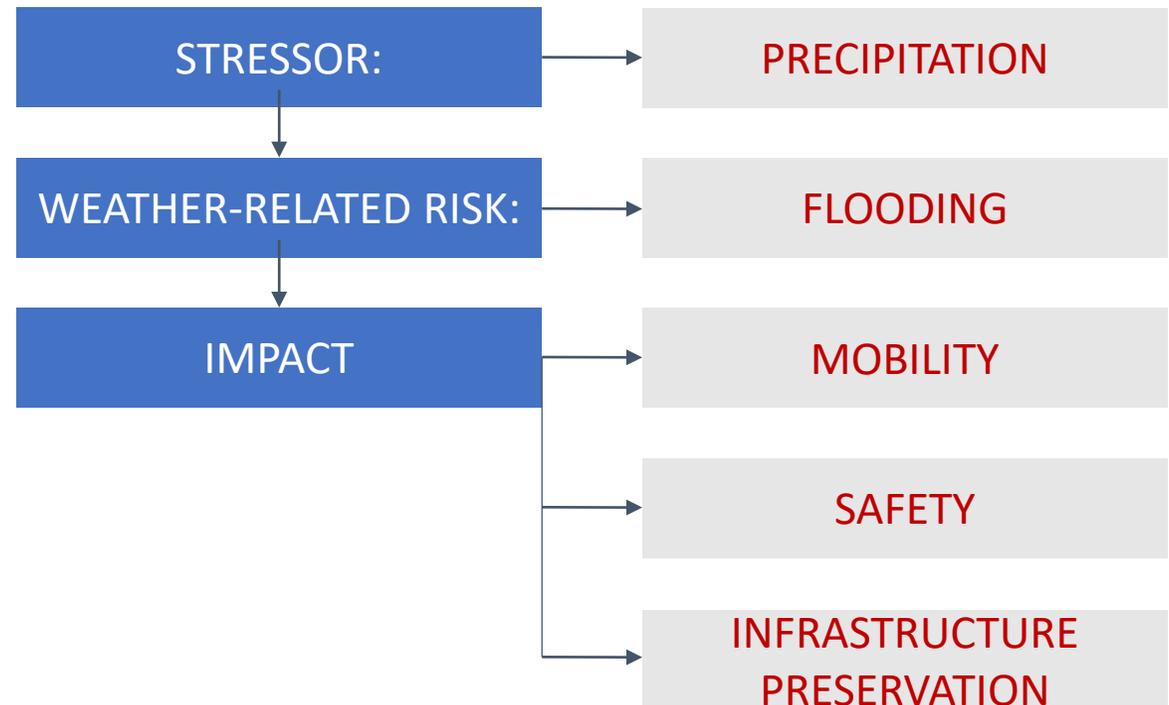
Case Study Area



Linking Extreme Weather and Asset Management

- Asset Management, Extreme Weather, and Proxy Indicators Pilot
 - The research refocused to identify root cause(s) of flooding in the targeted area to develop the most cost-effective risk management mitigation to be considered in lifecycle planning

Understanding The Problem



Top Project Findings - Results

- Understanding the root cause is key to developing cost-effective lifecycle management mitigation strategies and improve resilience:
 - Analysis showed low number of cleaning maintenance activities had a direct correlation with increased flooding occurrences. Increased maintenance activities can help to achieve a desired state of good repair/performance
- Important to address current problems/locations at risk while preparing for future conditions
 - Locations at risk under current scenarios may not be affected by climate change inundation projections (depending on the root causes). However, the frequency and severity of rain events now and in the immediate future will continue to put systems at risk unless appropriate mitigation strategies are implemented through asset management
- Isolating asset classes may not provide an accurate representation of problems