

# **EPA Introduction for Flooding Session:** NOAA's Climate & Weather Information for Water Utilities & Stormwater Managers in New England

Lynn Gilleland July 28, 2020



# AWIA Overview



- On October 23, 2018, America's Water Infrastructure Act (AWIA) was signed into law.
  - AWIA, passed in the Senate by a 99-1 vote, was sponsored by Senator Amy Klobuchar (D-MN) and developed by the Senate Environment and Public Works Committee and the House Transportation and Infrastructure Committee.

One Hundred Fifteenth Congress  
of the  
United States of America

AT THE SECOND SESSION

*Begun and held at the City of Washington on Wednesday,  
the third day of January, two thousand and eighteen*

An Act

To provide for improvements to the rivers and harbors of the United States, to provide for the conservation and development of water and related resources, to provide for water pollution control activities, and for other purposes.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,*

# AWIA Section 2013: Risk Resiliency Assessments & Emergency Response Plans



AWIA Section 2013 (a) – (f)

Replaces SDWA Section 1433 (from 2002 Bioterrorism Act)

Applies to all community water systems serving more than 3,300 people

Conduct Risk and Resilience Assessments and update Emergency Response Plans

Submit **certifications to EPA** by specified deadlines

Review risk assessments and ERPs every five years

Coordinate with local emergency planning committees

Maintain records

# Section 2013: Key due dates & approximate #s for New England



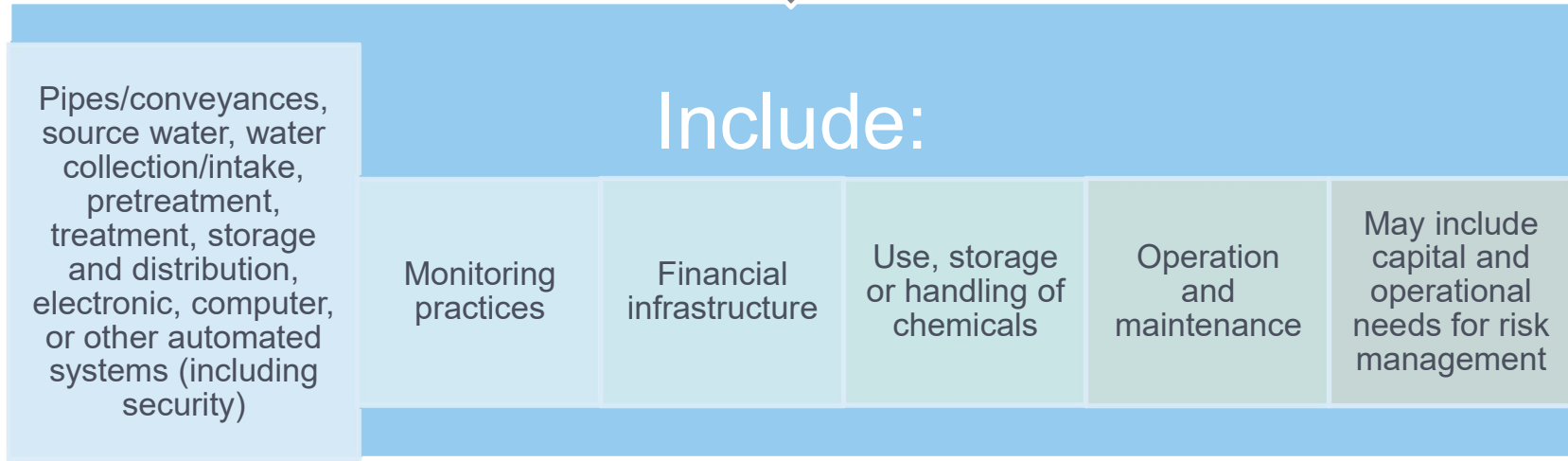
Sept. 30, 2020 next deadline: for ERP



# Risk and Resilience Assessments



Consider risks from malevolent acts and natural hazards



# EPA's Vulnerability Self-Assessment Tool Web 2.0



- Guides you through a risk and resilience assessment that complies with AWIA Section 2013
- Designed for mobile devices like tablets and iPads as well as PCs.
- Includes embedded tools that assist with estimating risk assessment parameters and resilience



# Emergency Response Plans



Prepare or revise an ERP that incorporates findings from the risk assessment



Include:

Strategies and resources to improve resilience, including physical security and cybersecurity

Plans, procedures, and equipment for responding to a malevolent act or natural hazard

Actions, procedures, and equipment to lessen the impact of a malevolent act or natural hazard, including alternative source water, relocation of intakes, and flood protection barriers

Strategies to detect malevolent acts or natural hazards





## Other EPA Tools to assist with AWIA:

- **Baseline Information on Malevolent Acts Relevant to Community Water System** document (assists in identifying the types of malevolent acts that could impact your system and estimating the threat likelihood)
- **EPA's ERP Template** to download, fill in/create your ERP
- **Incident Specific Checklists** to address various threat types (flooding, hurricanes, earthquakes, cyber attacks, etc.) to use/customize and include in your ERP
- Other **EPA water resilience guides**, tools to use as a base for your ERP (Flood Guide, Power Resilience Guide, Drought Guide, Hazard Mitigation Guide)

[www.epa.gov/waterresilience](http://www.epa.gov/waterresilience)





# AWIA Section 2018: Amendments to EPCRA



- SERC Notification Requirements Section 304 of EPCRA amended to add **(e) State Agency Notification**
- The state or tribal emergency response commission (SERC or TERC) shall promptly notify the applicable drinking water primacy agency of a release that requires notice (exceeds reportable quantity within 24-hr. period):
  - Extremely Hazardous Substances (EHSs) listed in EPCRA; and/or
  - Hazardous Substances (HSs) under CERCLA

# AWIA Section 2018: Amendments to EPCRA (cont.)



- Data Availability: Section 312(e) of EPCRA is amended to add community water systems
  - An affected\* CWS may have access to tier II information
    - The CWS must submit a request to the SERC or the local emergency planning committee (LEPC)
    - Upon receipt of the request, the SERC or LEPC shall request the tier II information from the facility and make provided information available to the affected CWS

\* A CWS that receives drinking water from a source water area in which a facility that is required to submit an inventory form under EPCRA Section 312 is located

# Where to find EPA Tools for Flooding:



## Drinking Water and Wastewater Resilience

CONTACT US SHARE



Not sure where to start?  
[Download the 2020 Route to Resilience.](#)  
[AWIA Section 2018](#)  
[Water Resilience Basics](#)  
[Water Security Tools and Resources List](#)

[www.epa.gov/waterresilience](http://www.epa.gov/waterresilience)

### Assess



- [Conduct a risk assessment](#)
- [Create Resilient Water Utilities](#)
- [Develop water quality surveillance and response capabilities](#)
- [Adopt cybersecurity best practices](#)

### Plan



- [Develop emergency response plans](#)
- [Build relationships in your community](#)
- [Access lab resources](#)
- [Build hazard resilience](#)
- [Share resources during an emergency](#)

### Train



- [Access the All-Hazards Boot Camp](#)
- [Develop a training and exercise plan](#)
- [Conduct tabletop exercises](#)
- [Find training opportunities](#)

### Respond



- [Response On-The-Go Tool](#)
- [Print a checklist to help you respond](#)
- [Monitor severe weather](#)

### Recover



- [Find federal funding for your utility](#)
- [Decontamination resources](#)
- [Get reimbursement tips](#)
- [Learn about the Public Assistance](#)

### Surveillance



- [Learn about water quality surveillance](#)
- [Learn from other utilities](#)
- [Access training resources](#)

# EPA Flood Guide



- With a user-friendly layout, the Guide provides *worksheets*, *instructional videos*, and *flood maps* to help utilities through a simple, 4-step process!

A screenshot of the EPA Flood Resilience guide interface. At the top left is the EPA logo and the text "United States Environmental Protection Agency". The main heading is "FLOOD RESILIENCE" in large blue letters, followed by the subtitle "A Basic Guide for Water and Wastewater Utilities". Below this is the instruction "Select a menu option below. First time users should start with the Overview." There are four menu options, each with a colored header and a representative image: "Overview" (orange header, image of flooded houses), "Approach" (yellow header, image of a water treatment structure), "Mitigation Options" (green header, image of a woman at a podium with a "FLOOD HAZARD MITIGATION PROGRAM" banner), and "Pilot Project" (dark blue header, image of a brick building labeled "BERWICK WATER DEPT").

United States Environmental Protection Agency

## FLOOD RESILIENCE

A Basic Guide for Water and Wastewater Utilities

Select a menu option below.  
First time users should start with the Overview.

- Overview
- Approach
- Mitigation Options
- Pilot Project

[https://www.epa.gov/sites/production/files/2015-08/documents/flood\\_resilience\\_guide.pdf](https://www.epa.gov/sites/production/files/2015-08/documents/flood_resilience_guide.pdf)

## Approach to Flood Resilience

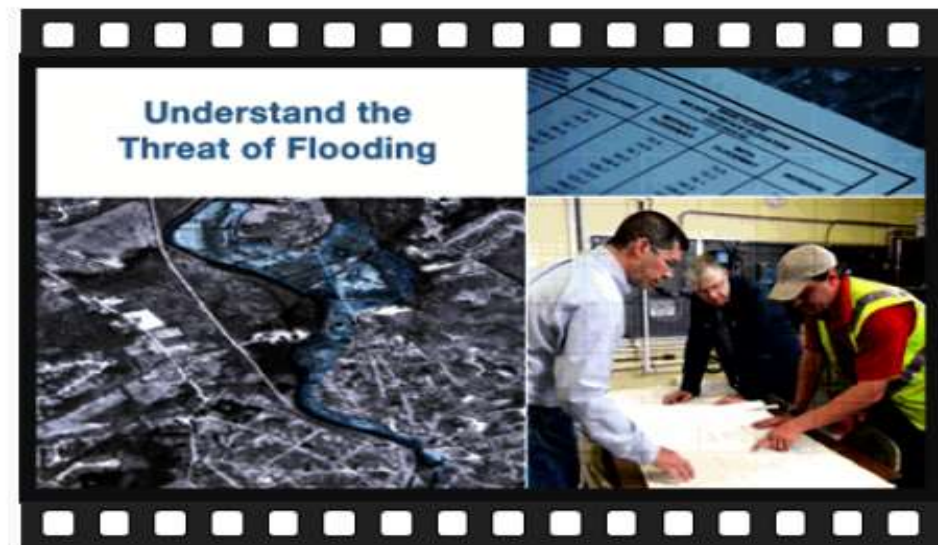
FIGURE 1: STEPS TO BECOME MORE RESILIENT TO FLOODING



*Click on each step.*

### STEP 1: UNDERSTAND THE THREAT OF FLOODING

Flooding depends on various factors including rainfall, topography, river-flow, drainage and tidal-surge. The threat of flooding is based on the likelihood that such a flooding event will occur. Learn how the Berwick Water Department (BWD) evaluated their threat of flooding from the video link. Also, the Federal Emergency Management Agency (FEMA) is a resource to help you. FEMA produces maps of a “100-year flood” (a flood event that has a one percent chance of occurring in a given year) and a more catastrophic “500-year flood” (a flood event that has a two tenths of a percent chance of occurring in a given year). Click on the Step 1 worksheet icon below so that you can document the flooding threat and obtain FEMA Flood Maps.



*Select the image to view the video.*

# MITIGATION OPTIONS FOR SPECIFIC ASSETS/OPERATIONS

Click the photographs of assets/operations at drinking water (DW) and wastewater (WW) to get tables of flood mitigation measures for that specific asset/operation.

## DW Assets



Water Intake, Distribution and Storage



Booster Stations and Other Pumps



Drinking Water Treatment Plant

## DW & WW Assets



Buildings



Chemical and Other Storage



Instrumentation and Electrical Controls



Power Supply

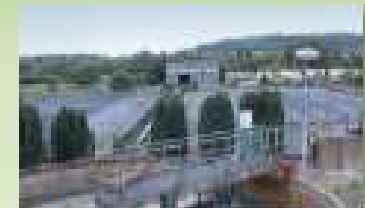
## WW Assets



Lift Stations



Headworks



Wastewater Treatment Plant

[Previous](#)

[Main Menu](#)

[Next](#)

# EPA CRWU: Coastal Storm Surge Scenarios for Water Utilities



## Storm Surge Inundation Map

Creating Resilient Water Utilities



Introduction

Hurricane Frequency

Storm Surge Flooding

FEMA Flood Zones

Real-Time Advisories

Details

### Storm Surge Flooding

This map displays the results from the SLOSH (Sea, Lake, and Overland Surges from Hurricanes) model. SLOSH is a numerical model used by NWS (National Weather Service) to compute storm surge. Storm surge is defined as the abnormal rise of water generated by a storm, over and above the predicted astronomical tides. Flooding from storm surge depends on many factors, such as the track, intensity, size, and forward speed of the hurricane and the characteristics of the coastline where it comes ashore or passes nearby.

Click on a button to see inundation depth for each hurricane storm category on the map.

Category 1

Category 2

Category 3

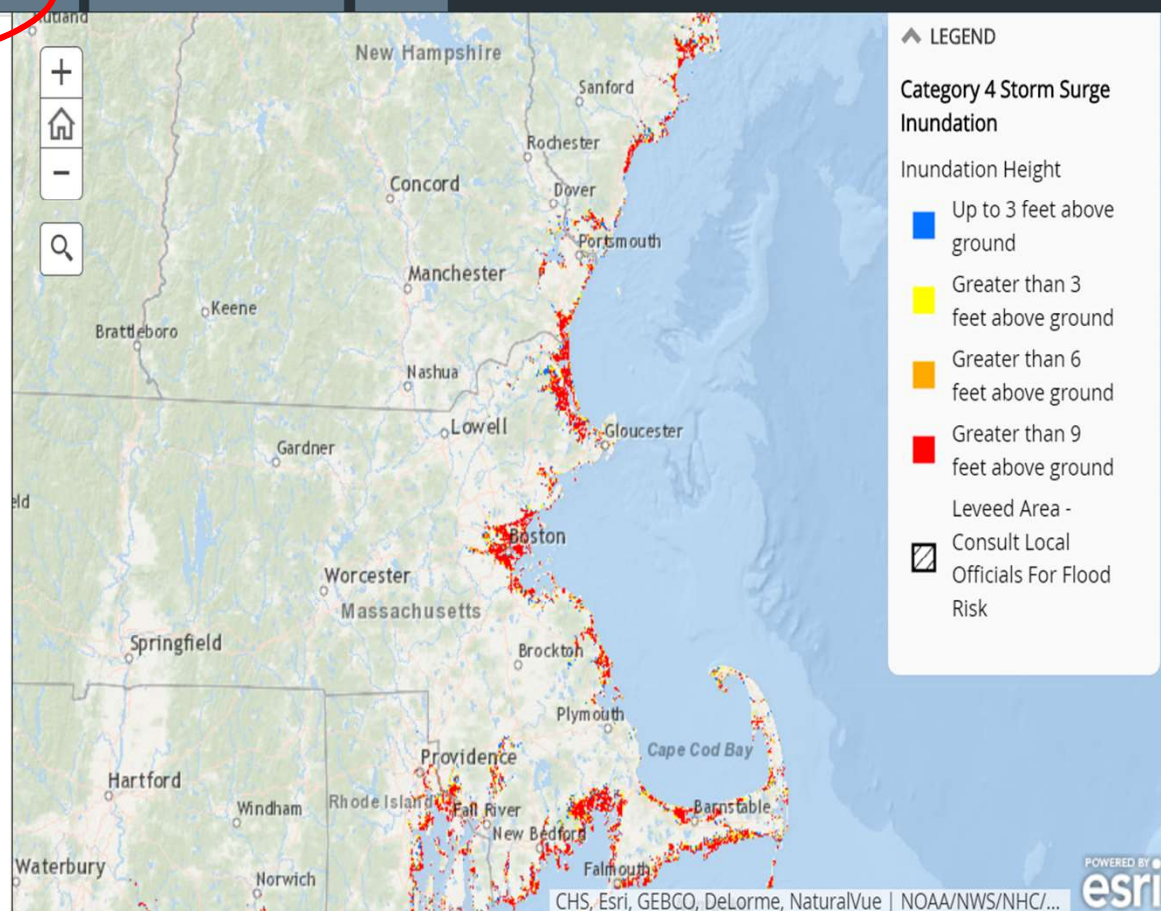
Category 4

Category 5

[Texas to Maine](#) [Puerto Rico and US Virgin Islands](#) [Hawaii](#)

Use the map search, pan and zoom, or links above to review potential inundation depth at your location.

This product displays a seamless national map of storm surge hazard scenarios developed by the NHC (National Hurricane Center) Storm Surge Unit. This map



[www.epa.gov/crwu](http://www.epa.gov/crwu)

# EPA CRWU: Case Study and Information Exchange



## Case Study and Information Exchange

Creating Resilient Water Utilities



### Overview

Extreme precipitation events and storm surge, combined with sea-level rise and coastal land subsidence, could lead to flooding at water utility facilities and across their service areas. Additional resilience to the impacts from these events is gained through planning response and recovery, monitoring weather and stream conditions, and building protection for critical assets.

### Drought



### Flood



### Ecosystem Changes



### Service Reliability



### Water Quality



Aquarion Water Company, Massachusetts



Camden County Municipal Utilities Authority, New...



Cape Fear Public Utility Authority, North Carolina



Capital Region Water, Pennsylvania



City of Atlanta, Georgia



City of Norfolk, Virginia



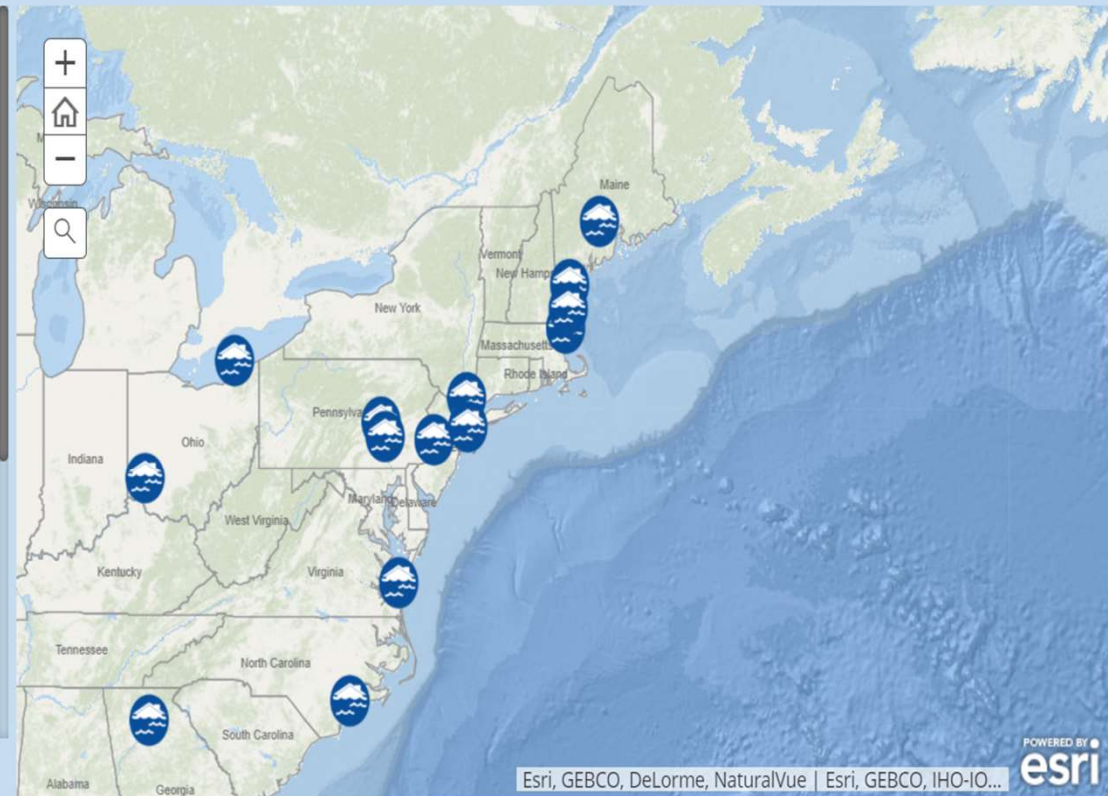
City of Portsmouth, New Hampshire



City of Cincinnati, Ohio



Cleveland Division of Water Pollution Control, Ohio



Esri, GEBCO, DeLorme, NaturalVue | Esri, GEBCO, IHO-IO...



[www.epa.gov/crwu](http://www.epa.gov/crwu)



# EPA CRWU: CREAT Tool Climate Scenario Projection Maps



## CREAT Climate Scenarios Projection Map

Creating Resilient Water Utilities



- Introduction
- Temperature
- Precipitation
- Storms
- Extreme Heat
- Sea Level
- Resources
- Technical Details

### Change in average annual precipitation

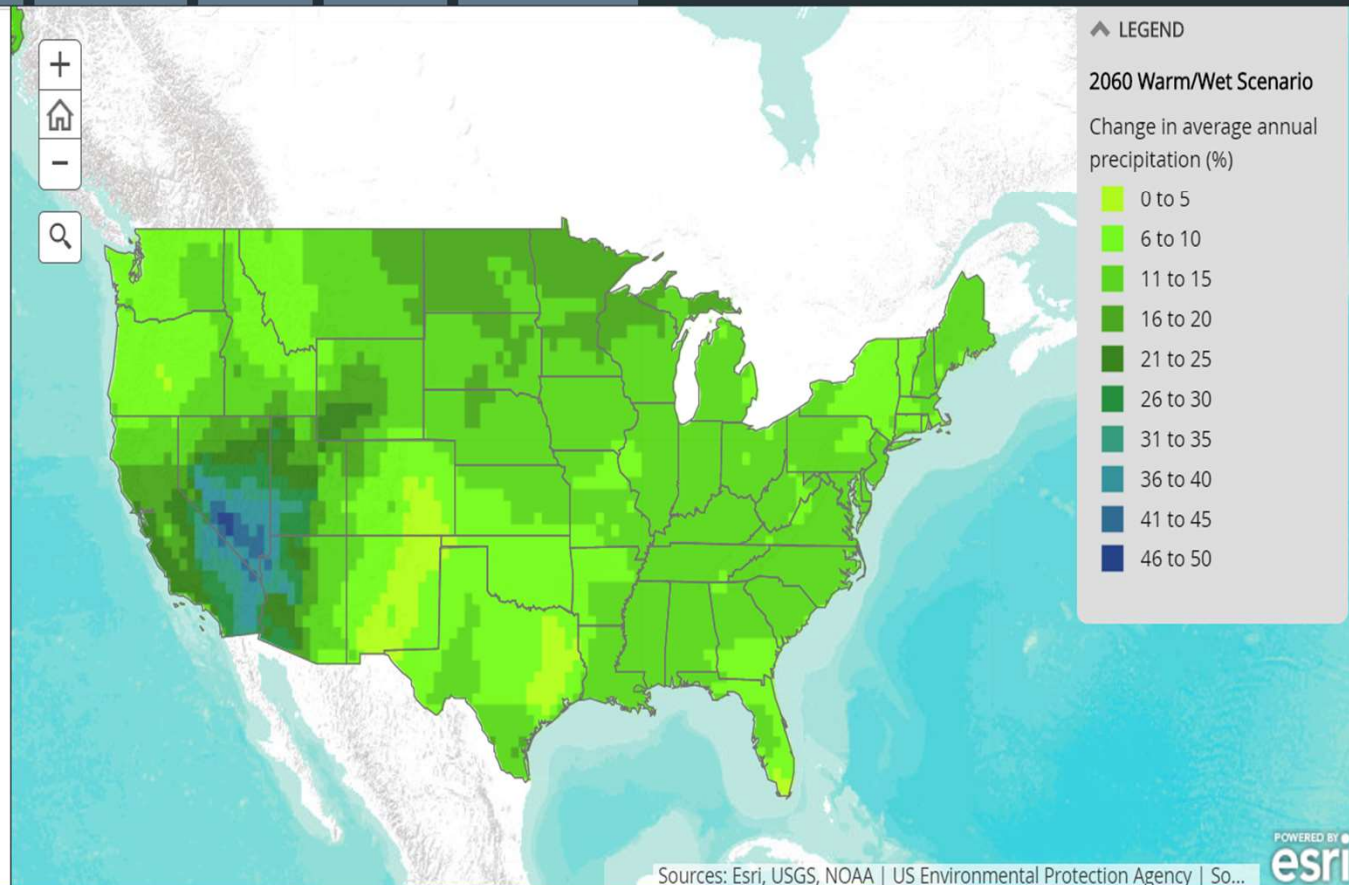
Select the time period and scenario to review:

	Hot/ Dry	Central	Warm/ Wet
2035			
2060			

Hide scenario layers

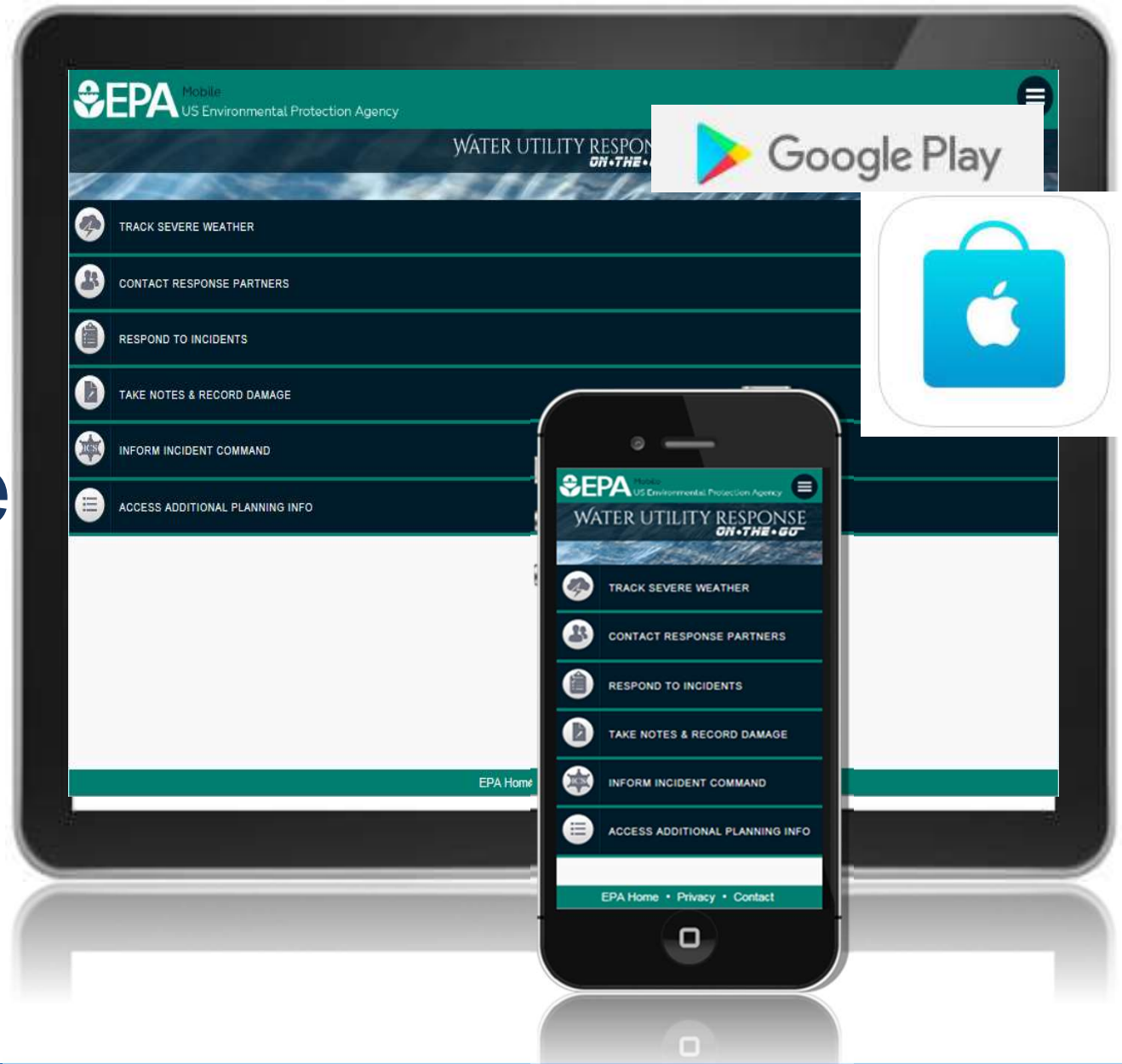
Zoom to: Entire U.S. Alaska Hawaii Puerto Rico

Using the same scenarios as those developed for changes in temperature, consider the range of future precipitation conditions for each time period provided. In many locations, models project both drier and wetter conditions, necessitating utilities to consider which trends in population could lead to the largest threats to reliable



[www.epa.gov/crwu](http://www.epa.gov/crwu)

# Water Utility Response *On-The-Go!* App



[www.epa.gov/responseotg](http://www.epa.gov/responseotg)

# EPA's Stormwater Tools:

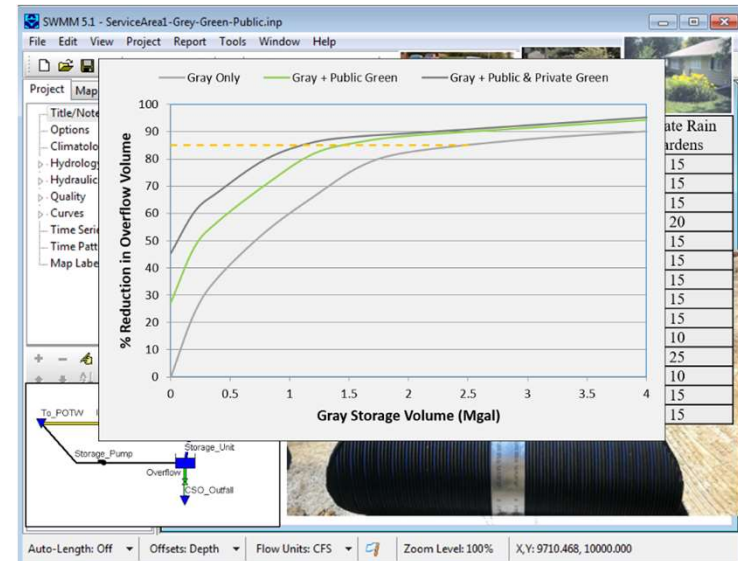


## Stormwater Calculator (SWC)

*Estimates the annual amount of rainwater and frequency of runoff from a specific site*

## Storm Water Management Model (SWMM):

*Helps predict runoff quantity and quality from drainage systems*





**Questions?**

**Thank You**

**[Gilleland.Lynn@epa.gov](mailto:Gilleland.Lynn@epa.gov)**

**617-918-1516**