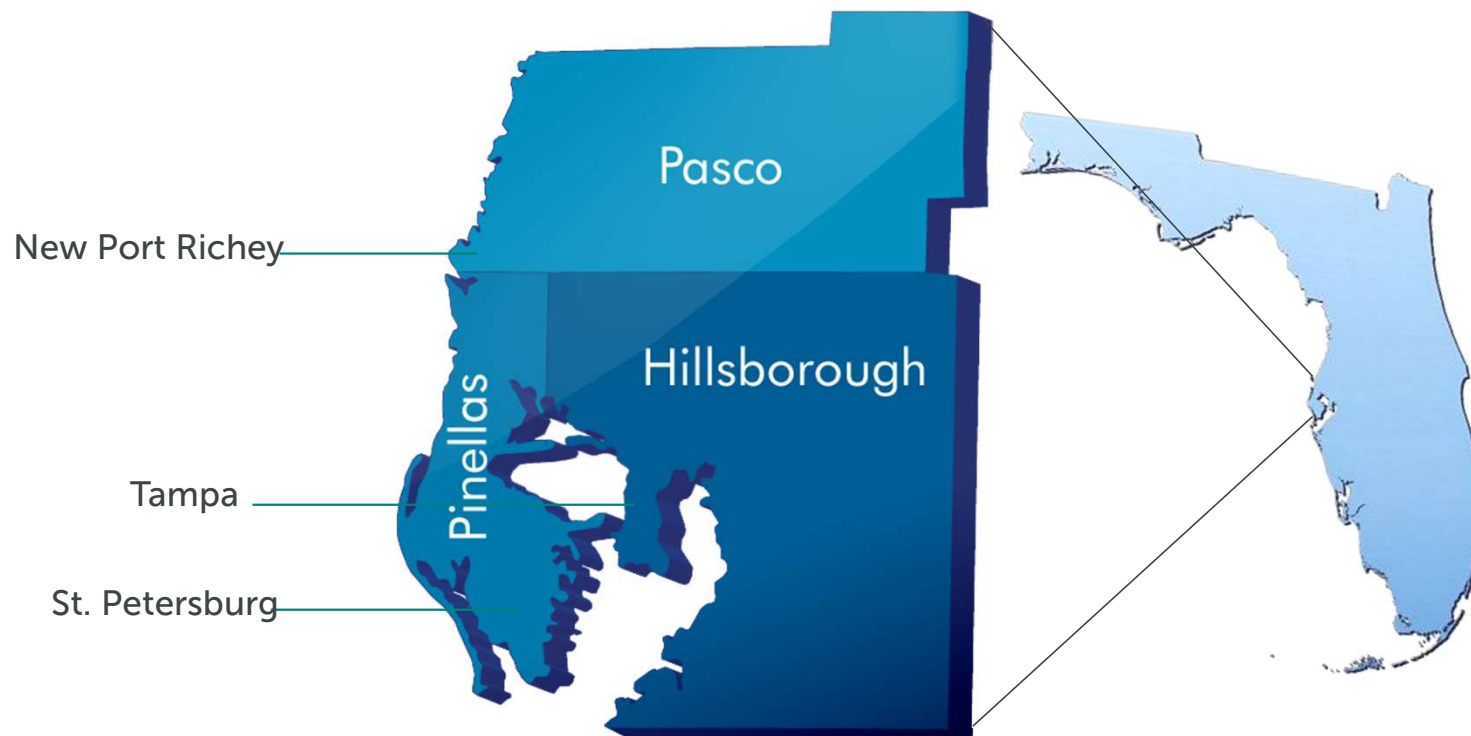


Tampa Bay Water's Approach to AWIA Risk & Resilience Assessment

Florida Water & Climate Alliance Webinar
Water Utility Resilience & Risk to Climate Change Impacts
September 25, 2020



A Regional Water Authority



Overview of Tampa Bay Water's Approach – An Eight Step Process

1. Decided on Methodology
2. Defined Assessment Scope
3. Selected Assessment Level
4. Identified Hazards & Threats

5. Identified Consequences
6. Defined Scoring Criteria
7. Completed Risk Scoring
8. Reviewed Results

Initial Risk & Resilience Assessment Completed in March 2020

Step 1

Decide on Methodology

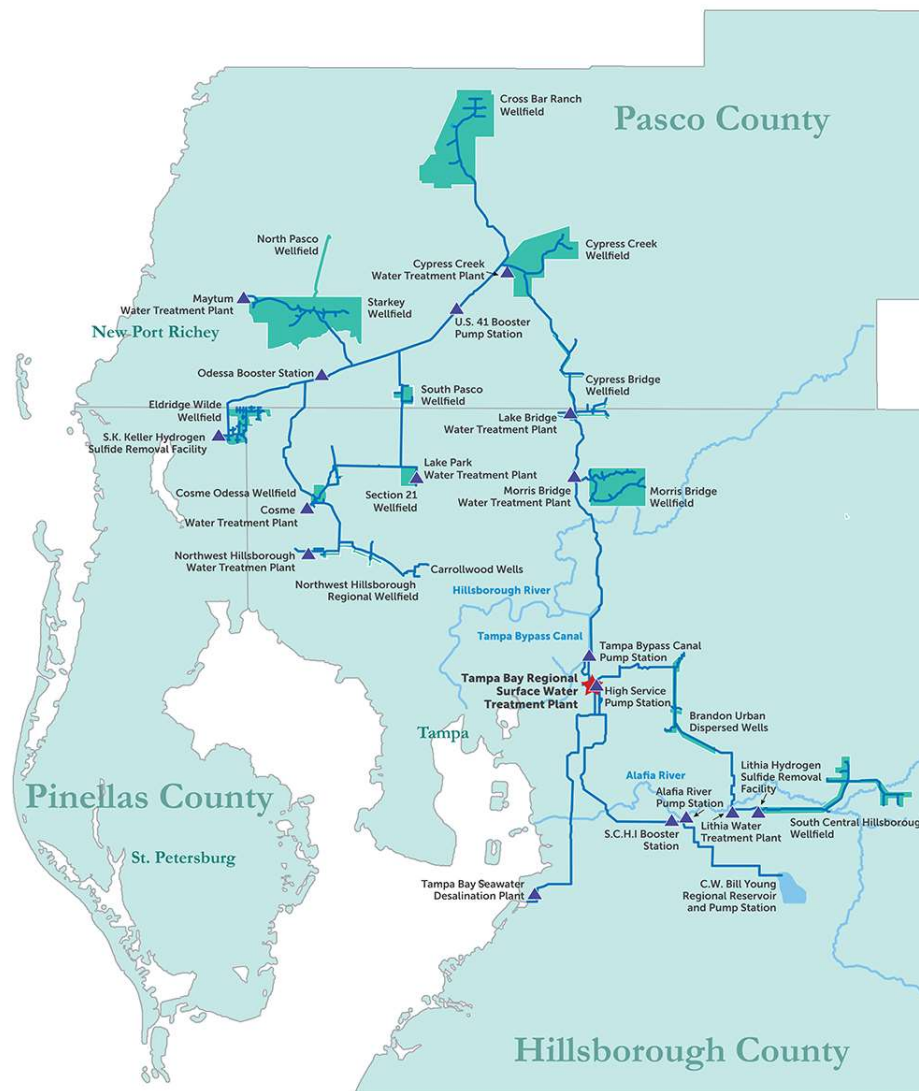
Decided on a Facility-Level
Multivariate Risk Screening Using
In-House Expertise and
Standardized Risk-Ranking Tables



Conducting the Risk & Resilience Assessment

Reasons for Using an Agency-Specific Approach

- Tampa Bay Water is a complex water supply system
- Availability of in-house expertise & existing in-depth risk assessments in several of the AWIA subject areas



Conducting the Risk & Resilience Assessment

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Step 2

Define Assessment Scope

Focused on AWIA Compliance – particularly the threats specified in AWIA



Risk & Resilience Assessment Threats

Threats Specified in AWIA

- Natural Hazards
- Malevolent Acts

NOTE: Tampa Bay Water included some "Other Threats" not specified in the AWIA in its assessment.

Step 3

Select Assessment Level

Risk screening done at Facility Level rather than system or asset level





AWIA Requirement Applies To ...

Tampa Bay Water

Tampa Bay Water has eight community water systems with individual PWS numbers that meet the AWIA reporting criteria.

Member Governments

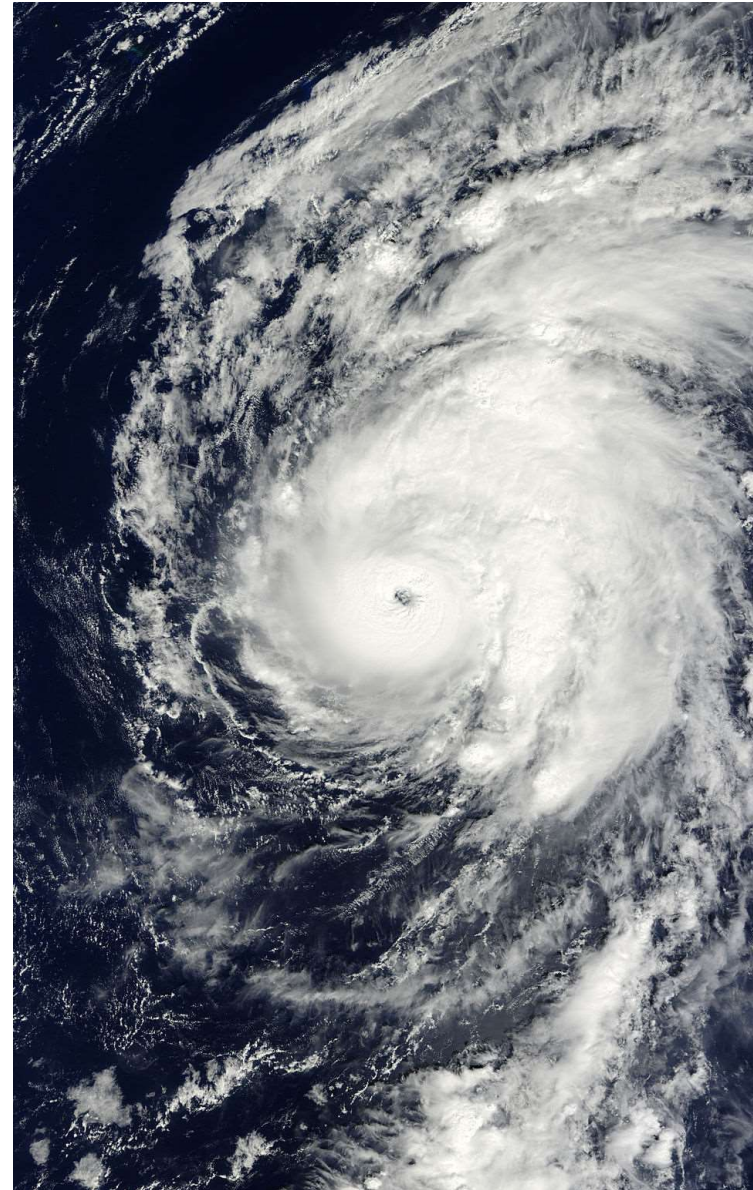
Tampa Bay Water is also an integral part of the "community water systems" of its Member Governments.

Step 4

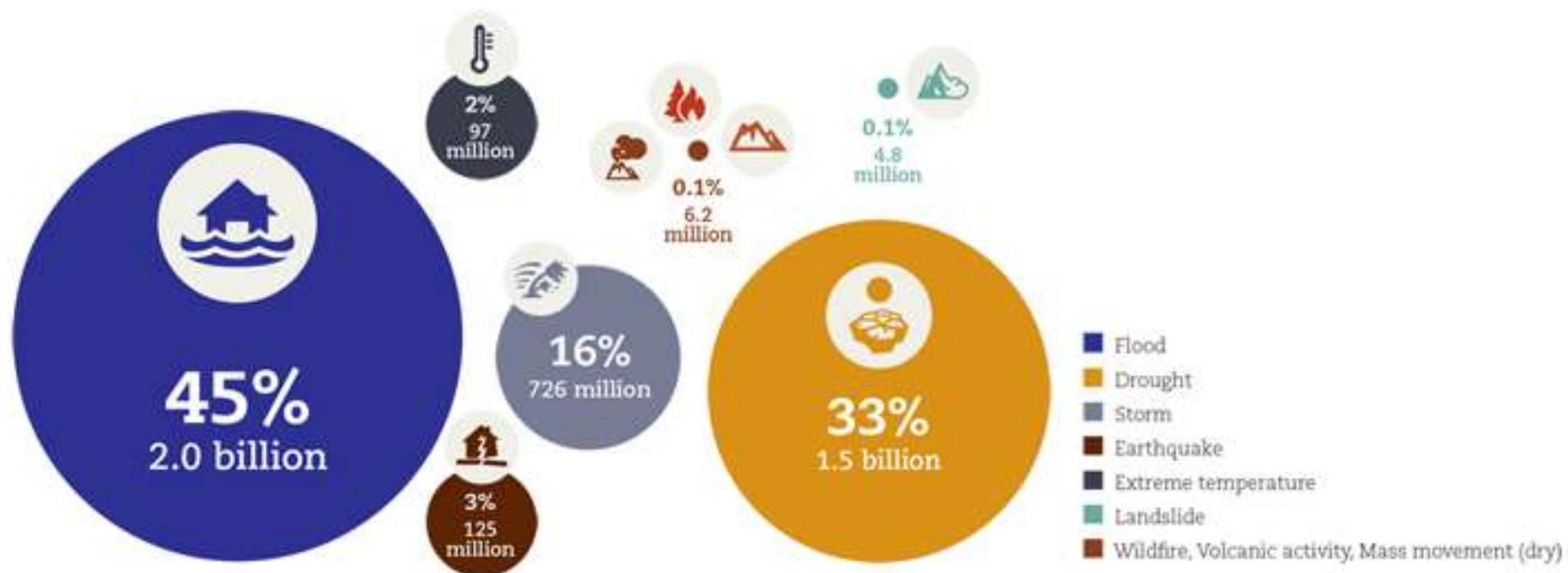
Identify Hazards & Threats

Used AWWA J100, EPA Guidance and UN Disaster Definitions to Develop List of Threats Relevant to Tampa Bay Water

<https://www.desinventar.net/definitions.html>



Number of people affected per disaster type 1998-2017



Source: CRED, UNISDR, 2018

Relevant Natural Hazards

- Animal & Insect Hazards
- Drought
- Electromagnetic Pulse
- Extreme Temperature
- Fire
- Lightning
- Microbiological
- Sink Hole

- Flooding – Local Impact
- Flooding – Regional Impact
- High Wind – Local Impact
- High Wind – Regional Impact
- Storm Surge

Potential Malevolent Acts

- Cyber Attack
- Insider Threat
- External Threat – Contamination Attack
- External Threat – Physical Attack
- Risk Due to Proximity

Relevant Other Threats

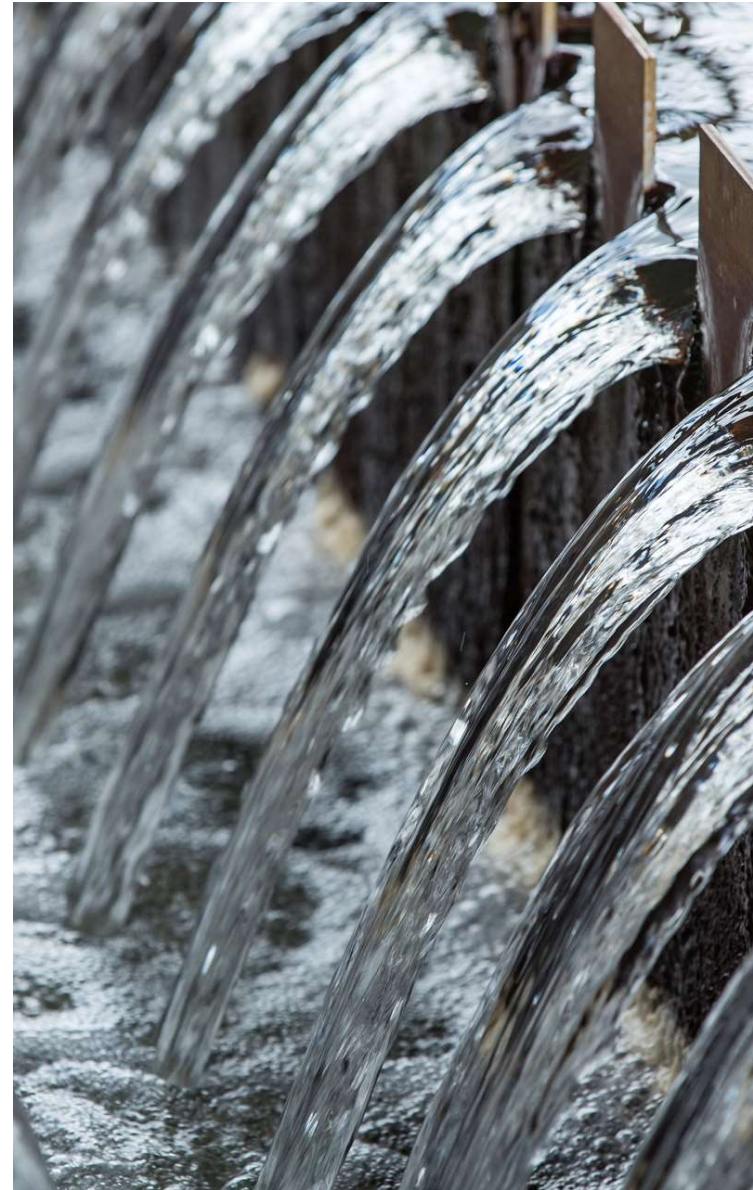
- Financial Institution Mistake or Failure
- Building Fire
- Human Error or Failure
- Impact from Potential Contamination Source
- Transportation Disruption
- Utility Failure – Communications
- Utility Failure – Power



Step 5

Identify Consequences by AWIA Subject Area:

- Source Water
- Water Production
- Computer Systems (SCADA)
- Chemical Use
- Safety & Security



Step 6

Define Scoring Criteria

Used 0 to 5 scoring criteria to assess probability, consequence and vulnerability.

Goal – Tool simple enough to be usable yet provide sufficient differentiation in risk scores for prioritizing future action.



Scoring Criteria

Probability

Probability of Threat Occurrence at Specific Facility

0 - Not probable

1 - Very Low - Unlikely in next 100 years

2 - Low - Unlikely in next 10 years

3 - Medium - Likely to occur in next 10 years

4 - High - Has occurred once in last 10 years

5 - Very High - Has occurred more than once in last 10 years

NE - Not Evaluated (Evaluated in different subject area)

NA - Not Applicable

Scoring Criteria

Consequence	Consequence (Severity of Impact)
	0 - None
	1 - Insignificant
	2 - Minor
	3 - Moderate
	4 - Major
	5 - Catastrophic
	NE - Not Evaluated
	NA - Not Applicable

Scoring Criteria

Vulnerability

Vulnerability (Strength of Controls) Score

1 - No Controls Required

2 - Significant Reduction with Controls

3 - Moderate Reduction with Controls

4 - Minimal Reduction with Controls

5 - No Controls Available

NE - Not Evaluated

NA - Not Applicable

Step 7

Complete Risk Scoring

In-house subject-matter experts assigned scores for Probability, Consequences and Vulnerability for EACH threat at EACH facility (Using a 2-Step Process)

Used standardized excel workbooks (1 per facility) to document assessment results



Risk Assessment Screening

Step 1 – Threat Identification & Analysis

Initial Risk Assessment Scoring - xxxxx(area) xxxx Facility, PWS# xxxx					
Threat Analysis			Consequence Analysis (0 - 5)		Initial Risk Score
Threat	Type	Probability (0 - 5)	Consequence 1	Consequence 2	
Natural Hazards					
Animal Incident / Insect Infestation	Natural Hazards				
Drought	Natural Hazards				
Electromagnetic Pulse / Solar Flare	Natural Hazards				
Extreme Temperature - Cold	Natural Hazards				
Extreme Temperature - Heat	Natural Hazards				
Fire - Brush or Land Fire	Natural Hazards				
Flooding - Local Impact ¹	Natural Hazards				
Flooding - Regional Impact ¹	Natural Hazards				
High Wind - Local Impact ²	Natural Hazards				
High Wind - Regional Impact ²	Natural Hazards				
Lightning	Natural Hazards				

Risk Assessment Screening

Step 2 – Vulnerability (Resilience) Analysis

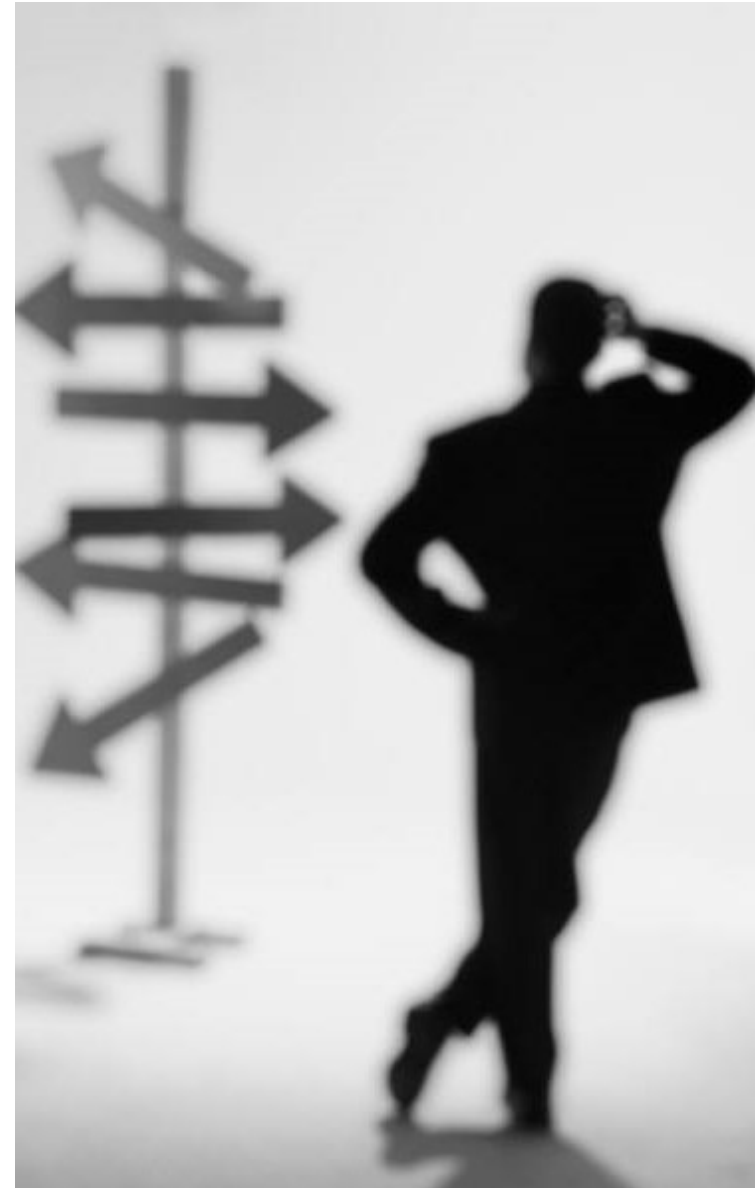
	Final Risk Scoring - xxxArea xxx xxxx Facility, PWS# xxxxx					
Initial Risk Score		Vulnerability Analysis			Final Risk Score	Risk Management Actions
Threat	Initial Risk Score	Description of Identified Vulnerabilities	Description of Existing Controls	Vulnerability Score		
Natural Hazards						
Animal Incident / Insect Infestation					0	
Drought					0	
Electromagnetic Pulse / Solar Flare					0	
Extreme Temperature - Cold					0	
Extreme Temperature - Heat					0	
Fire - Brush or Land Fire					0	
Flooding - Local Impact					0	
Flooding - Regional Impact					0	
High Wind - Local Impact					0	
High Wind - Regional Impact					0	
Lightning					0	
Microbiological					0	

Step 8

Review Assessment Results & Plan Risk Management Actions

Reviewed Results for:

- Consistency
- Completeness
- Further Action



What Did We Do With Assessment Results?

- Completed initial scoring and documented the results in facility-specific workbooks (for review and revising in future)
- Submitted initial certification forms to U.S. EPA in March 2020
- Used the assessment results to plan actions to improve resilience, conduct more detailed assessments and updated emergency plans

Questions



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