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Paving the Way: Initial Steps towards Resilience for Federal Investments through FFRMS

- *Sarada Kalikivaya, PE, PMP, CFM*

TFMA Conference – Track B3

March 9, 2023

Presenter

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20 years of H&H experience in modeling, project and program management supporting Federal / State projects

Currently leading Atkins Innovation team to support major initiatives like FFRMS, 2D modeling standards for FEMA

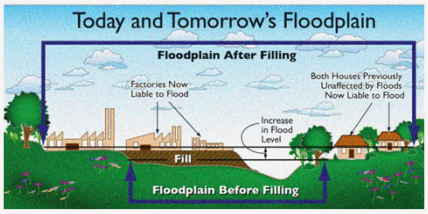
Today's Outline

- Define Federal Flood Risk Management Standard (FFRMS)
- Purpose of FFRMS
- Timeline of FFRMS
- FFRMS Datasets Approach
- Define "Critical Action"

THE WHITE HOUSE, May 20, 2021. Filed 5-24-21; 11:15 am]

FFRMS - Federal Flood Risk Management Standard

- Policy of the US to improve resilience of communities and Federal assets against the impacts of flooding
- Higher standard than FEMA's NFIP's 0.1% Annual chance standard (100 yr standard)



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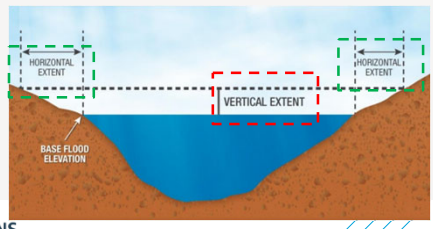
FFRMS Background

The FFRMS was issued to encourage federal agencies to consider current and future risk when taxpayer dollars are used to build or rebuild near floodplains

The FFRMS gives flexibility and requires agencies to select one of the three approaches for establishing **the flood elevation** ("how high") and corresponding **flood hazard area** ("how wide")



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FFRMS - Timeline

May 1977
EO-11988 – Floodplain Management

20 May 2021
EO -14030 - Climate-Related Financial Risk

EO-13690 - Established Federal Flood Risk Management Standard
30 Jan. 2015

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Definition - Critical Action*

Critical actions include, those which create or extend the useful life of structures or facilities such as:

- Those which produce, use, or store highly volatile, flammable, explosive, toxic or water-reactive materials;
- Hospitals and nursing homes, and housing for the elderly
- Emergency operation centers, or data storage centers which contain records or services and
- Energy generating plants, and other principal points of utility lines

*Non-critical actions are any actions that are not defined as a critical action

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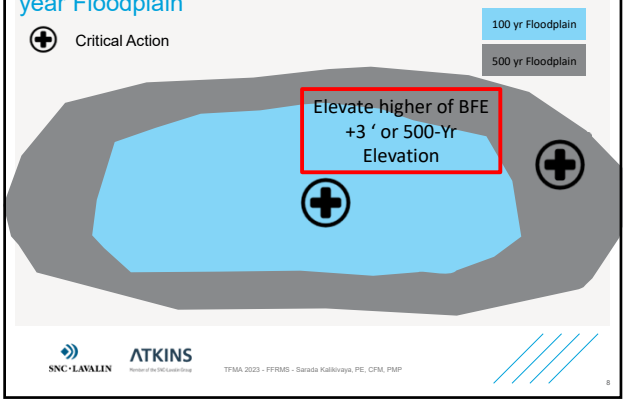
If Structure (Critical Action) is within 100-year / 500-year Floodplain



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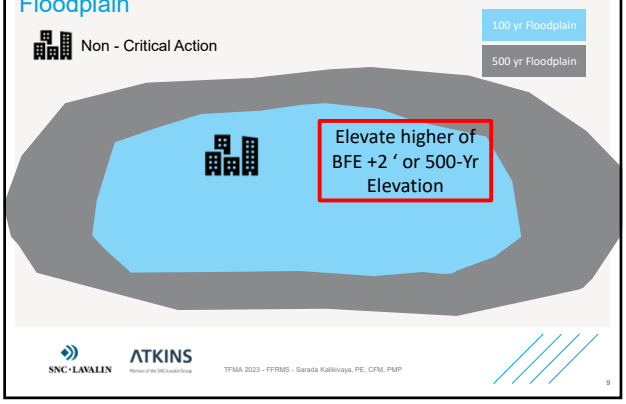
If Structure (Non - Critical Action) is within 100-year Floodplain



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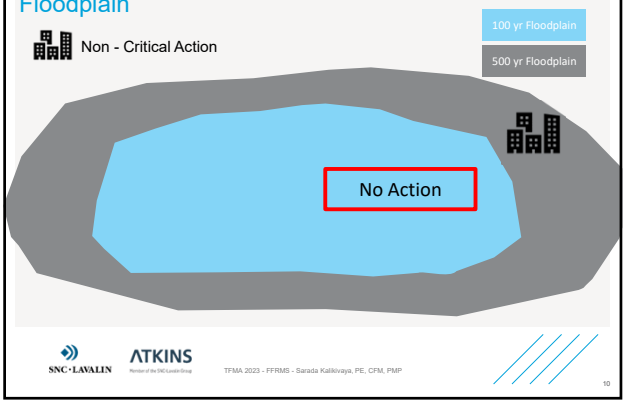
If Structure (Non - Critical Action) is within 500-year Floodplain



Available 3 Approaches to implement FFRMS

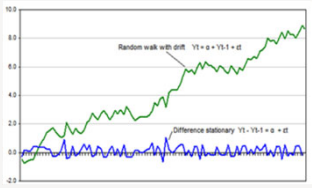
› Climate Informed Science Approach (CISA): Utilizing the best-available, actionable hydrologic and hydraulic data and methods that integrate current and future changes in flooding based on climate science.

› Freeboard Value Approach (FVA): FEMA's base flood elevation + X, (where X is 3 feet for Critical Actions and 2 feet for other actions).

› 0.2-percent-annual-chance Flood Approach (0.2PFA): 0.2 percent-annual-chance flood (also known as the 500-year flood).

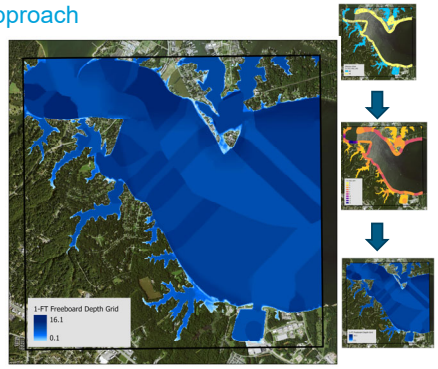
Climate Informed Sciences Approach - CISA

- Treats the future as potentially non-stationary,
- Should consider local conditions as well as global change,
- Can accommodate other factors beyond those that are climate-related, and
- Assists in bounding the decision space by considering future conditions appropriate to a given decision.

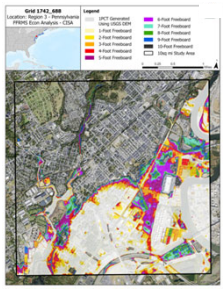


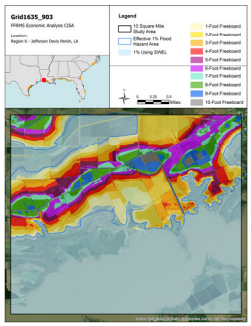
Free Board Approach

+ 1, +2, +3 Feet Freeboard Grids



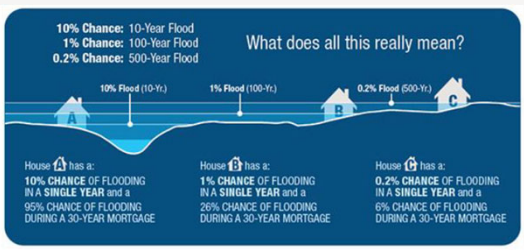
Free Board Approach Examples





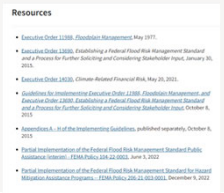
0.2-percent-annual-chance Flood Approach (0.2PFA)

Data Availability - 0.2 Percent Flood (500-year) floodplain extent, which is mapped in approximately 20% of the U.S.



FEMA Policy Documents for FFRMS Implementation

1. Partial Implementation of FFRMS for Hazard Mitigation Assistance Programs - **June 3, 2022 -** FEMA Policy 206-21-003-001
2. Partial Implementation of the FFRMS for Public Assistance - **December 9, 2022** - FEMA Policy 104-22-0003


Resources

- Executive Order 11988, *Floodplain Management*, May 1977.
- Executive Order 13690, *Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input*, January 30, 2015.
- Executive Order 14030, *Climate-Related Financial Risk*, May 20, 2021.
- *Guidelines for Implementing Executive Order 11988, Floodplain Management, and Executive Order 13690, Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input*, October 8, 2015.
- Appendices A – H of the Implementing Guidelines, published separately, October 8, 2015.
- Partial Implementation of the Federal Flood Risk Management Standard Public Assistance Interim – FEMA Policy 104-22-0003, June 3, 2022
- Partial Implementation of the Federal Flood Risk Management Standard for Hazard Mitigation Assistance Programs – FEMA Policy 206-21-003-0001, December 9, 2022

ASCE 24-14 - Design Class 4 critical action facilities include:

1.Hospitals and health care facilities

2.Fire, rescue, ambulance, and police stations and emergency vehicle garages.

3.Designated emergency shelters.

4. Emergency operation centers

5.Power generating stations and other public utility facilities

6.Critical aviation facilities such as control towers, air traffic control towers, electrical substations, fuel or water storage tanks or other structures necessary to allow continued functioning

7.Buildings that manufacture, process, handle, store, use, or dispose hazardous toxic substances

ASCE 24-14 Design Class 3 critical action facilities include:

1.Jails, correctional facilities, and detention facilities.

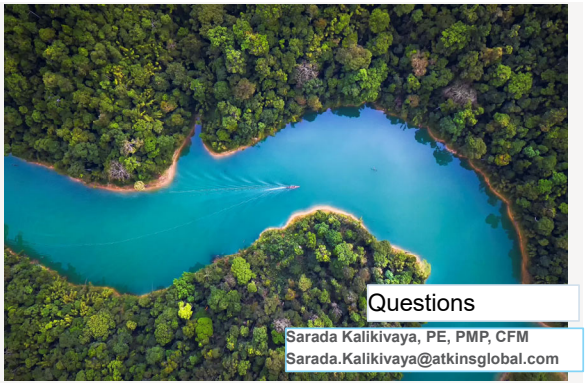
2.Care facilities

3.Preschool and childcare facilities

4.Buildings and structures associated with power generating stations, water and sewage treatment plants, telecommunication facilities, and other utilities

Key Takeaways

- ✓ FFRMS standard is higher standard than NFIP Standard
- ✓ FFRMS has 3 approaches to implement
  - ✓ Climate Informed Science Approach (CISA)
  - ✓ Free Board Value Approach (FVA)
  - ✓ 0.2 PCT Approach (0.2PCT)
- ✓ Critical Action Structures within 0.1 PCT or 0.2 PCT floodplains – need to elevate higher of BFE +3 ' or 500-Yr Elevation
- ✓ Non - Critical Action Structures within 0.1 PCT need to elevate higher of BFE +2 ' or 500-Yr Elevation



Questions

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