FFRMS & Executive Order 13690

Brian Varrella, PE, CFM
CASFM Chair
Colorado Assoc. of Stormwater and Floodplain Managers
www.casfm.org
970-342-1536
@CasfmOrg
@COriverdude
FFRMS & Executive Order 13690

Today’s Agenda

1. Start With WHY?
2. History of Exec. Orders
3. New Components of FFRMS
4. Details of FFRMS
5. 8-Step Decision-Making
6. Colorado Perspectives
7. Group Dialogue

Photo: Varrella, 2009
FFRMS & Executive Order 13690

Start With WHY?

Photo: Varrella, 2013
2010 National Disaster Costs:

- Floods = $5.1 Billion (52%)
- Tornado = $1.1 Billion (11%)
- Hail = $1.0 Billion (10%)
- Others = $2.6 Billion (27%)
- TOTALS = $9.8 Billion (100%)

Source: Bloomberg Businessweek, 2011
Start With WHY?

Recent Considerations:

• Flood losses are increasing
  – Despite the NFIP
• Climate on the brain
  – Hot topic
• Natural & Beneficial FP functions better understood
  – And more frequently incorporated into planning, design and construction
History of Executive Orders
History of Executive Orders

Exec. Order 11988:

• Signed May 24, 1977 (Pres. Carter)
• Established a general policy
• Cites specific req’s for Federal agencies
• Goals
  – Avoid adverse FP impacts
  – Avoid FP development
  – Losses from flooding affect national security
Exec. Order 13690 DRAFT:

- Drafted Jan. 28, 2015 (Pres. Obama)
- Reaffirms EO 11988 tenants
- Additions for Fed. Agencies
  - Use a higher flood elevation
  - Expand the flood hazard area
  - Use climate change in planning
- Will be amended with comments
  - MitFLG = Mitigation Framework Leadership Group
- “These guidelines are advisory” – (L.193 & 217)
  - Agencies will draft rules & regs in 1 year (L.482)
History of Executive Orders

EO 13690 Definitions:

- **Action** = any Federal activity *(unchanged)*
- **Structure** = walled & roofed building
- **Facility** = man-made/placed item that is not structure
- **Resilience** = ability to adapt, withstand & recover
- **FFRMS** = 3 approaches to compliance
  1. Climate-Informed Science Approach *(L.90)*
  2. Freeboard Approach above BFE *(L.96)*
  3. 500-yr Elevation Approach *(L.100)*
History of Executive Orders

EO 13690 Supporting Policy:

- National Environmental Policy Act (NEPA), 1969
- National Flood Insurance Act, 1968
- Flood Disaster Protection Act, 1973
- Executive Order 11988, 1977

Each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities… (L.297+)
FFRMS & Executive Order 13690

New Components of FFRMS
New Components of FFRMS

EO 13690 Goals:

- Expand flood management levels \((L.253)\)
- Add nature-based alternatives
- Resilience to impacts of climate change \((L.249)\)
- Move from “flood control” to “flood risk management”
- Move from “protection” to “resilience” \((L.259)\)

Photos: Varrella, 2013
New Components of FFRMS

EO 13690 Goals:

• Per ASFPM website (http://goo.gl/5Ggclj):
  – Increase public safety, reduce flood losses
  – Address problem of increasing flood disaster costs
  – Protect taxpayer investment in actions in flood prone areas
New Components of FFRMS

Updates Since EO 11988:

- **Nature-Based** approach for alternatives (Sec. 2[a][2])
  - Avoid FPs if possible
  - Minimize harm to FP
  - Notify the public of change
- **New Climate-Based Sciences** approach to protection
  - Currently ambiguous & intentionally vague
- **Critical Actions** recognized
  - Health, safety & welfare
New Components of FFRMS

Updates Since EO 11988:

• New definition of floodplain (not just inundated land)
  – Horizontal applicability outside the SFHA
  – Affects freeboard for critical & non-critical features

FFRMS & Executive Order 13690

Details of FFRMS

As Currently Drafted

Photo: Varrella, 2012
Details of FFRMS

General Features:

- Federal agencies = 1 year to develop rules & regs
- **Elevating structures preferred over filling land** (L.597)
- **New Construction is**… (L.603)
  - New structures & facilities
  - Existing struct.’s damaged by any hazard
  - Existing struct.’s rehabilitated, repaired, altered and with new additions

*Photo: Varrella, 2014*
Details of FFRMS

Flood Elevation & Flood Hazard Area:

1. **Climate-Informed Science Approach** *(L.748)*
   - Current & future changes in flooding
   - Preferred method *(L.799 & 1250)*

2. **Additional Freeboard Approach** *(L.754)*
   - BFE + 2.0 ft for non-critical actions
   - BFE + 3.0 ft for critical actions

3. **0.2% Annual Chance Approach** *(L.758)*

4. **Or other method from future FFRMS updates** *(L.758)*
   - Exceptions for emergency & National Security
Details of FFRMS

Climate-Informed Science Approach:

- Preferred floodplain identification method
- Uses H&H from best available data
- Future development planned
- Future conditions hydrology applied

Photo: Fish Creek in Estes Park, CO, by Terry Martin, ICON Engineering, 2013
Details of FFRMS

Additional Freeboard Approach:

- Vertical component (+2.0 ft or +3.0 ft)
- Horizontal projection for affected area

Details of FFRMS

Critical Actions:

• If flooded, adds **new dimension** to a disaster \( (L.838) \)
• Building occupants can’t move easily \( (L.841) \)
• **Essential** records, resources, & services \( (L.844) \)
• If flooded, turns local disaster into **regional disaster** or larger event \( (L.847) \)
FFRMS & Executive Order 13690

8-Step Decision-Making

Photo: Varrella, 2013
8-Step Decision-Making

Evaluates…:

- Type of agency action
- Location of action
- Impacts to the floodplain
- Impact mitigation & avoidance
8-Step Decision-Making

1. FP Impact?
   - Riverine or coastal?
   - Other hazards?
   - If available, use Actionable Climate Science to find FP
   - Future conditions H&H?
   - Critical actions?
   - Advisory BFEs

![8-Step Decision-Making Diagram](image)
8-Step Decision-Making

Advisory BFEs (ABFEs):

- Actual limits of flooding
- FEMA mapped flood hazards
- Actual limits of flooding

Photo: Google Earth, 2015

Fish Creek, Estes Park, CO
8-Step Decision-Making

2. Public Notice

- Let the public affect the outcome of decisions
- Post notice explaining proposed action
- Target stakeholders
- Target outreach mechanisms
- Integrate feedback into decision-making
3. Alternatives Outside FP?

- Do alternatives exist outside the FP?
- Alternative means to succeed elsewhere?
- Viable null option?
- Impacts to consider;
  - Natural
  - Social
  - Economic
  - Legal
4. Identify FP Impacts

- Tabulate impacts on...
  - Lives
  - Property
  - N&B Functions

- Impact types:
  - Positive / negative
  - Concentrated / dispersed
  - Short- / long-term
5. FP Impact Minimization

- Applies when proposed action results in harm
- Minimize harm, or
- Restore to previous, or
- Preserve natural environment
6. Reevaluate FP Impacts

- Final reevaluation
  - Still feasible?
  - Modifiable?
  - Option to relocate?
- Evaluate the adverse impacts of building in FP

• Explain findings to the public
  – Show tradeoff analysis
  – Post notifications
• All statements in writing

8-Step Decision-Making
8-Step Decision-Making

8. Public Response & Implementation

• Go forth and build your public liabilities in the floodplain
FFRMS & Executive Order 13690

Colorado Perspectives on FFRMS

Photo: Varrella, 2013
Colorado Perspectives on FFRMS

CO Department of Transportation (CDOT):

- Concept seems good
- Not entirely sure what it means for CDOT
  - Include highways?
  - Include salt sheds or maintenance facilities?
- Clarity in execution needed for planning soon
- Recovery actions receiving positive public feedback
  - Showing the science now † must continue
  - Must continue the goodwill & public trust
  - Rulemaking process = transparent & science-based
Colorado Perspectives on FFRMS

CO Water Conservation Board (CWCB, 2/2):

- “Generally supportive of changes”
- Recommend federal agencies align criteria
- Concerned about complexity of 8-Step Process
- Questions on Climate-Informed Science Approach
  - No trends in heavy precip. expected in Colorado
  - Equal weight for other hazards?
  - Equal weight for future conditions data?
- Supportive of freeboard concept in SFHA
  - But....
Colorado Perspectives on FFRMS

CO Water Conservation Board (CWCB, 2/2):

• Concerned about horizontal freeboard projection
  – Doesn’t acknowledge channel meander migration
  – Topo needs updating after movement
  – Costs $$$ & could jeopardize project funding
  – Current mapping inaccuracies can make it challenging to implement right now
• Need comprehensive discussion on impact mitigation
• Need examples of resilient transportation projects
• Need funding for resiliency & higher FPM standards
Colorado Perspectives on FFRMS

Assoc. of State FP Managers (ASFPM, 1/3):

- Generally supportive
- EO 11988 language relatively unchanged
  - “Federal Action” definition unchanged
- Climate-Informed Science = national discussion
- Biggest changes
  - Added Climate-Informed Science approach
  - Added horizontal area outside SFHA
  - Added nature-based alternatives focus
Colorado Perspectives on FFRMS

Assoc. of State FP Managers (ASFPM, 2/3):

- Federal agencies have flexibility in implementation
  - Rulemaking is typically pragmatic & flexible
  - Opens the door to innovation
    - i.e.; VA does not provide loans to new houses on repetitive loss sites based on EO 11988
    - i.e.; FHWA has different standards for different roadways based on EO 11988
- US Army Corps of Engineers may lead climate science
  - Already part of their planning process
  - Should be a good bellweather for other agencies
Colorado Perspectives on FFRMS

Assoc. of State FP Managers (ASFPM, 3/3):

• CDOT & CWCB already showing leadership
  – i.e.; erosion zones & lateral migration considerations
  – Good example for FHWA
• Recommend commenting now
• Recommend getting involved in rulemaking process
  – That is the time for substantive input
  – Helps get states/locals on better page with Feds
• ASFPM still encourages higher safety standards
Special Thanks to the Following Individuals for Their Insight, Wisdom & Dedication:

- Holly Piza, PE, CFM UDFCD, Sr. Project Engineer
- Jamie Prochno, PE, CFM CWCB, NFIP Coordinator
- Steven Griffin, PE, CFM CDOT, Region 4 Hydraulics
- Chad Berginnis, CFM ASFPM, Executive Director
- Larry Larson, CFM ASFPM, Exec. Dir. Emeritus
FFRMS & Executive Order 13690

Thanks for Listening

Questions?

Brian Varrella, PE, CFM
casfm@casfm.org
970-342-1536
http://www.linkedin.com/in/brianvarrella/
@COriverdude
@CasfmOrg