Coordinated Needs Management Strategy

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Presentation Overview

• CNMS Basics
• Database Components
• Validation Process
• Future of CNMS
• CNMS Demo
What is CNMS?

• CNMS is a FEMA initiative to update the way FEMA organizes, stores, and analyzes flood hazard mapping needs information for communities.

• CNMS is a method to enter and update an inventory of floodplain studies in a geospatial environment.
  ▫ FEMA’s CNMS Database User’s Guide and Database lays out the structure and guidelines for CNMS.

• CNMS assesses validity of current studies using Physical environment, Climate patterns, and Engineering (PCE) factors. (17 Critical and Secondary Elements)

• Tool used to report New, Valid, or Updated Engineering (NVUE) statistics.

• Tool for performing Risk MAP (Risk Mapping, Assessment, and Planning) Discovery and Scoping tasks.
Why CNMS?

- Under Title 42 of the Code of Federal Regulations Chapter III Section 4101(e) FEMA is to revise and update all floodplain areas and flood risk zones based on an analysis of all natural hazards affecting flood risks on a five-year cycle.

- Due to the changing nature of the landscape from influences of physical, engineering, and climatological processes, timely updates to SFHA info on FIRMs become necessary to maintain accuracy and relevance.
CNMS Partners:
Main Geodatabase Components:

- **S_Studies_Ln** (Lines)
  - Represent the centerlines of flooding sources.
  - Can also include any requested study for a stream that is unmapped.

- **S_Studies_Ar** (Polygons)
  - Detailed studies
  - Approximate studies that are model-based.

- **S_Requests_Ar** or **S_Requests_Pt**
  - Community requests for studies
  - Comments about existing studies
Polylines
Polygons
Useful Information in the feature class attribute tables:

<table>
<thead>
<tr>
<th>Polylines</th>
<th>Polygons</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Water name</td>
<td>• Water name</td>
</tr>
<tr>
<td>• Stream Miles</td>
<td>• Date of Study</td>
</tr>
<tr>
<td>• Validation Status of stream (Valid, Invalid, or Unknown)</td>
<td>• Hydrologic and Hydraulic methods/models used</td>
</tr>
<tr>
<td>• Flood Zone</td>
<td>• Each Critical and Secondary Element’s Evaluation</td>
</tr>
<tr>
<td>• Reason the stream is ‘Invalid’</td>
<td>• Validation Status (Valid, Invalid, or Unknown)</td>
</tr>
</tbody>
</table>
Validation Process

- For Detailed and Model-Based Studies (Polygons), each study goes through 17 checks to determine validity:
  - Of these 17 checks, there are 7 Critical and 10 Secondary Elements:
    - Invalid Study = 1 Critical or 4 or more Secondary deficiencies
    - Valid Study = 0 Critical and <4 Secondary deficiencies

- If the study reach is non-model based (most Zone A’s), then the validation status is “Unknown” and there will be no polygon for the polyline.
7 Critical Elements:

- **C1_GAGE** – Change in gage record. Major change in gage record since effective analysis that includes major flood events?

- **C2_DISCH** – Change in Discharge. Do the updated and effective peak discharges differ significantly based on confidence limits criteria in FEMA’s Guidelines and Specifications for Flood Hazard Mapping Partners?

- **C3_MODEL** – Model methodology. Model methodology no longer appropriate based on Guidelines and Specifications for Flood Hazard Mapping Partners?

- **C4_FCSTR** - Hydraulic Change. Addition/removal of a major flood control structure?

- **C5_CHANN** - Channel Reconfiguration. Current channel reconfiguration outside effective SFHA?

- **C6_HSTR** - Hydraulic Change 2. More than 5 new or removed hydraulic structures (bridge/culvert) that impact BFEs?

- **C7_SCOUR** - Channel Area Change. Significant channel fill or scour?

If one or more elements are true then Flood Hazard Information is ‘Invalid’
10 Secondary Elements:

- **S1_REGEQ - Regression Equation.** Use of rural regression equations in urbanized areas?
- **S2_REPLO - Repetitive Loss.** Repetitive losses outside the SFHA?
- **S3_IMPAR - Impervious Area.** Increase in impervious area in the sub-basin of more than 50 percent (i.e., 10 percent to 15 percent, 20 percent to 30 percent, etc.)?
- **S4_HSTR - Hydraulic Structure.** More than 1 and less than 5 new or removed hydraulic structures (bridge/culvert) impacting BFEs?
- **S5_CHIMP - Channel Improvements.** Channel improvements / Shoreline changes?
- **S6_TOPO - Topography Data.** Availability of better topography/bathymetry?
- **S7_VEGLU - Vegetation or Land Use.** Changes to vegetation or land use?
- **S8_DUNE - Coastal Dune.** Failure to identify primary frontal dune in coastal areas?
- **S9_HWMS - High Water Mark.** Significant storms with High Water Marks.
- **S10_REGEQ - Regression Equation.** New regression equations available?

If four or more elements are true then Flood Hazard Information is ‘Invalid’
CNMS and Beyond....

- CNMS is a ‘Living Database’
  - Continuous new input and updates whenever there are new or revised studies.
  - ‘Valid’ streams will get reassessed every 5 years.
  - ‘Invalid’ streams will get prioritized for potential funding.

- Stream Inventory (polylines) will be used for regional and national NVUE (New Validated Updated Engineering) reporting.

- CNMS will provide support to data-driven planning efforts and will be used in prioritization for funding of new hydrologic and hydraulic watershed projects.

- Watershed Discovery Meetings will provide input for CNMS community requests (Requests Polygons and Points) and help prioritize studies in the watershed.

- The CNMS geodatabase will eventually be available online to the public.
CNMS Lifecycle:

- Existing Study Detailed or Model Based
  - Validation 1C or 4S?
    - NO: Store as VALID
    - YES: Store as INVALID
- Existing Study Approximate Non-Model Based
  - Store as UNKNOWN
- No existing Study
  - Justify as Floodprone
  - Store as a Request

- Valid Studies are Re-evaluated every 5 years
- UPDATE CNMS
- FEMA HQ Allocation of Resources to Regions
- Allocate Funding for Selected Needs and Requests
- Review and Prioritize (Needs and Requests)
- FIS Update
- Develop Final Scope of Work
  - Add new requests if necessary
  - UPDATE CNMS
  - UPDATE CNMS
CNMS Sneak Peak
Questions?

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