Natural Floodplain Functions Alliance (NFFA) BI MONTHLY WEBINAR SERIES PRESENTS:
Comprehensive Local Planning & Programs: Charlotte-Mecklenburg’s Approach

Tim Trautman, PE, CFM
Engineering & Mitigation Program Mgr., Charlotte-Mecklenburg Stormwater Svcs.

December 6, 2016
2:00pm – 3:30pm CT

AGENDA

1. NFFA Federal Updates (15 min):
   ▪ WRDA (Larry Larson)
2. Quarterly Webinar Topic (45 min):
   ▪ Comprehensive Local Planning & Programs: Charlotte-Mecklenburg’s Approach (Tim Trautman)
3. Webinar Q&A
NFFA Federal Update: Water Resource Development Act (WRDA)

Larry Larson
Sr. Policy Advisor
Association of State Floodplain Managers
larry@floods.org

BIMONTHLY WEBINAR SERIES PRESENTS:
Comprehensive Local Planning & Programs: Charlotte-Mecklenburg’s Approach

Tim Trautman, PE, CFM
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Charlotte-Mecklenburg Stormwater Svcs.

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Learning Objectives

- Key components to flood resilience
- How to gain political support
- Ideas for local initiatives & funding
- How to create Risk Reduction Plans
- Ways to demonstrate results

✓ Shared Learning discussion questions
Charlotte-Mecklenburg

- Mission: Protect Life and Property and restore the natural & beneficial floodplain functions
- 1993 Storm water utility
- FEMA Floodplains
- 1999 Guidance Document

Community Vision

Floodplains are meant to flood

Value to Community:
- Reduce Loss of Life and Property
- Community Resilience
- Public Health & Safety

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Tim Trautman, 980-314-3224, tim.trautman@mecklenburgcountync.gov
www.mecklenburgcountync.gov
Shared Learning

- Does your community have a vision for the function of its floodplains?
- What would your vision be?

Floodplain Mapping Initiatives
Role of Local Government?

- Public Safety
- Public Health
- Protecting Life & Property

Floodplain Mapping Uses

- Flood Insurance
- Regulatory
- Risk Communications
- Mitigation Plans
- Community Resilience

Local Investments in public safety and long term sustainability
Floodplain Maps - History

- First Maps Dated 1978 – 2004
- 1% annual chance Flood
- Floodplain Maps - History
- Map Updates 2004
- Insurance Maps available online with additional property information

Future Floodplains

- Philosophy: Floodplain meant to flood
- Upland land for flood storage in new construction
- Account for future hydrologic changes to 1% event

Lower future risk & Lower future flood insurance rates when maps increase!
Shared Learning

- What does your community do to account for future changes to floodplains?
- How can flood risk information be better communicated to citizens?
**Flood Mitigation Program**

- **FEMA Mitigation Grants** (Buyouts, Elevation) 1999
- **Local Risk-Based Buyouts** 2012
- **Flood-proofing building retrofits** 2015

**Comprehensive Local Planning & Programs**

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**Protecting Life & Property**

**Since 1999**

- Removed from Floodplain:
  - Over 320 buildings/homes
  - Over 550 families
- Floodplain restored:
  - 150 acres
- Actual Damage Avoided:
  - 100’s buildings
  - ~$25M in losses avoided
- No Disaster funding

**Comprehensive Local Planning & Programs**
Enhance Quality of Life

Since 1996
- Creek Use Policy
- CIP Projects
  - Over 20 Floodplain miles
  - Over 550 families
- Development Ordinances
  - Buffers
  - LID & Post-Construction Controls
- Stream Walks
  - 280 miles per year

Residential Neighborhoods
RetroFIT Program

- Incentivize private mitigation
- Floodplain property owners
- Financial & technical assistance
- Direct grant program
- FY16 - Pilot Year $250,000

RetroFIT Candidates

<table>
<thead>
<tr>
<th>Floodplain Buildings</th>
<th>2500</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acquisition</td>
<td>1250</td>
</tr>
<tr>
<td>Service Equipment</td>
<td></td>
</tr>
<tr>
<td>Dewatering</td>
<td>1350</td>
</tr>
<tr>
<td>Relocation</td>
<td>955</td>
</tr>
<tr>
<td>Wet/Dry Floodproofing</td>
<td>1000</td>
</tr>
<tr>
<td>Elevation</td>
<td>825</td>
</tr>
<tr>
<td>Abandon Basement</td>
<td>375</td>
</tr>
</tbody>
</table>

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Shared Learning

• How can you incentivize and implement mitigation locally?
• What are other community benefits to natural floodplain functions?
Purpose of the Plan

- Recommend specific flood mitigation techniques at a building level
- Assist in planning and prioritizing future mitigation projects
- Use a dynamic and holistic, risk-based approach

Plan Concept

- Flood Risk Property Score
  - Flood Property Damage (Impacts)
  - Storm Probability (Frequency)
  - Structure Location

- Risk Reduction Recommendations
  - Evaluate all flood mitigation techniques
  - Four recommendation categories

- Mitigation Priority Scores
  - Accounts for other community benefits & factors not included in flood risk
  - Combined with Risk Score to prioritize:
    - Properties
    - Projects (groups)

Risk Assessment & Risk Reduction Plan

Comprehensive Local Planning & Programs
Flood Risk Example

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Impact-based Factors</th>
<th>Storm Event</th>
<th>Points*</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Flooding above the lowest finished floor of a building</td>
<td>N/A</td>
<td>0</td>
</tr>
<tr>
<td>B</td>
<td>Flooding of electrical and/or mechanical equipment</td>
<td>5-20Y</td>
<td>48</td>
</tr>
<tr>
<td>C</td>
<td>Flood water is touching a portion of the building</td>
<td>10-20Y</td>
<td>100</td>
</tr>
<tr>
<td>D</td>
<td>Property is completely surrounded by flood water</td>
<td>25-50Y</td>
<td>44</td>
</tr>
<tr>
<td>E</td>
<td>Structure is completely surrounded by flood water</td>
<td>25-50Y</td>
<td>20</td>
</tr>
<tr>
<td>F</td>
<td>Structure is completely surrounded by flood water and is a critical facility</td>
<td>N/A</td>
<td>0</td>
</tr>
<tr>
<td>G</td>
<td>Structure is completely surrounded by flood water and is multi-family residential</td>
<td>N/A</td>
<td>0</td>
</tr>
<tr>
<td>H</td>
<td>Flood water touching building with structural damage as a result of cumulative flooding</td>
<td>N/A</td>
<td>0</td>
</tr>
<tr>
<td>I</td>
<td>Flooding of significant exterior property improvements</td>
<td>10-20Y</td>
<td>60</td>
</tr>
<tr>
<td>J</td>
<td>Flooding of moderate exterior property improvements</td>
<td>N/A</td>
<td>0</td>
</tr>
<tr>
<td>K</td>
<td>Flooding around areas where single-family residential vehicles are typically parked</td>
<td>10-20Y</td>
<td>60</td>
</tr>
<tr>
<td>L</td>
<td>Flooding of my yard (any portion of parcel)</td>
<td>2-5Y</td>
<td>15</td>
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</tbody>
</table>

Total Impact Based Score = 347 x 1.3 = 451

Risk Reduction Recommendations

- **Reclamation**: ICB, Highly Effective, 2.430/14
- **Repurpose**: Further Evaluation Needed
- **Relocation**: Further Evaluation Needed
- **Buyout Re-Sale**: Highly Effective, 4.115/31
- **Elevation**: Highly Effective, 0.850/15
- **Fill Basement**: Highly Effective
- **Dry Floodproofing**: Further Evaluation Needed
- **Wet Floodproofing**: Net Recommended
- **Audible Flood Warning**: Highly Effective
- **Storm Water Detention Facilities**: Unknown
Flood Mitigation Priority Score

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Priority Factors</th>
<th>Mitigation Techniques That Apply*</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Life and human safety</td>
<td>1, 3, 4</td>
<td>150.00</td>
</tr>
<tr>
<td>2.</td>
<td>Cost Effectiveness (Benefit-Cost Ratio)</td>
<td>1, 3, 4, 5, 7, 8</td>
<td>0.00</td>
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<tr>
<td>3.</td>
<td>Proximity to other mitigation projects</td>
<td>1, 2, 3, 4, 5</td>
<td>50.00</td>
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<tr>
<td>4.</td>
<td>Property added to flood zone</td>
<td>Any</td>
<td>0.00</td>
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<tr>
<td>5.</td>
<td>Repetitive loss structure</td>
<td>Any</td>
<td>150.00</td>
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<tr>
<td>6.</td>
<td>Property adjacent to publicly owned land</td>
<td>1, 3, 4</td>
<td>50.00</td>
</tr>
<tr>
<td>7.</td>
<td>Property located on five-year planned greenway trail</td>
<td>1, 3, 4</td>
<td>0.00</td>
</tr>
<tr>
<td>8.</td>
<td>Property located on five-year planned sanitary sewer route</td>
<td>1, 3, 4</td>
<td>0.00</td>
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<tr>
<td>9.</td>
<td>Property intersects with major system water quality buffer (Buffer that is ≥ 100')</td>
<td>1, 3</td>
<td>0.00</td>
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<tr>
<td>10.</td>
<td>Property located in an Environmental Focus Area</td>
<td>1, 3</td>
<td>0.00</td>
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<td>11.</td>
<td>Property covered by NFIP policy</td>
<td>Any</td>
<td>30.00</td>
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<tr>
<td>12.</td>
<td>Historic preservation and cultural asset protection</td>
<td>3, 5, 7, 8</td>
<td>0.00</td>
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<tr>
<td>13.</td>
<td>Other</td>
<td>Any</td>
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<tr>
<td><strong>Total Flood Mitigation Priority Score</strong></td>
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<td><strong>430</strong></td>
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Measuring Risk Reduction

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<th>Fiscal Year</th>
<th>Total Cost</th>
<th>Flood Score Mitigated</th>
<th>Average Cost per Year</th>
<th>Average Annual Points Mitigated</th>
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Shared Learning

• How can you make your mitigation planning more useful?
• How should communities plan for acceptable “residual risk”?
Floodplain Risk Profile

Charlotte-Mecklenburg, NC

Potential future buyouts
~750 buildings

Residual Risk and Floodproofing

Total Risk Pool Points (Thousands)

- 0 to $250K: 52%
- $250K - $500K: 22%
- $500K - $1,000K: 15%
- $1,000K or more: 49%

Mitigation Cost

- <$250/Point: 19%
- $250 - $500/Point: 17%
- $500 - $1,000/Point: 15%
- $1,000/Point or more: 49%

42% reduction

Conclusions:

1. Have a community vision
2. Resilient Funding = Resilient Community
3. Show the benefits & demonstrate results

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Thanks to Our Presenter:

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NFFA Webinars

Natural Floodplain Functions Alliance (NFFA) Webinars  
http://www.aswm.org/watersheds/natural-floodplain-function-alliance  
-OR-  

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