

Potomac River Waterfront  
**Flood Mitigation Study**

Public Meeting  
March 16, 2010

Department of Transportation and  
Environmental Services

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**Purpose**

**Purpose of the Study:**  
Identify, evaluate and recommend flood mitigation solutions along the Potomac River Waterfront

**Purpose of this Meeting:**  
To provide an overview of recommended flood mitigation measures and provide information on measures to be implemented by private property owners

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**Study Area**

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**Public Input Themes**

- **Criteria for selecting solutions**
  - ▶ No negative impacts on aesthetics/water viewshed
  - ▶ Reduce business interruptions
  - ▶ Reduce frequency of minor (nuisance) flooding
- **Specific input provided on potential solutions**

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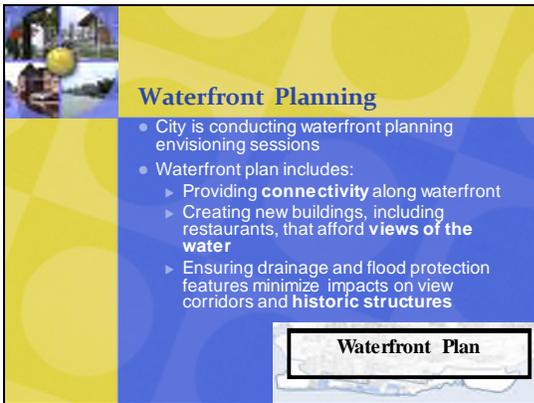
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**Waterfront Planning**

- City is conducting waterfront planning envisioning sessions
- Waterfront plan includes:
  - ▶ Providing **connectivity** along waterfront
  - ▶ Creating new buildings, including restaurants, that afford **views of the water**
  - ▶ Ensuring drainage and flood protection features minimize impacts on view corridors and **historic structures**

**Waterfront Plan**

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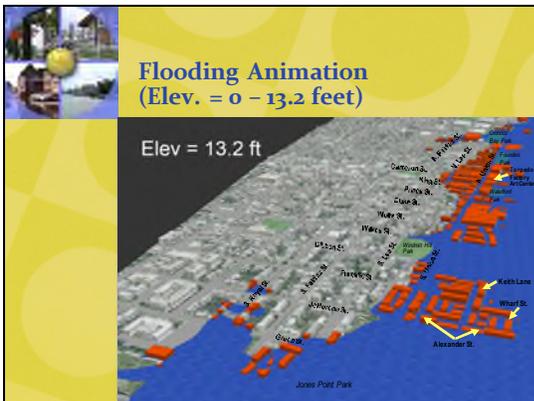
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**Flooding Animation**  
(Elev. = 0 - 13.2 feet)

Elev = 13.2 ft




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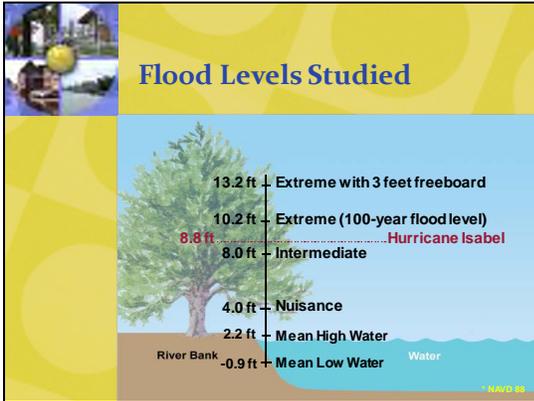
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- Study Process**
- Brainstorming sessions with public to identify wide range of potential solutions
  - Solutions were evaluated based multiple criteria:
    - Floodplain management
    - Aesthetic and cultural resources
    - Economic and environmental impacts
    - Cost and feasibility
  - Narrowed field to 9 potential solutions

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### Study Process

- Evaluated potential solutions using benefit-cost ratio
- **Benefits: avoidance of costs**
  - Property damage (structure and content)
  - Lost revenues
  - Displacement costs
- **Costs: implementation and operation**
  - Design and permitting
  - Construction
  - Property acquisition
  - Operation and maintenance

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### Study Process

- **BCR = Benefits ÷ Costs**
  - At least 1 for a project to be considered feasible
  - A useful tool, but must be applied with judgment
- **Other factors considered include potential impacts to**
  - Aesthetics
  - Business operations
  - Natural resources
  - Historic and archeological

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### Recommended Flood Mitigation Solutions

- Dry floodproofing
- Internal relocation of supplies
- Elevated pedestrian walkway (floodwall)
- Increase road and inlet elevations
- Improve floodplain ordinance
- Enhance sandbag program

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**Flood Mitigation Solutions  
Not Recommended**

- Property acquisition
- Elevation of structures
- Floodwalls, including Jones Point berm
- Alternate temporary flood barriers (in lieu of sandbags)

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**Recommended Solutions  
Dry Floodproofing**

- Physical barrier to prevent floodwaters from entering building
- Protects contents and structure
- Can be passive or active
- Limited to water depths of 3 feet or less
- Not applicable for basements
- Impacts of natural resources are limited
- Possible impact on historical resources

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**Dry Floodproofing  
Floodgate**



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Dry Floodproofing  
Elevation of First Floor

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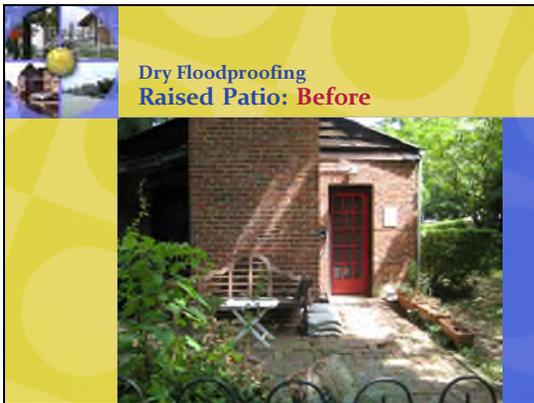
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Dry Floodproofing  
Raised Patio: **Before**

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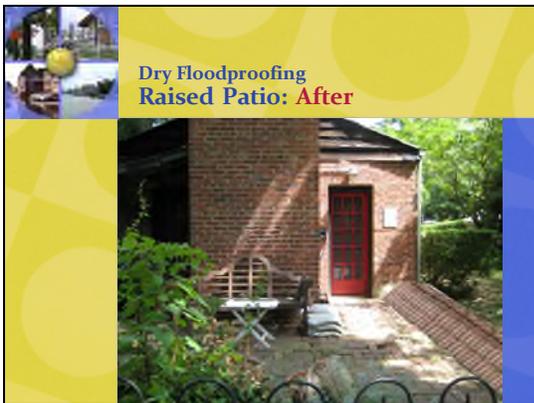
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Dry Floodproofing  
Raised Patio: **After**

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### Internal Relocation of Supplies



- Relocate internal supplies, products/ goods, and utilities above flooding depths
- Reduces damage to contents
- Does not reduce structure damage

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### Internal Relocation Recommendations

- Internal elevation of goods and supplies recommended for large commercial buildings
- Recommend public outreach activities to inform business owners of potential activities they can implement

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### Elevated Pedestrian Walkway (Floodwall)



Walkway in Sault Sainte Marie, Ontario, Canada

- Build a pedestrian boardwalk that will act as an engineered floodwall
- Would be integrated with the waterfront plan

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### Elevated Pedestrian Walkway



- Potential alignment based on 10-year flooding protection
- Extends from Duke Street to King Street
- Additional section extends from Queen Street to Thompsons Alley

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### Elevated Pedestrian Walkway Before



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### Elevated Pedestrian Walkway After



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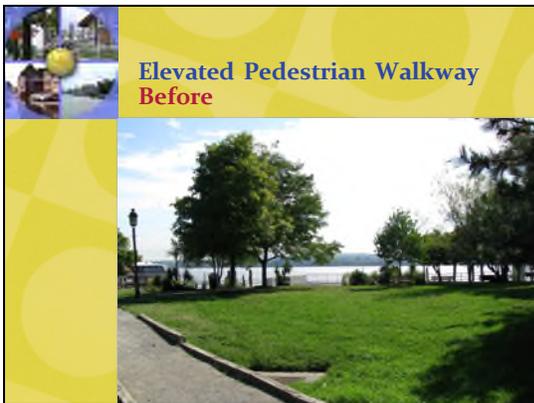
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**Elevated Pedestrian Walkway**  
**After**

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**Elevated Pedestrian Walkway**

**Inundation at The Strand with Flood Elevation of 6 feet**

**Inundation at The Strand with protection to elevation 6 feet**

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**Elevated Pedestrian Walkway**  
**Design Opportunities**

- Critical feature is protection to elevation 6.0 feet NAVD88 (10-year event)
- Between nuisance and intermediate flood levels
- Optimal elevation for BCR and constructability
- Incorporate this elevation into landscape and building design
- Incorporate into Waterfront Plan

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**Increase Inlet and Road Elevations - Recommendations**

- Recommended as an interim flood mitigation measure for King Street area
- **Impacts and limitations:**
  - ▶ Minor impacts during construction
  - ▶ Adjacent curbs and building entrances limit elevation
  - ▶ Protects buildings to less than nuisance flood

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**Improve Floodplain and Zoning Ordinance Recommendations**

- **Goal: Reduce future flooding impacts**
- Based on improving the City's Community Rating System (CRS) rating
- Six potential ordinance changes recommended

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**Temporary Flood Measure Program Improvements**




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**Temporary Flood Measures  
Sandbag Program**

- **Recommend maintaining program**
- **Implement following enhancements:**
  - ▶ Expand sandbag service areas to include all floodprone areas
  - ▶ Document guidelines for determining when to initiate sandbag distribution
  - ▶ Post information for sandbag policy on city website

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**Summary of Recommendations**

- **Floodproofing – for all applicable structures**
- **Relocate internal supplies – for many commercial structures**
- **Elevated pedestrian walkway (floodwall)**
- **Zoning ordinance modifications**
- **Sandbag program enhancements**

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**Next Steps**

- **Study available at:**  
Alexandriava.gov/Waterfront
- **Send comments to:**  
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301 King St, Room 3200  
Alexandria, VA 22314  
[Craig.Perl@alexandriava.gov](mailto:Craig.Perl@alexandriava.gov)  
703.746.4057

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