Recommendations of the Passaic River Flood Commission – a Model for New Jersey and National Mitigation Efforts

John A. Miller, P.E., CFM, CSM
New Jersey Association for Floodplain Management
Legislative Committee Chair

Associate; Water Resources Engineer
Princeton Hydro, LLC
In response to the mid-March 2010 flooding events in the Passaic River Basin, Governor Chris Christie formed a Commission via Executive Order No. 23, April 22, 2010.

The Commission consisted of seven members charged with the task of analyzing the conditions and proposing policy and actions to address longstanding, chronic flooding in the Passaic River Basin.

The Commission reported to the Governor after eight months with a list of recommendations.
Advisory Commission Members

- **Chair:** NJDEP Commissioner, the Honorable Bob Martin

- **3 Elected Officials from Passaic Basin:**
  - Assemblyman, the Honorable Scott Rumana
  - Pompton Lakes Mayor, the Honorable Kathleen Cole
  - Little Falls Mayor, the Honorable Mike DeFrancisci

- **State Police Superintendent** Colonel Rick Fuentes
  - Represented by Captain Christopher Shultz and SFC Robert Little

- **2 Technical Experts:**
  - Robert Prezant, PhD, Dean of Math and Science, Montclair University
  - John A. Miller, P.E., CFM, CSM, Water Resources Engineer, Princeton Hydro, LLC
Role with the Commission

- John A. Miller, P.E., CFM, CSM:
  - Water Resources Engineer; Associate at Princeton Hydro
  - Former technical member of the Delaware River Flood Mitigation Task Force

- Chair of NJAFM Legislative Committee
  - NJAFM wanted representation on the Commission

- Former Region II Director of ASFPM
  - Support provided by ASFPM
The Passaic Basin: One of the Most Floodprone Regions in NJ; and nation

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>1</td>
<td>Toms River ($535.3)</td>
</tr>
<tr>
<td>2</td>
<td>Brick ($253.1)</td>
</tr>
<tr>
<td>3</td>
<td>Stafford ($234.9)</td>
</tr>
<tr>
<td>4</td>
<td>Long Beach ($216.0)</td>
</tr>
<tr>
<td>8</td>
<td>Wayne ($119.8)</td>
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</tbody>
</table>

**National Ranking**

Total Flood Insurance Policies In Force/Total Losses (1978-2014)

<table>
<thead>
<tr>
<th>Rank</th>
<th>State</th>
<th>Policies In Force</th>
<th>Total Losses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>FL</td>
<td>2,004,347</td>
<td>244,288</td>
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<tr>
<td>2</td>
<td>TX</td>
<td>607,576</td>
<td>241,890</td>
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<td>3</td>
<td>LA</td>
<td>473,160</td>
<td>234,988</td>
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<td>4</td>
<td>CA</td>
<td>239,218</td>
<td>188,016</td>
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<tr>
<td>5</td>
<td>NJ</td>
<td>239,595</td>
<td>163,742</td>
</tr>
</tbody>
</table>

NJ #3 in claims paid dollars; only $16 million behind TX

Passaic Basin
Passaic Basin

Notable Towns:
- Paterson
- Little Falls
- Wayne
- Lincoln Park
- Pompton Lakes

Major Rivers:
- Passaic
- Pompton
- Ramapo
- Pequannock
Passaic Basin Facts

- The densely populated Passaic River Basin has experienced severe flooding events throughout the twentieth and into the twenty-first century.

- According to the USACE, the Passaic River Basin has accumulated over $6 billion in flood losses since 1900 (would be more now).

- The Commission is not a new policy approach. Similar task forces and commissions, as far back as 1903, have been created to address flooding in the Passaic Basin.
Advisory Commission Tasks

- Executive Order 23 states, “The Commission shall be responsible for identifying both short-term and long-term recommendations to enhance flood mitigation efforts.”

- There are a number of issues included in the EO, from elevating homes to enhancing public involvement. The Commission deliberated on many of these policy issues.

- One of the EO directive was to reevaluate the USACE Main Stem Comprehensive Plan; this included a tunnel.
Political Context of Main Stem Project

- Between the late 1980s - early 1990s, the project reached its peak in federal and statewide political support.
- Governor Florio (1990-1994) was indifferent to the diversion tunnel, stating he would base his decision on EIS Report findings.
- In late 1993, local and statewide political support started to decline, with Governor Whitman, then candidate, vocal in opposition.
- By 1995, the tunnel was considered a dying project; deemed politically, financially, and environmentally unfeasible.
USACE Main Stem Project Parts

- Diversion tunnel
- Levees and Floodwalls
- Channelization
- Natural Flood Storage
- Property buyouts
- Flood Warning System

- USACE design effort cost $50 million on preliminary studies from 1984-1995.
“Monumental Project”

Maximum inside diameter of 42-feet, requiring a 45-foot Tunnel Boring Machine (TBM).

Estimated time to complete project: 15 years.

Note: Photos from 47’ dia TBM
Tunnel Boring Machine

Note: Passaic to be 45’ dia TBM
USACE Main Stem Project
USACE Main Stem Project - Tunnel

Pompton Main Inlet

Vent Shaft (typ.)

Work Shaft (typ.)

Discharge Riser @ Newark Bay

Pump Station

42’ dia tunnel

20+ miles

400’
Without question, the Passaic Basin is vulnerable to flooding, but is flooding the actual problem?

Image Source: United States Geological Survey (USGS), 2010
Forest and wetland habitats within the 100 year floodplain converted to urban use between 1986 and 2007.
Hot Spots

- Based on dated FEMA RL and SRL data

- Blue areas represent RL and SRL “Hot Spots”

- Image includes parts of Wayne, Lincoln Park, Fairfield and Little Falls
The Real Problem Facing the Passaic River Basin

“Floods are acts of god, but flood losses are largely acts of man”
- Gilbert Fowler White, “Grand Father” of Floodplain Management

- For many decades, interests in the Passaic River Basin have engaged in short-sighted land use and development practices, thus increasing vulnerability to flood losses.

- **Bottom Line:** The Passaic River Basin has a land-use problem, not a flooding problem. The diversion tunnel is a panacea floodplain management approach and its magnitude as commensurate with the vulnerability to flooding.

- Overall, as with most floodplain management solutions, sacrifices will need to be made in order to reach a desirable outcome.
Recommendations
issued February 10, 2011

1. Federal and State Floodway and Floodplain Property Acquisitions
2. Structure Elevations in Floodplains
3. Federal Open Space Acquisition and Preservation
4. Improved Operation of the Pompton Lakes Dam Floodgates
5. Desnagging and Shoal Dredging
6. Feeder Dam Removal
7. State Adoption of National Flood Insurance Program Regulations
8. Expedited NJDEP Permit Process to allow towns to clear trees and repair river walls and shoals
9. Improved Effectiveness of County and Local Emergency Response Plans
10. Enhanced Passaic River Flood Warning System
11. Inundation Mapping
12. Enhanced Public Involvement, Information and Outreach for Flood Response
13. Reevaluation Request to U. S. Army Corps of Engineers
14. Updated Flood Risk Mapping
15. Moratorium on All New Development within the Floodplain
Implemented Recommendations as of March 2014
Report and status found here:
http://www.nj.gov/dep/passaicriver/

or search “Passaic Flood Commission”

John A. Miller, P.E., CFM, CSM
NJAFM (www.njafm.org) Legislative Committee Chair
Twitter: @jamiller45
email: jmiller@princetonhydro.com
609-203-8935 (cell)