Lake Champlain-Richelieu River Study Context
What is floodplain management?
Why moving everyone out of the floodplain has it challenges.
Study’s strategy for improving future floodplain management.
We are a study with limited authority.
The past: How has the floodplain been managed in the basin over the last 40 years?
The future: Floodplain management changes that are coming.
Alternatives the Study will be exploring.
Study focusing on four key mitigation themes, of which floodplain management is one.

Work is more advanced on other themes.

Workshop of experts and floodplain managers was organized to determine how the Study should address Theme 4.
2011 flood triggered the five-year binational study that was initiated in 2016. The focus being on identifying mitigation solutions to address flooding.

Next steps:
- The study is responsible for providing its recommendations to the International Joint Commission (IJC).
- The IJC will takes this information and then advise the two governments.
- If the governments agree to (any) recommendations, then they will work with the appropriate jurisdictions to implement.
What is Floodplain Management?

- "Floods are 'acts of God,' but flood losses are largely acts of man" Gilbert White, 1942.

- White is considered the father of floodplain management and his ideas led to the flood insurance and floodplain management policies fifty years ago in the U.S.

- Floodplain management is the coordinated long-term effort to establish floodplain uses that satisfactorily accommodate the risk of flooding.
<table>
<thead>
<tr>
<th>POLICY TOOL</th>
<th>OBJECTIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>flood risk mapping</td>
<td>raise public awareness of flood risk; support informed decision-making</td>
</tr>
<tr>
<td>public education and engagement</td>
<td>raise awareness of flood risk; share responsibility for flood risk management; motivate property-level protection</td>
</tr>
<tr>
<td>real estate disclosure</td>
<td>make flood risk transparent; protect property buyers</td>
</tr>
<tr>
<td>insurance</td>
<td>engage private recovery resources; reduce burden on public treasury; signal flood risk to property-owners</td>
</tr>
<tr>
<td>protection levy (i.e.,tax)</td>
<td>raise revenue for flood risk management; communicate regular reminder of flood risk</td>
</tr>
<tr>
<td>retrofit incentives</td>
<td>encourage property-owners to retrofit</td>
</tr>
<tr>
<td>property buyouts</td>
<td>reduce exposure to flood hazards and restore natural flood protection</td>
</tr>
<tr>
<td>land use regulation</td>
<td>prevent new flood risk; control use of existing properties to minimize exposure and vulnerability</td>
</tr>
<tr>
<td>enhanced emergency management</td>
<td>mitigate flood risk and prepare for effective response and recovery</td>
</tr>
<tr>
<td>watershed management agencies</td>
<td>empower special purpose body at watershed scale to regulate flood prone lands and manage flood risk</td>
</tr>
</tbody>
</table>
"Flooding is the most common and widespread disaster we face nationally, and the one that is the easiest to alleviate by effective planning," Richard Yuretich, a director of NSF’s Dynamics of Coupled Natural and Human Systems program.

- Flooding is a very difficult problem to eliminate in reality because people want to inhabit the floodplain.
- Waterfront homes are worth significantly more, an indication of the value of living in the floodplain when it’s not flooding, which is most of the time.
- Relocation offers are often not compelling for residents.
Study Strategy for Better Floodplain Management

- Show how much has and can be done:
  - Document the success of floodplain management since the 1970s.
  - Identify and characterize residual risks.
  - Consider how new QC and U.S. policies can further reduce these residual risks.

- Collaborate on the recommendations coming from the Floodplain Risk Management workshop:
  - Develop white papers on those recommendations.
  - Show what we’ve learned about mapping risk.
  - Formulate an insurance driven management regime.
  - Show how the other three themes impact floodplain management (Theme 4).
The Study’s Contribution

- The Study is investing millions $ in:
  - Collecting essential data.
  - Hydrologic and hydraulic modelling.
  - Integrated Social Economic and Environment System.
  - State-of-the-art flood forecasting and mapping.
  - Climate change research.

- Study provides credible scientific information and advice for making sound decisions.

- Study legacy will be the data, tools and knowledge it has compiled and in the way we frame the challenge and formulate alternatives.
Quebec and U.S. Floodplain Management since 1976

- 1976 Romeo LeBlanc Canadian Minister of the Environment and Jean Cournoyer, Quebec's Minister of Natural Resources sign an agreement to reduce development in the floodplain, reducing pressure to build the six-gated proposed structure.
Quebec and U.S. floodplain management since 1976

• 1976 Romeo LeBlanc Canadian Minister of the Environment and Jean Cournoyer, Quebec’s Minister of Natural Resources sign an agreement to reduce development in the floodplain, reducing pressure to build the six-gated proposed structure.

• On the U.S. side, political leaders stated their preference for flood insurance and floodplain management policies over building new flood control structures.
From its inception, the National Flood Insurance Program (NFIP) offered flood insurance coverage only to property owners in communities enrolled in its program.

In the early years of the program, few communities enrolled in the NFIP.

Reforms in 1973 were adopted to increase community enrollment.

- Any property that had a “federally backed” loan and was in the Special Flood Hazard Area had to purchase an NFIP policy.
- Owners of residential and commercial buildings that did not have an NFIP policy would receive limited post flood aid.
Flood Insurance Developments in Canada

- Residential overland flood insurance only available in Canada since 2015.
- Only a 35% uptake of the insurance in Quebec.
- Quebec’s General Financial Assistance Program for Individuals specifically excludes “damages caused to property by an insurable risk.”
- Federal government recently announced a Task Force to address the issue of flood insurance and relocation on a national basis.
Floodplain Management Has Already Helped

- The 1976 IJC study showed damages starting at 29.6m (97 ft) feet elevation, more than 0.9m (3 ft) below the currently targeted *minor* flood level (30.7m or 100.8 ft).

- At the minor flood level damages were estimated to be $2M at that time or $10M in current dollars.

- Based on the current stage-damage curve there are negligible damages at that flood level.

- The 2011 flood damages were estimated to be $86 M.
Quebec’s Floodplain Management Evolution


- July 2019: Final Order respecting the declaration of a special planning zone to promote better management of flood zones.
• Federal Emergency Management Agency’s (FEMA) Risk Rating 2.0 will go into effect nationwide October 2021.

• Still many unknowns, but

• Risk Rating 2.0 will be:
  • based on characteristics of each building
  • will comply with existing statutory caps on premium increases.
Identified four priority areas.

1. There should be better flood risk maps:
   • Good flood risk maps are user-friendly, searchable by address or postal code, clearly distinguish the extents of the flood zone, and offer risk reduction information about topics such as evacuation procedures, property-level protection measures and expected damages.

2. Flood risk should be better communicated and understood:
   • Engagement with citizens is an important tool for increasing awareness of flood risk and sharing responsibility for flood risk management
   • Need to examine a variety of methods to better communicate with the public.
3. Management of floodplain occupancy should adapt and evolve:
   • Need to explore a wide range of measures such as: relocation, flood retrofit incentives, etc. as appropriate.

4. Developments in Canadian and U.S. flood insurance should be recognized:
   • Insurance is a useful tool to reduce vulnerability, because it engages private resources to support recovery and because premium rates provide a market signal to property-owners about their level of risk.
Study Preparing White Papers on the Four Topics

- White Paper context:
  - think piece compiling ideas from various experts and other sources.
  - incorporating knowledge/information established by the Study.
  - cognizant of current political directions.
  - short and concise.
  - to provide recommendations for Study Board consideration in the final report
• **Ouranos** has been contracted to lead on the development of two of the papers:
  • There should be better flood risk maps
  • Management of floodplain occupancy should adapt and evolve

• **Study** has contracted a leading expert to lead on the other two papers:
  • Flood risk should be better communicated and understood *Dr. Daniel Henstra*
  • Developments in Canadian and U.S. flood insurance should be recognized *Dr. Len Shabman*
New flood insurance ideas and geomatic flood risk estimates
Carefully developed building by building flood risk maps can be used to communicate risks building by building.
- To identify building groups that will flood frequently and are most suited for relocation or elevation.
- Perhaps residents could stay in such buildings until the next flood, then be relocated.
- To identify buildings that will rarely flood, but suffer large damages if they do, and are best suited for high deductible insurance policies.
- To shape emergency response plans (perhaps to identify neighborhoods that flood rarely but with great damage, for protection with Aquadams).

Integration of the Floodplain Management Alternatives

1. Risk Maps
2. Communication
3. Floodplain Management
4. New insurance ideas
Next Steps

• White Papers to be completed by March 2021

• Study Board will be consulting on the findings with the public in the Fall, 2021

• Study Board’s final report to the IJC due March 2022
In that last four decades floodplain management has helped to reduce flooding impacts in the LCRR basin.

Older buildings and buildings outside the delineated floodplain may still be vulnerable, and addressing that risk is extremely challenging and complex and involves many considerations.

The final Study report will provide recommendations on how flood risk in the basin can be better addressed.

Action on the IJC recommendations requires governments’ support and the implementation will be the responsibility of the appropriate jurisdictions.