



Floodplain Management in Ontario and Emerging Issues

Ryan Ness
Toronto and Region Conservation Authority
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Discussion Points

1. Floodplain management policy in Ontario
2. Methods for flood hazard delineation
3. Impacts of urbanization on flood risk
4. Stormwater management methods for flood control - and limitations
5. Advancing policy and technical practice in Ontario



Ontario Floodplain Management Policy

“Development will generally be directed to areas outside of ... hazardous lands adjacent to river and stream systems which are impacted by flooding and erosion hazards”

Provincial Policy Statement on Land Use Planning and Development (2005)



Regulatory Events

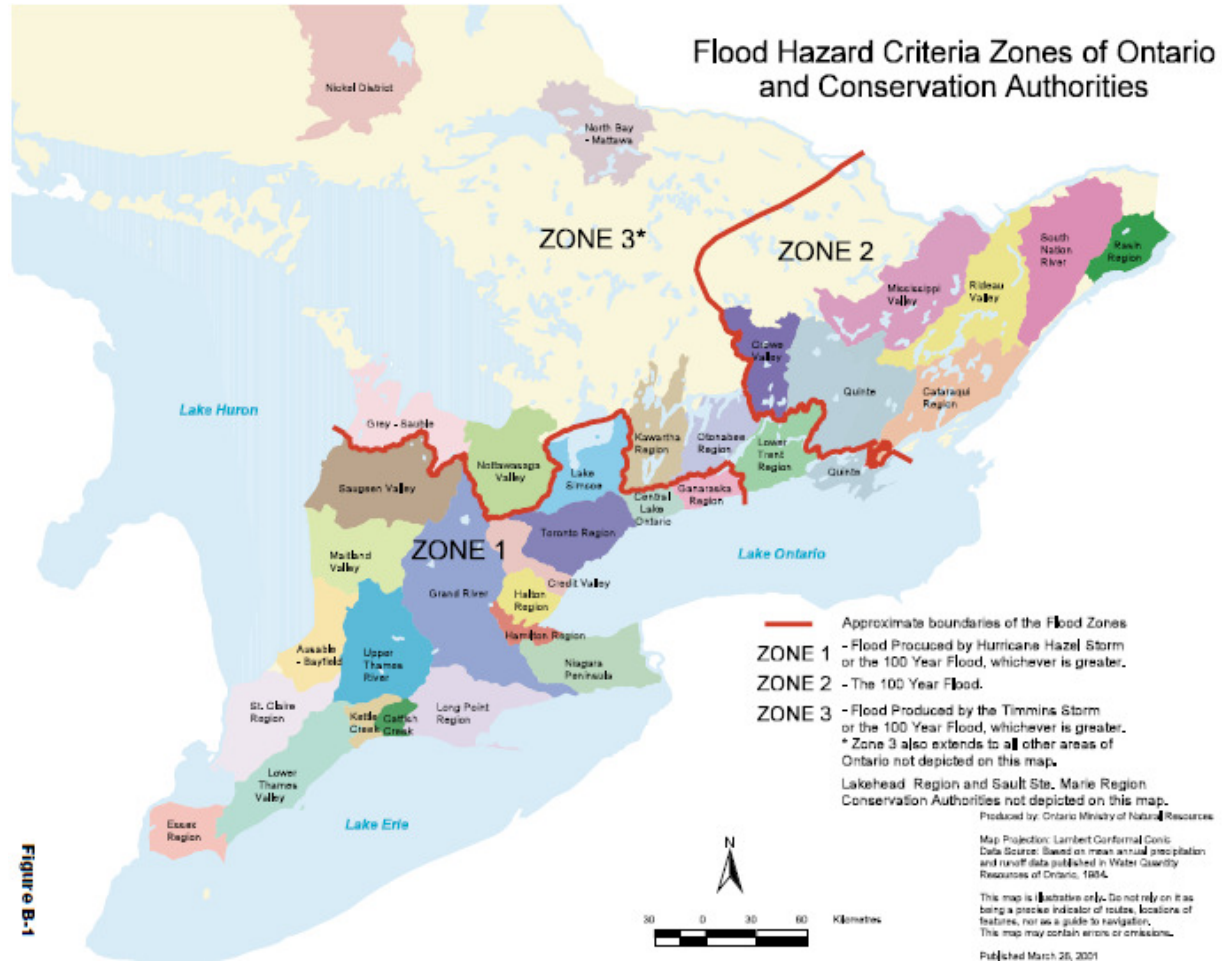


Figure B-1

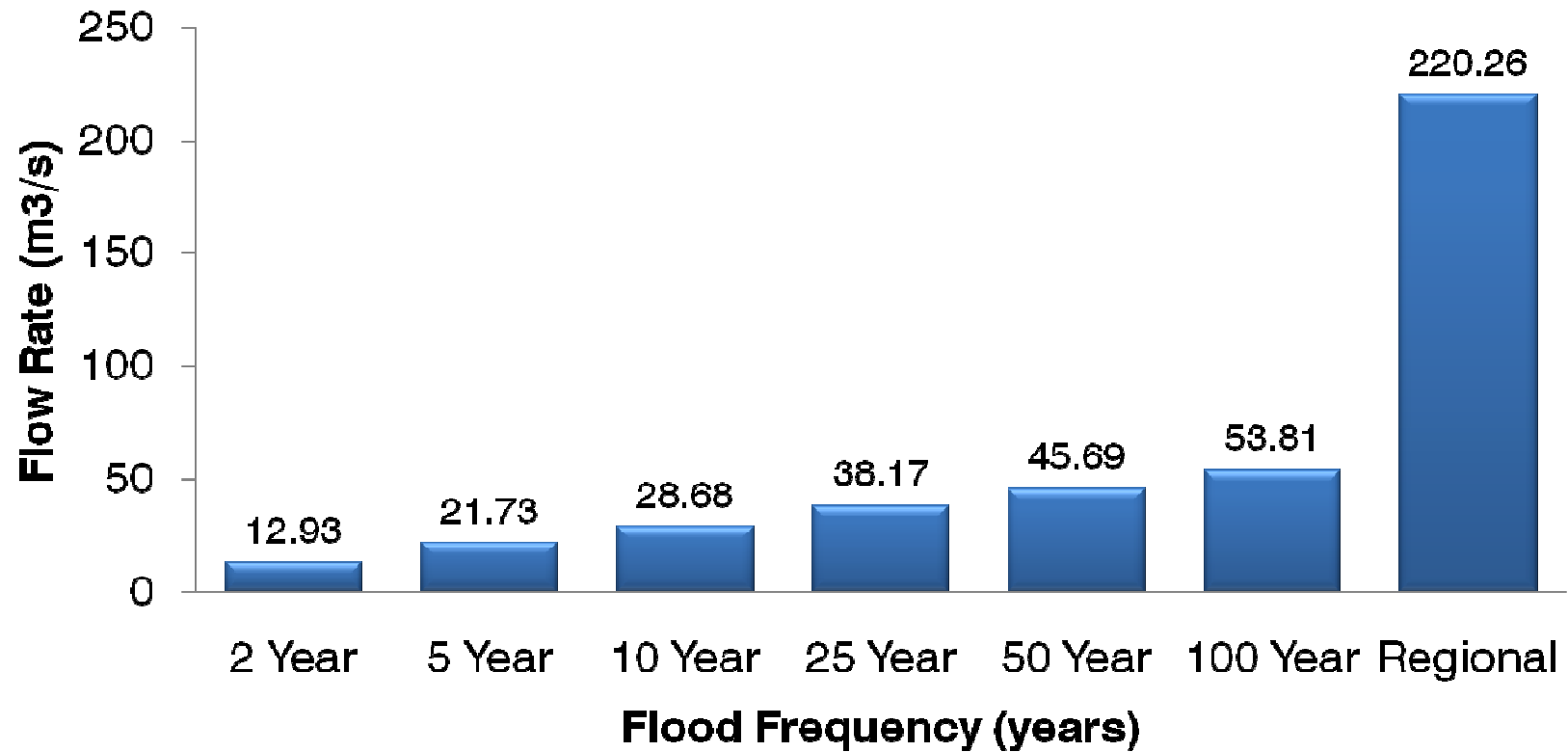


Hurricane Hazel



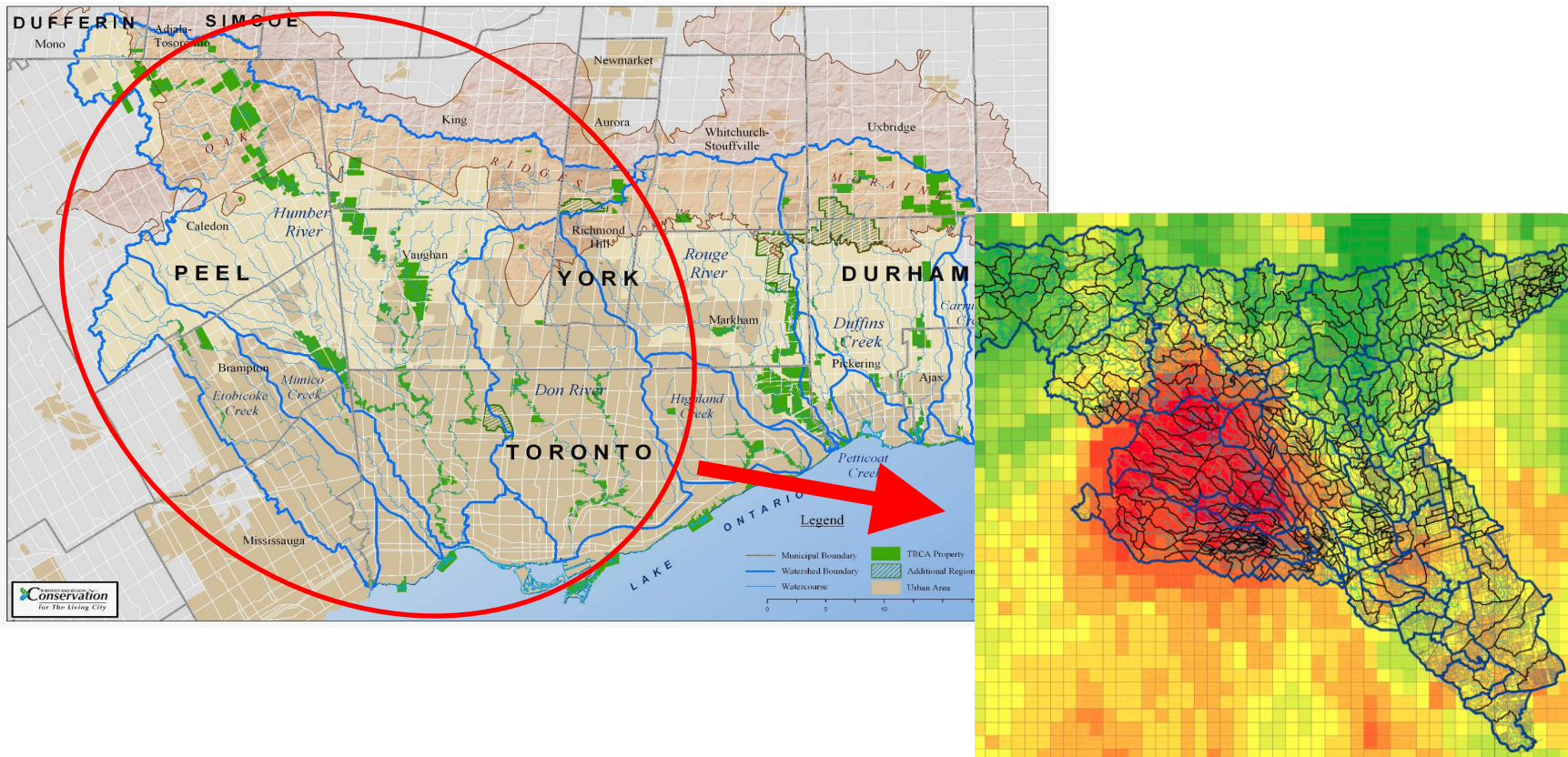


Hurricane Hazel



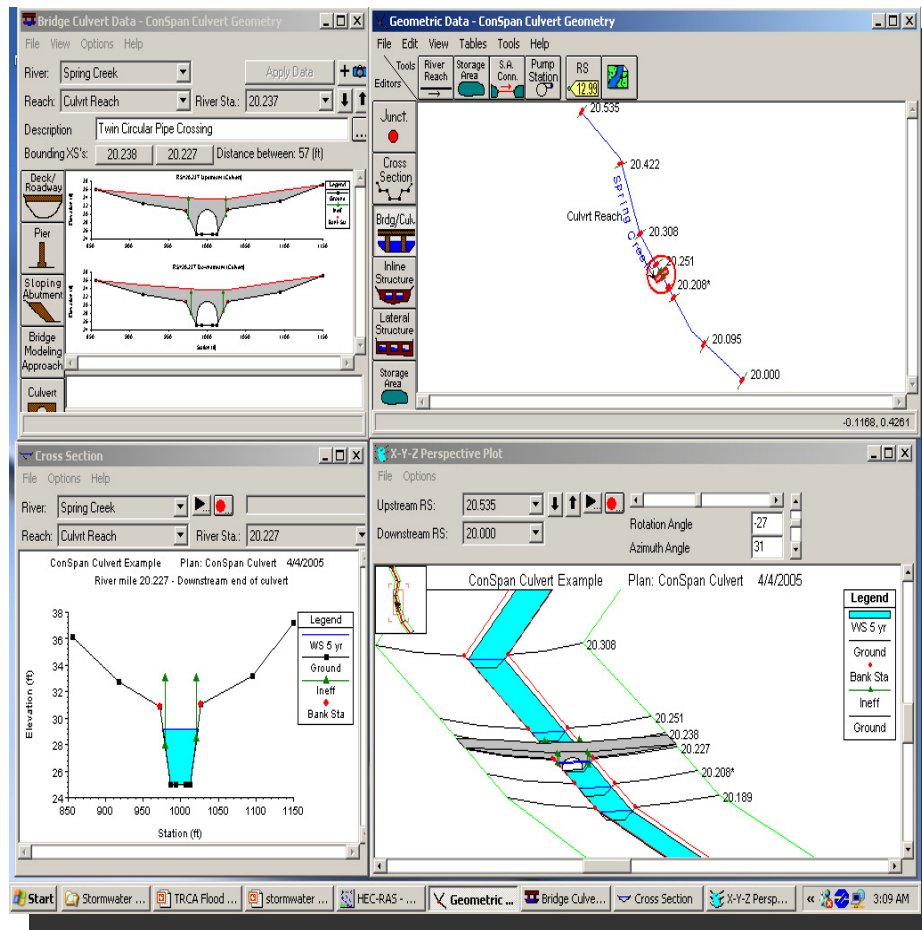


Flood Hazard Delineation - Hydrology



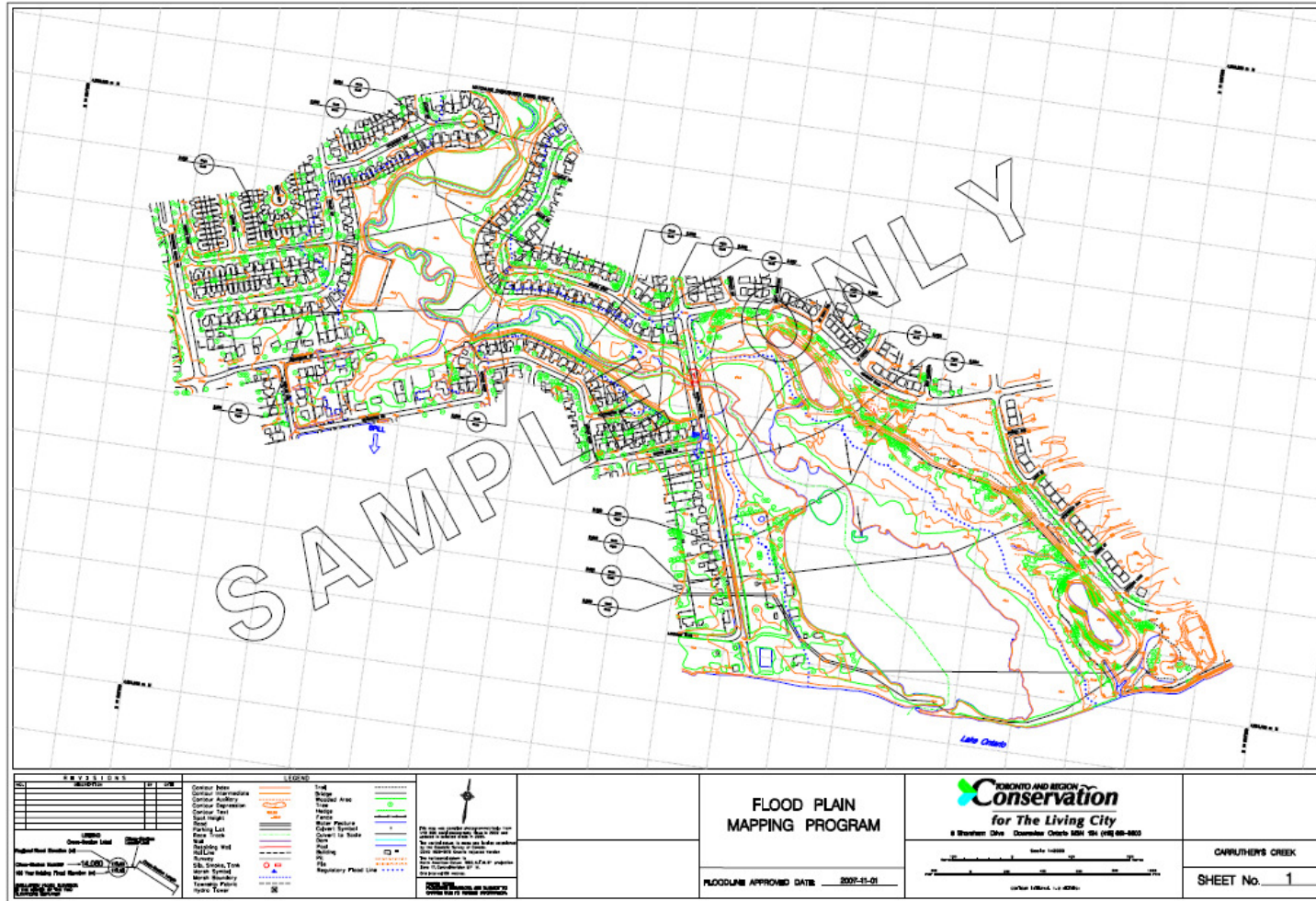


Flood Hazard Delineation - Hydraulics





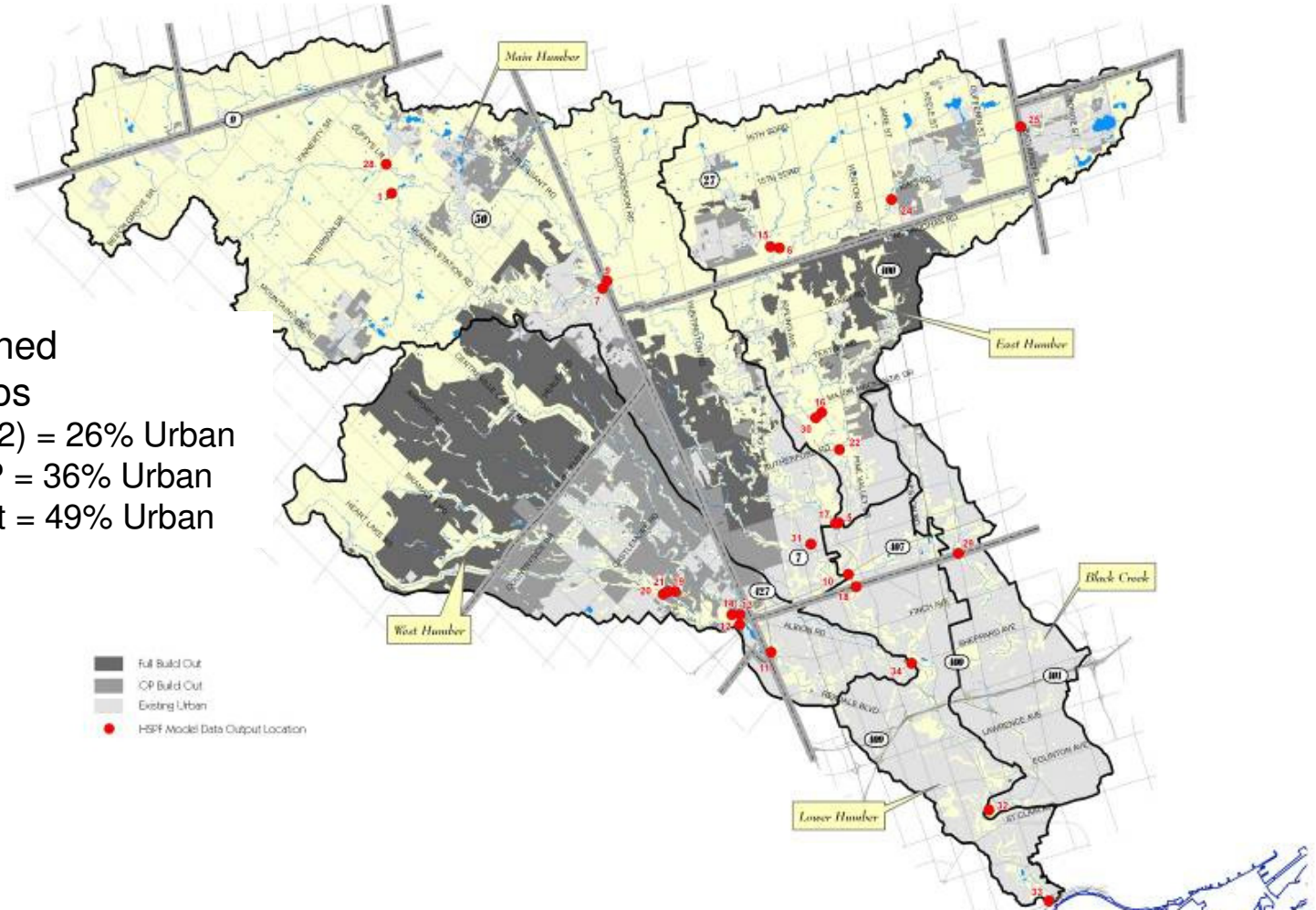
Flood Hazard Delineation - Mapping





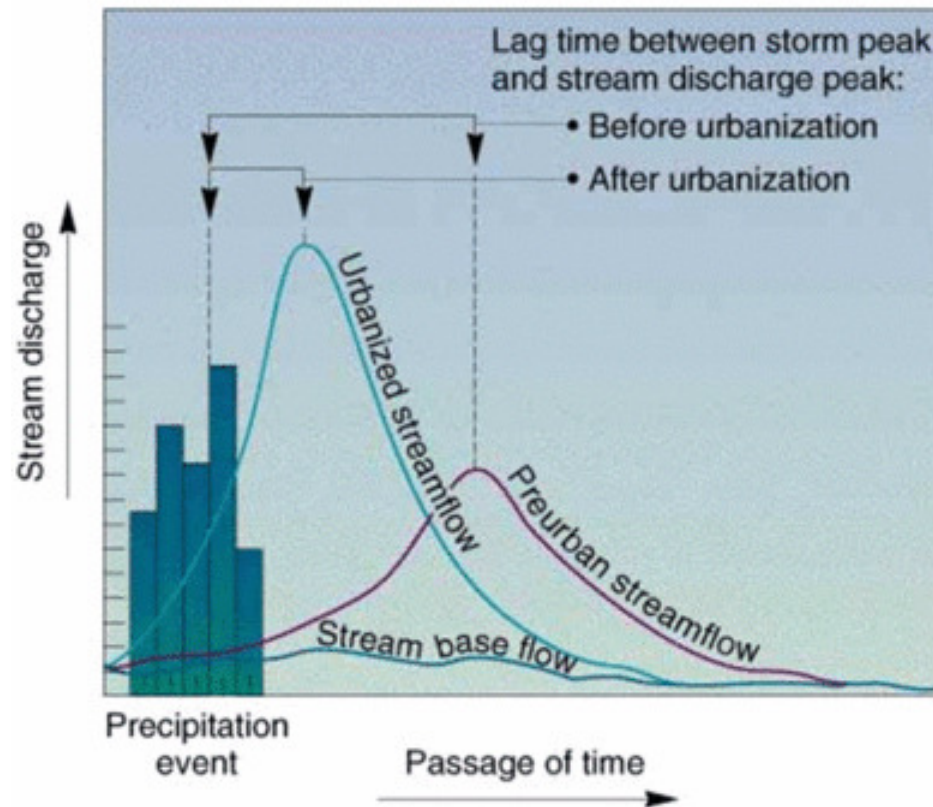
Urbanization and Flood Risk

Humber River Watershed
Development Scenarios
Scenario 1: Existing (2002) = 26% Urban
Scenario 2: Approved OP = 36% Urban
Scenario 3: Full Build-Out = 49% Urban





Increases in Peak Flood Flow





Stormwater Management for Flood Control

“Generally, accepted criteria are that maximum peak (site) flow rates must not exceed pre-development values for storms with return periods ranging from 2 to 100 years”

Ontario Stormwater Management Planning and Design Manual
Ministry of Environment, 2003

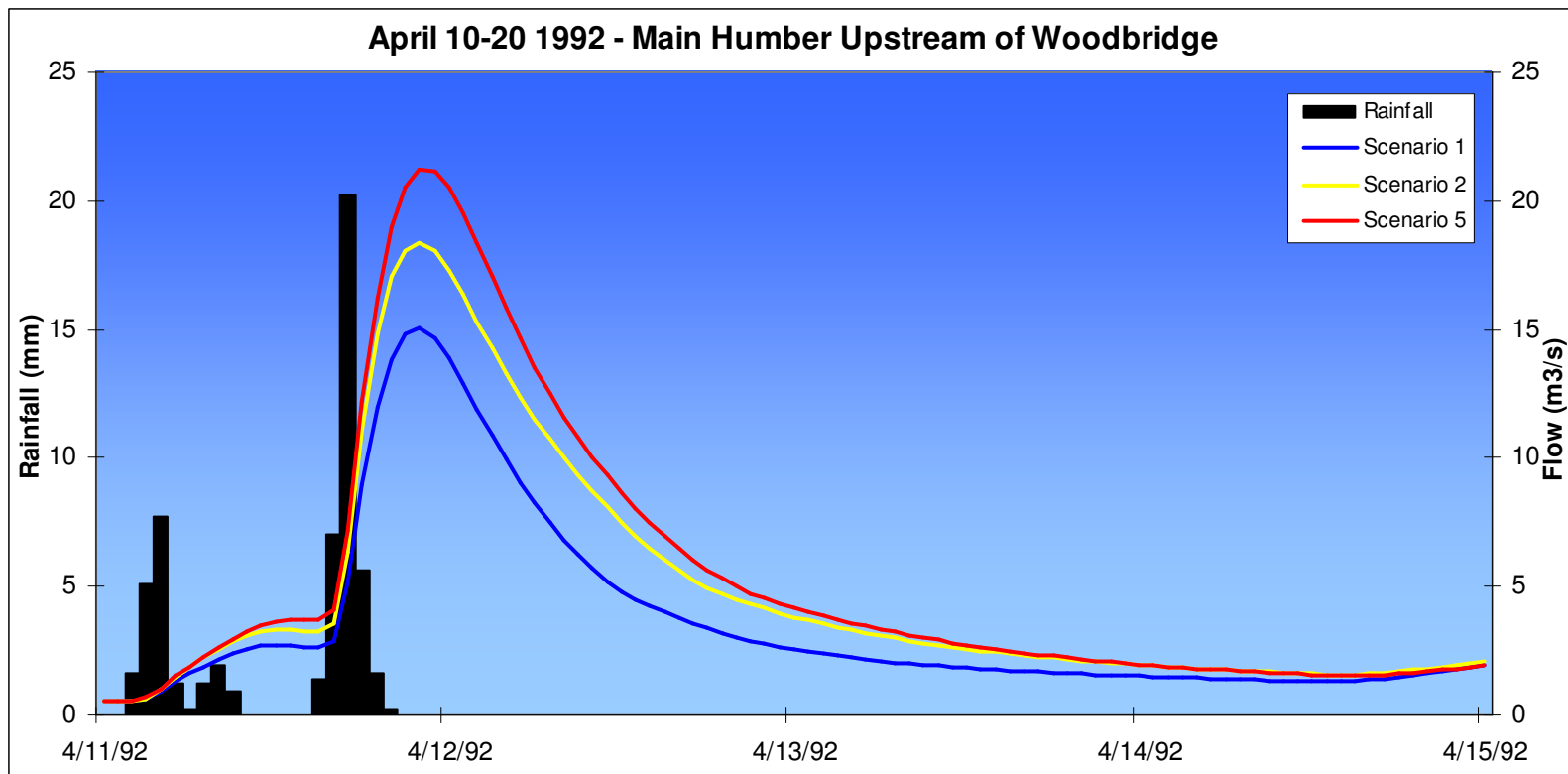


Stormwater Detention Ponds





Peak Flows Increase Even With Detention





Regulatory Floodplain Expands



1986



2009



Restrictive Policies

“Stormwater management facilities may not be used to provide any reduction in flood flows”

River and Stream Systems: Flooding Hazard Limit
Ontario Ministry of Natural Resources (2002)



Gaps - Policy

- Stormwater management for flood control is not required by legislation or policy
- Governance disconnects:
 - Floodplain management: MNR, Conservation Authorities
 - Stormwater management: MOE, Municipalities
- Provincial floodplain management policy does not acknowledge mitigation effects of stormwater management facilities



Gaps - Policy

“Stormwater management facilities may not be used to provide any reduction in flood flows”

River and Stream Systems: Flooding Hazard Limit
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Gaps - Practice

- SWM facilities are typically not designed to mitigate downstream impacts for many types of extreme events including Hurricane Hazel
- The cumulative impact of new development on downstream flood risk is not systematically assessed



Advancing Policy and Practice

1. Provincial policy on stormwater management for flood control
2. Harmonization of provincial stormwater management and floodplain management policy
3. Updated technical standards
 - Cumulative, watershed-scale assessment of development impacts on downstream flood risk
 - Design of stormwater management facilities
 - Climate change?



Take-aways

1. Expanding urban development can increase the flood risk in existing downstream communities
2. Conventional stormwater management may not prevent these increases
3. There is a need for consistent provincial policy and direction on this issue
4. Updates to technical practices in stormwater management design and watershed-scale planning



Thank You

Ryan Ness
Senior Manager, Research and Development
Toronto and Region Conservation Authority
rness@trca.on.ca