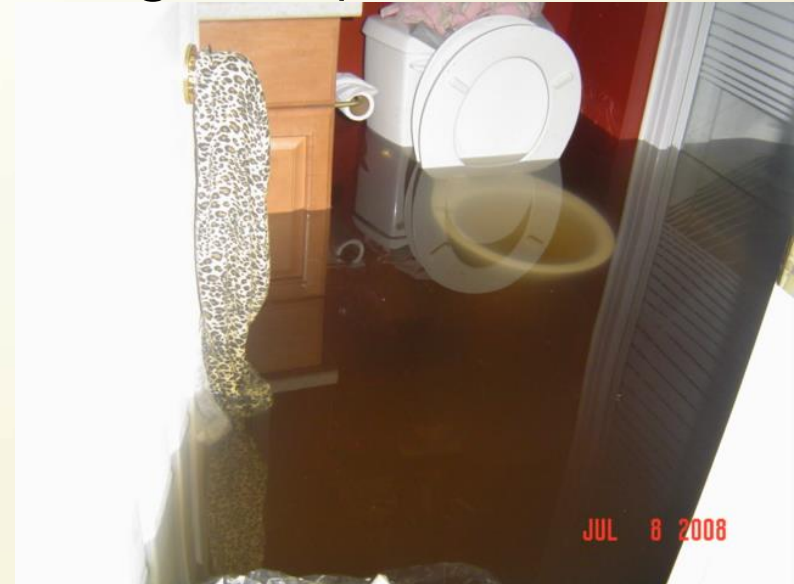


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FLOODING MATTERS WORK PLAN Phase I (Investigation)





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PURPOSE

To satisfy a December 1, 2015 Civic Works Committee recommendation requiring:

- the formation of a Working Group
- a full investigation be carried out by the Working Group with a focus on flooding matters, specific to high intensity, short duration rainfall events
- the Working Group to report back to Civic Works Committee on the results of its investigation



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The Working Group

- Established immediately following Council's December 8, 2015 meeting
- Consists of experts from across the Corporation including the following service areas: Legal, Environmental and Engineering Services, Corporate Communications, Risk Management

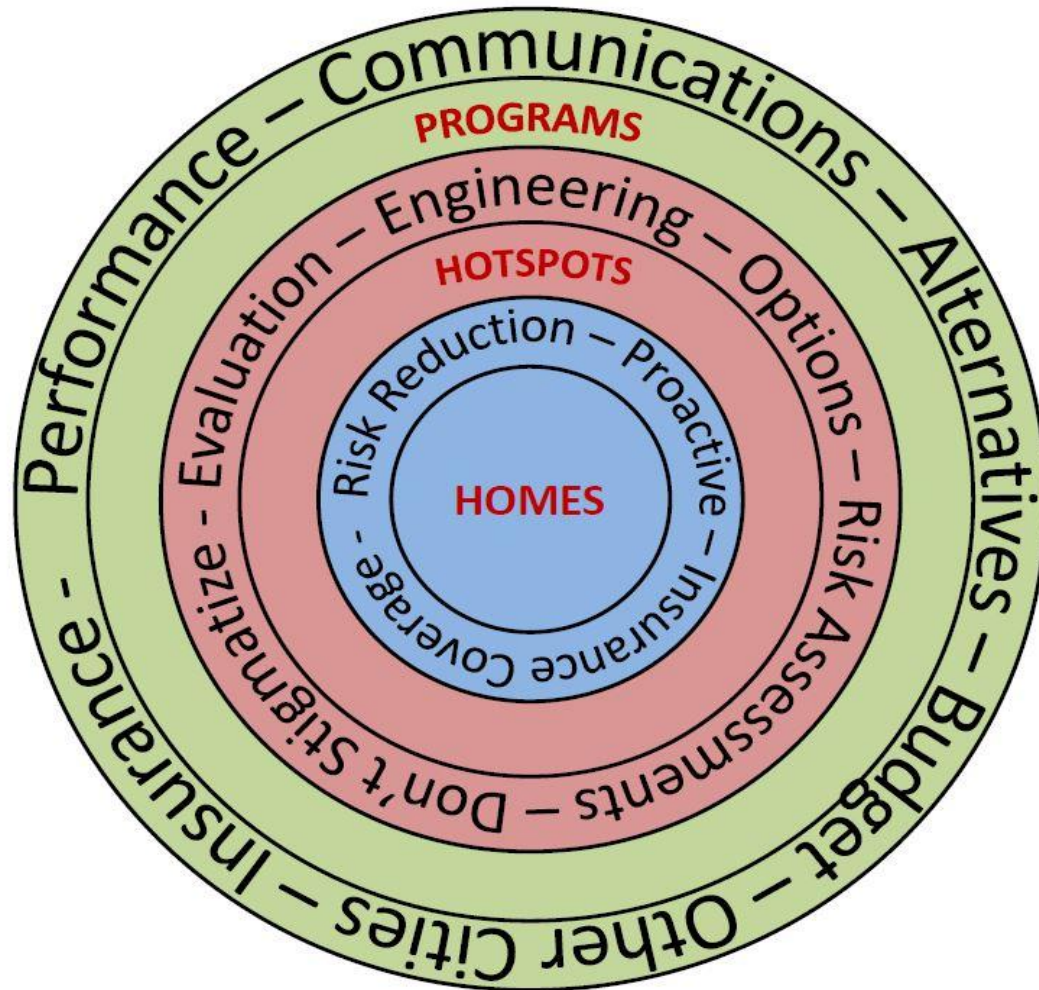


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Working Group's Primary Focus

- **HOMES** – Why are residents having a difficult time maintaining their insurance, especially repeat flooding?
- **HOTSPOTS** -- What are the common elements associated with known flooding locations?
- **PROGRAMS** -- What are the best strategies, methods, programs and communication tools used by others? How do we compare?
- **PROGRAMS** -- Can the City do a better job communicating post severe weather event information? If so, what kind of information is important to the citizens and what forums are most effective?

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Focus is on ...

**WEATHER !!...HIGH
INTENSITY, SHORT
DURATION RAINFALL
EVENTS**



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Introducing Environment Canada's

Mr. Geoff Coulson

Warning Preparedness Meteorologist

Ontario Region Client Services

Government of Canada

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Putting Flooding Matters in Perspective

(Reference Appendix 'C')

5 YEAR BASEMENT FLOODING SUMMARY CHART

Year	Private	Overloaded System	Total	% of Calls Attributed to Overloaded Sewers
2011	463	96	559	17.2%
2012	315	18	333	5.4%
2013	424	49	473	10.4%
2014	453	235	688	34.2%
2015	348	389	737	52.8%
Total	2003	787	2790	28.2%

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What Are the Numbers Telling Us?

75%

- PDC collapses/obstructions
- Sump pump failures
- Internal plumbing failures



25%

high intensity, short duration rainfall events





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What Else Can We Tell You?

- The majority of the 25% can be attributed to weeping tile connection to the City's sanitary sewer
- There are approximately 50,000 private side connections today
- Property owners are more reactive than proactive
- Only 3% or 1,500 homes have taken advantage of the City's volunteer basement Flooding Grant Program over the last 30 years



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Further...

- A range of calls between 5% - 55% can be attributed to high intensity, short duration rainfall events
- The numbers shown on the table are only as accurate as the number of calls received
- Perhaps 2 – 3 times the number of flooding calls received go unreported



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Finally...

- Insurance Bureau of Canada reports first time and repeat flooding claims are on a dramatic rise
- Citizen expectation of municipalities to resolve their private property flooding
- Citizens pressure to impose regulations similar to that of auto insurance



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Introducing the Insurance Bureau of Canada (IBC)

Mr. Pete Karageorgos, BA (Hons), FCIP, FLMI, CRM
Director, Consumer & Industry Relations



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HOMES – Proactive Insurance Coverage

Here is what we learned:

- Historically, insurance companies have not provided insurance caused by overland flooding
- They will consider increasing insurance availability only when they can spread the risk
- Property owners are pressuring government to implement mandatory insurance requirements



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What else?

- Property owners have general lack of understanding of their insurance coverage
- Property owners become particularly frustrated when they are impacted by multiple significant rainfall events and they are no longer compensated by their insurance company
- First time, or single claims are generally awarded to remedy ensuing damages
- Multi claims may only be awarded in the form of partial, or reduced coverage



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Recommendations for Consideration

- City should continue to dialogue with the insurance industry
- Communicate City/citizen efforts to local insurance underwriters
- City should use every avenue /opportunity to educate citizens
 - Homeowner letters delivered on Capital projects
 - City's web site (post IBC information and contacts)
 - Post significant weather event information through social media



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HOT SPOTS – proactive identification

Here is what we did:

- Data mapping and analysis (of the 25%)
- Reviewed past design modelling for applicability
- Other important variables: soil type, pre-storm soil moisture conditions, lot grading, downspouts, weeping tile connections, storm attributes (intensity, duration, sequence), seasons, temperatures, pipe depth, basement floor elevation



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HOT SPOTS – proactive identification

Here is what we learned:

- High intensity, short duration rainfall events account for 25% of London's basement flooding occurrences
- Homes built between 1920's and 1980's generally have their weeping tiles connected to City sewers
- This accounts for approximately 50,000 homes
- Only 3% of the 50,000 homes have been disconnected over a 30 year period



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What else?

- A great deal of staff time, effort and cost has been invested to develop analysis, however:
 - Analysis, conclusions drawn are only as accurate as the data (many flooding incidents go unreported)
 - The success of new initiatives is generally related to the accuracy and breadth of the supporting data
 - Property owners who have experienced basement flooding are generally interested in the City's voluntary Basement Flooding Grant program
 - Modeling as a risk assessment tool is too onerous, variables not known and/or wide ranging



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Further:

- Property owners are generally reactive than proactive
- One bad experience is sometimes not enough to convince property owners to take advantage of the City's voluntary Basement Flooding Grant program
- Considerable staff time and effort is required to convince property owners with dry basements, but who are major contributors to basement flooding on their street to engage in the City's Basement Flooding Grant program.



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Recommendations for Consideration

- Discuss data sharing with insurance companies
- Develop a communication plan to promote more self-reporting basement flooding
- Consider communication and mitigation strategies for the majority of reasons that basements flood
- Continue to accurately document events and use the information to update priorities



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PROGRAMS – other cities

Here is what we learned:

- The City of London is not alone – Canadian municipalities are impacted by short duration rainfall events
- Most Canadian cities offer flooding assistance through “compassionate grant programs”, namely:
 - Weeping tile disconnection
 - Sump pump installation
 - Backwater valves
 - Disconnection of downspouts



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Examples of activities offered by other Canadian cities

- Public drainage workshops (Kingston)
- Flood prevention video (Saskatoon)
- Embedding IBC information (Edmonton)
- Mandatory weeping tile disconnection (Fort Erie)
- Root removal (Windsor)
- Relining private laterals (Columbus)



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Recommendations for Consideration

- Participation in local radio and television station talk shows - preferably pre-wet weather timing
- Producing backwater valve maintenance instruction
- Increasing the City's grant program – currently offers up to 75%
- Arranging drainage workshops for property owners
- Include Low Impact Development Strategies (LIDS) in new development proposals



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PROGRAMS – COMMUNICATION

Here is what we learned:

- Councillors and Civic Administration face significant challenges to convince property owners to invest in flood mitigation measures
- Most property owners are unaware of plumbing issues until they experience a basement flooding occurrence

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Recommendations for Consideration

- Develop a communication plan that incorporates proactive and reactive information with a specific focus on the following:
 - General awareness
 - Pre event
 - During the event
 - Post event





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By Category:

General awareness – providing property owners with preventative flooding information specific to weeping tile disconnection, downspout disconnections, backwater valves, window wells, grading around foundations, etc.

Pre event – an intense campaign to warn citizens of impending, or possible high intensity weather forecasts, actions they can take to prevent flooding and where/how to get information during an event



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During the event – a campaign to inform Londoners where and how City’s first responders are, City contact information, road closures, etc.

Post event – a neighbourhood specific campaign to inform property owners how to avoid future basement flooding occurrences



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Communication Tools include:

City spokespersons (delivering key messages), advertising, social media, brochures, posters, City website, video, information packages (print and e-mail versions), template news releases, warranted news conferences, help lines, focused public meetings, etc.

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SURFACE FLOODING

- Private surface flooding categories:
 - 1) Caused by surface water between private lands.
 - 2) At least a portion of overland water originates from City lands. (e.g. roads, parks)
- Minor Surface Flooding and Erosion (ES3040)



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Category 1: Surface Flooding Between Private Lands

- Some solutions are low cost but others are more expensive.
- Solutions can be financially prohibitive costing tens of thousands of dollars.
- Brochure developed.

PRIVATE PROPERTY FLOODING INFORMATION HANDOUT

June 5, 2015

City of London

Version: 1.0

Introduction

Flooding of your property can be a serious problem. The City of London receives hundreds of private property flooding complaints every year for a variety of reasons. Every flooding scenario is unique and this document contains general information that may be helpful to assist in fixing the problem.



Typical Causes of Flooding

- **Dense soils and grading:** settlement of soils following the construction of a home or dense soils (clay) can create ponding and does not permit water to infiltrate.
- **Frozen ground:** water will pool if it cannot infiltrate through ice or winter frost.
- **Large storms:** lawns can typically absorb only a small amount of water, if it rains heavily, rainwater will start to pond.
- **Drainage from other properties:** Neighbour's may have altered their grading through landscaping or other construction activities (pools and sheds). This may inadvertently direct more rainwater to your yard.



How to Resolve a Private Matter

- **Make changes to your grading:** Contact a drainage contractor or landscaper to consider options to alter the grading on your property to remedy the problem.
- **Reuse rainwater:** Use rain barrels or rain gardens in your yard to absorb additional rainwater.
- **Speak with your neighbour:** Let your neighbour know how you have been impacted by their drainage. Request that they make changes to their grading to reduce flooding on your property.
- **Get legal advice:** Be aware that legal proceedings can be a costly, it may be more cost effective to implement your own drainage solution.

Who Can Help?

- Contact a drainage contractor or landscaper to develop a solution to reduce ponding water or improve drainage.
- If you believe that the flooding on your property is the result of drainage from City of London owned lands, roads, or parks contact:

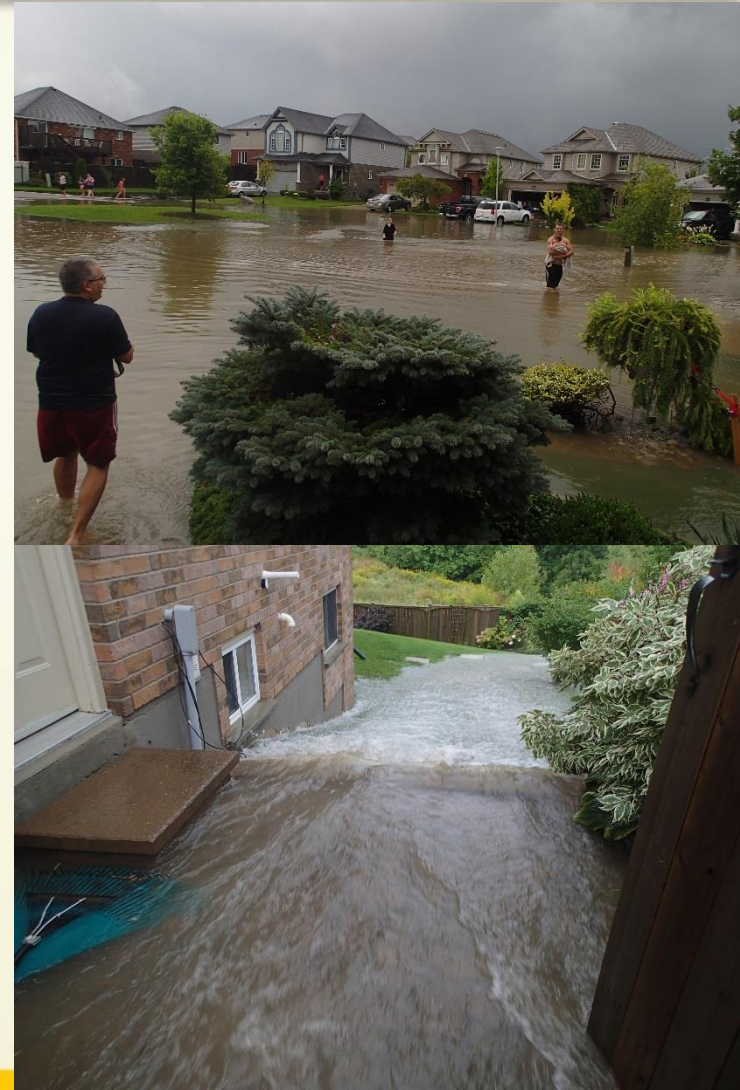
Email: stormwater@london.ca
Call: 519-661-2500

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Category 2:

A portion of Overland Water Originates from City Lands

- Liability with respect to private property damage.
- Some cost effective measures.
- Others are complex and need to be considered with long-term Capital projects.



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Recommendations for Considerations

- Create a surface flooding grant program similar to the basement flooding program.
- Fund the program from the existing ES3040 capital account for both categories of flooding.
- Seek Council direction regarding work undertaken on private property.

Protect Your Basement



Basement and Surface Flooding ~~Basement Flooding~~

Grant Program

to help homeowners
reduce the likelihood
of basement flooding



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Summary

- Size of the rain induced problem
- Weeping tile disconnection at \$100s million – public or private
- Relationship to other issues - overflows
- Hotspots based on history
- Robust compassionate grant program
- Opportunities to educate / promote issue and program
- Range of different approaches



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A Range of Potential Approaches

Option 1: Maintain Status Quo

- Continue to treat basement flooding as a private property controlled
- Sanitary sewer overloading from weeping tile connections are beyond the City's responsibility
- City is not introducing storm water into the sewer, source comes from private property
- Staff continue to devote time and effort
- Property owners continue to be reactive, not proactive



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A Range of Potential Approaches

Option 2: Modify Current Approach

- Passive enhancement of Option 1
- Citizens to become more aware of their potential flooding risks, and environmental responsibilities through contribution to sewer overflows
- Achieved through communication enhancements
- Wider use of weeping tile disconnection programs



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A Range of Potential Approaches

Option 2: cont'd...

- Ideas:
 - weeping tile disconnection programs including work on private property
 - Identifying flooding risks on home inspection reports
 - Communicate the importance of upgrading home to current Plumbing standards
 - Expanding the City's current home visit program

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A Range of Potential Approaches

Option 2: cont'd...

- Option has all the potential of producing favourable outcomes
- Anticipate additional resources to effectively develop and implement
- Consideration should be given to financial implications related to an accelerated enhancement program
- Responsibility to undertake flooding prevention still resides with the property owner



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A Range of Potential Approaches

Option 3: Financial Disincentive

- Places additional burden on private property owners
- Essentially an effort to accelerate weeping tile disconnections
- Holds property owners accountable for contributing to sanitary sewer overloading



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A Range of Potential Approaches

Option 3: How Would This Option Work?

- City would identify with certainty private properties with weeping tile connections
- A surcharge would be imposed
- Surcharge would show on monthly water bills, or alternatively
- Measure actual flows and charge accordingly



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A Range of Potential Approaches

Option 3: Potential complexities

- Need to determine an accurate means to identify properties that have weeping tile connections
- Legal implications – flooding occurs on private property
- Costs associated with development, implementation and maintenance of such a program
- Public and social impacts



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A Range of Potential Approaches

Option 4: Mandatory Weeping Tile Disconnection

- Requires the amendment of an existing by-law, or a new by-law
- May occur when:
 - A house is sold
 - Before a new service account is approved
 - When a major renovation is undertaken, or other significant instance
- Requires a good understanding of legal ability, legal liability associated with risk, social/public impact



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A Range of Potential Approaches

Option 4a: Strategic Mandatory Weeping Tile Disconnection

- Less demanding, more strategic
- Expansion of neighbourhood infrastructure reconstruction programs
- Where all infrastructure is built to new standards
- City has greater control over effectiveness of a community solution
- Disadvantage – property owner resistance, legally challenging



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A Range of Potential Approaches

Option 5: Infrastructure Responsibility Conversion

- Attempts to address the larger basement flooding issue – private infrastructure condition
- City has knowledge, expertise, technology to manage pipe assets
- Typically property owners do not.
- Despite discounted subsidies offered to private property owners during infrastructure renewal programs – uptake continues to be low
- Leaves behind aging infrastructure and ongoing property owner risk



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A Range of Potential Approaches

Option 5: for consideration...

- Amend City responsibility boundaries
 - Up to property (same as London drinking water system)
 - To the building face
- This approach is less expensive because restoration becomes part of the infrastructure project under one contractor mobilization
- Legal ability, liabilities and financial impacts are not fully understood at this time



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Basis for Recommendations

- Consideration be given for immediate communication enhancements because:
 - Raise the discussion level on basement flooding
 - Connect the discussion to insurance protection
 - Support present reactive and proactive programs
- **Option 2** is a good starting point that only requires formulation and costing
- Staff seeks Committee direction on other approaches
- Depending on direction some analysis will be required to explore legalities, liabilities, workload, resources and associated costs



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Considerations for Direction – Value and Risk

- Level of effort/investment on 25% of the problem?
- Relationship to other matters (I/I, overflow reduction) by competing or supporting?
- Effectiveness of communication enhancement?
- Social acceptability of changing from passive to active (forced) action, if it is possible?
- Stepped / ratchet approach (\$millions to \$100's millions)?