



WEST HANTS REGIONAL MUNICIPALITY REPORT

Information ☐	Recommendation ☐	Decision Request ☒	Councillor Activity ☐
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To: Mayor Zebian and Members of West Hants Regional Municipality Council

Submitted by: _____
John Ogilvie, Climate Action Coordinator

Date: 2024-05-14

Subject: Decision Request: Home Flood Protection Pilot Program

LEGISLATIVE AUTHORITY

NS Municipal Government Act, Section 65C

DECISION REQUEST

Staff request direction from Council on components of the Home Flood Protection Pilot Program. The following motions relate to each question posed to Council in the “Discussion” section of this report. Council, through the Chair, may also prefer to provide direction by a quick informal show of hands to indicate the direction they wish to proceed on these individual items vs. formal motions for each item. The final draft of the policy will be redrafted and provided to Council for final approval.

“...that Committee of the Whole recommend to Council to make a valid home flood protection assessment (insert option 1 (a) or (b)) for approval of a grant for upgrades under the Home Flood Protection Pilot Program”.

“...that Committee of the Whole recommend to Council to offer to pay for (insert desired percentage) of the cost of a home flood protection assessment for approved applicants to the Home Flood Protection Pilot Program”.

“...that Committee of the Whole recommend to Council to delegate the recommendation process for grants to (insert option 3 (a) or (b))”.

“...that Committee of the Whole recommend to Council to offer to pay for (insert desired percentage) of the cost of a homeowner’s upgrade, to the specified limit, for approved applicants to the Home Flood Protection Pilot Program”.

“...that Committee of the Whole recommend to Council to set the individual funding limit for applicants to the Home Flood Protection Pilot Program at (insert desired grant value)”.

BACKGROUND

Property ☒	Public Opinion ☐	Environment ☒	Social ☐	Economic ☒	Councillor Activity ☐
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At the January 23, 2024, Council meeting, Council passed the following motion:

“Council direct staff to create a home flood protection program and present it to Council by the March Committee of the Whole meeting for viewing and/or approval for budgetary implications”.

At the March 26, 2024, Council meeting, Council passed the following motion.

“Council direct staff to create a home flood protection program offering both flood risk assessments and grants for eligible upgrades”.

At the April 24, 2024, Council meeting, Council passed the following motion:

“Staff expedite the grant program and have it in place, so residents have the ability to purchase their own emergency kits to store and have readily available when they are needed.”

Based on that motion and feedback from Council, staff have further investigated the design of the Home Flood Protection Pilot Program to offer grants to homeowners. Staff have specific decision requests for Council that will directly impact the pilot program.

DISCUSSION

Following further discussion among staff about program design and administration, there are multiple factors that must be decided by Council. These factors will decide the strategic direction of the Home Flood Protection Pilot Program and are listed and discussed below.

- 1) Does Council wish to make a valid home flood protection assessment mandatory for approval of a grant under the program?
 - a) Mandatory; or
 - b) Non-mandatory.
- 2) Does Council wish to pay 100% of the total cost of a home flood protection assessment under the program, or a portion of the cost?
 - a) 100%; or

- b) Any other percentage ratified by Council.
- 3) Does Council wish to have staff make specific recommendations to Council for approval of grants under the program, or have staff review applications with the Climate Action Committee, which would then make recommendations to Council for approval?
 - a) Staff; or
 - b) Staff and the Climate Action Committee.
- 4) Does Council wish to pay 100% of the total cost of a homeowner's upgrades, to the specified limit under the program, or a portion of the cost?
 - a) 100%; or
 - b) Any other percentage ratified by Council.
- 5) What does Council wish to set as the maximum grant value for a property?
 - a) \$2,500;
 - b) \$10,000;
 - c) \$20,000;
 - d) \$30,000; or
 - e) Any other value ratified by Council.

A home flood protection assessment will list the suggested upgrades to improve resiliency to flooding at one's home, based on existing conditions. A mandatory assessment would occur before a homeowner gets contractor quotes and performs any upgrades. Council could give a partial, or full, reimbursement of the assessment cost, contingent on a homeowner taking at least one action listed in the assessment. This type of incentive is offered for energy efficiency initiatives, where homeowners receive a reimbursement of 50% of the cost of a home energy assessment if they take at least one action listed. The current estimate for an assessment is anticipated to be between \$500.00 and \$1,000.00 at this time based on current research.

Allocating a specific amount as a maximum grant for applicants to the program will enable Council and staff to better understand the impacts on the Municipal budget during budget deliberations, and the number of potential applicants the program will have capacity for.

Based on the motion made at the April 24, 2024, Council meeting, an additional component to the Home Flood Protection Pilot Program would be the purchase of emergency kits including pumps, hose lines, and other supporting equipment. As a high-level cost investigation, staff estimate one emergency kit including a 3-inch gas-powered trash pump would cost approximately \$600-\$4,000, depending on the model chosen and desired pumping rate and solids/debris size. An electric sump pump capable of handling solids/debris with an applicable generator would cost approximately \$1,200-\$4,000 or more. This would include associated hoses and gas cans. The fuel and oil to operate these machines would be an additional cost.

Further, these decisions made by Council will impact the program policy, which will be brought to Council at a later date following editing and legal review. The information report "Home Flood Protection Pilot Program", dated April 9, 2024, includes the previous draft policy, and is

included as Attachment A to this report.

NEXT STEPS

Following Council direction on the above decision requests, staff will:

- edit the draft policy accordingly;
- request a legal review of the draft policy; and
- further review program details for administration and applications, such as agreements to be signed by grant recipients.

FINANCIAL IMPLICATIONS

The Home Flood Protection Pilot Program may have significant financial implications for the Municipality. Subject to budget deliberations and Council's desired budget allocation for this program, a pilot program for 20 homes with a maximum grant of \$20,000 each would cost \$400,000. This cost may vary depending on Council's determination of individual grant limits, and the associated Council contribution to homeowner's projects.

As noted above, the emergency kits referenced in Councillor Ivey's report to Council on April 23, 2024, may cost between \$600-\$4,000 or more. The cost of those items is heavily dependant on desired specifications such as pumping capacity and solids/debris size capacity, which is an important consideration when dealing with floodwaters or stormwater overflow that may contain debris.

ALTERNATIVES

In response to this report, Council may:

- suggest alternative criteria or components of the Home Flood Protection Pilot Program;
or
- request further information on a specific topic.

ATTACHMENTS

Attachment A 2024-04-09 Staff Report: Home Flood Protection Pilot Program

CHIEF ADMINISTRATIVE OFFICER REVIEW

The coordinator has requested that Council provide direction regarding some of the individual components that influence the draft policy. With Council's direction the policy will be drafted for Council's review at the May Council meeting.

Report Prepared by: _____

John Ogilvie, Climate Action Coordinator

Report Reviewed by: _____

Sara Poirier, Director of Planning and Development

Report Reviewed by: _____

Carlee Rochon, Director of Financial Services

Report Approved by:  _____

Mark Phillips, Chief Administrative Officer



Attachment A

WEST HANTS REGIONAL MUNICIPALITY REPORT

Information ☒	Recommendation ☐	Decision Request ☐	Councillor Activity ☐
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To: Mayor Zebian and Members of West Hants Regional Municipality Council

Submitted by: _____
John Ogilvie, Climate Action Coordinator

Date: 2024-04-09

Subject: Information: Home Flood Protection Pilot Program

LEGISLATIVE AUTHORITY

NS Municipal Government Act, Section 65C

BACKGROUND

Property ☒	Public Opinion ☐	Environment ☒	Social ☐	Economic ☒	Councillor Activity ☐
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At the March 26, 2024, Council meeting, Council passed the following motion.

“Council direct staff to create a home flood protection program offering both flood risk assessments and grants for eligible upgrades”.

Based on feedback from Council, staff have drafted a policy to govern the Home Flood Protection Pilot Program.

DISCUSSION

The Home Flood Protection Pilot Program Policy is pending legal review by the Municipality’s legal advisors, so the attached draft policy is presented to Committee of the Whole for information purposes. This will give the Committee some insight into the eligibility and scoring criteria that staff are proposing. The policy specifies criteria for applicant eligibility, funding limits, and the approval process. The listed upgrades in the policy are intended to reduce the

risk of flooding to individual properties and reduce the impacts of flooding if it does occur on the property. The upgrades range from small-scale to large-scale, allowing for applicants who experience various flooding issues throughout the Municipality to apply for the program. The draft policy will be brought back to Committee of the Whole at a future meeting following legal review.

The recommended individual grant limit of \$20,000 encompasses a Home Flood Protection Assessment and recommended upgrades for the home and/or property. It would provide ample fiscal capacity to perform multiple upgrades on a property, while allowing the Municipality to fund multiple projects. An allocation of \$400,000, pending Council's approval of the policy, in the 2024-25 budget would fund up to 20 projects, depending on the overall cost of administering assessments and the project sizes for individual applicants.

Approving the policy and potential budget allocation will enable staff to have more detailed discussions with the Clean Foundation about administering Home Flood Protection Assessments. If funding were made available, the Clean Foundation has indicated a potential ability to provide expertise and staff to perform assessments; this may involve signing agreements or a memorandum of understanding with the Clean Foundation. Further discussion with the Clean Foundation will give staff more clarity on this subject. Following the budget allocation and enabling policy, the Municipality could launch the program.

NEXT STEPS

Pending Council's discussion regarding the Home Flood Protection Pilot Program, staff will:

- bring the program policy to Committee of the Whole and Council for approval, following legal review;
- further discuss working with the Clean Foundation to administer home flood protection assessments;
- prepare the Climate Action Committee to review and recommend program applications; and
- discuss 2024-25 financial support from the program estimated to be in the \$400,000 range.

FINANCIAL IMPLICATIONS

Staff are suggesting a potential 2024-25 budget allocation of \$400,000 for the Home Flood Protection program, to be funded through the Regional Operating Reserve. This funding will be disbursed as grants to applicants, up to a maximum of \$20,000 per approved application.

This would be represented in the Climate Action Committee 2024-25 budget and any transfers from the operating reserve would only match what has been utilized at the fiscal year end.

Staff are not aware of any external funding sources to assist with funding such a program, however, will continue investigating any external funding opportunities available to help the Municipal contribution for the Home Flood Resilience Program.

ALTERNATIVES

Council may:

- approve a different budget allocation than the recommendation from staff; or
- request further information on a specific topic.

ATTACHMENTS

Attachment A Draft Home Flood Protection Program Policy

Attachment B 2024-03-12 Staff Report: Home Flood Protection Program

CHIEF ADMINISTRATIVE OFFICER REVIEW

The current policy and report reflect direction from Council at the March 26th Council meeting. Specifically, the policy is drafted to reflect a grant approach vs a loan program. Ultimately fiscal support is determined by Council and staff await legal review of the policy to ensure our ability to provide a direct grant to a private property vs. a loan program which could be similar to the West Hants SWITCH PACE Program.

Additionally, Council may still consider a hybrid including a grant for the assessment portion of the program and a loan (perhaps interest free) for the home improvement portion of the program. Funding scenarios are at the discretion of Council. Pending further review, should a loan portion be incorporated into the policy and revision of the policy may be required.

Staff are seeking the direction from Council on the continued direction of the policy to ensure staff are continuing to approach the program as Council desires.

Report Prepared by: _____

John Ogilvie, Climate Action Coordinator

Report Reviewed by: _____

Sara Poirier, Director of Planning and Development

Report Reviewed by: _____
Carlee Rochon, Director of Financial Services

Report Approved by: _____
Mark Phillips, Chief Administrative Officer



Attachment A

WEST HANTS REGIONAL MUNICIPALITY HOME FLOOD PROTECTION PILOT PROGRAM POLICY

RCOXX-###.00

1. TITLE

This policy shall be known, and cited, as the Home Flood Protection Pilot Program Policy.

2. SCOPE AND PURPOSE

- 2.1. This policy is applicable to the Home Flood Protection Pilot Program for West Hants Regional Municipality and all qualifying residential properties. This policy shall only apply to upgrades installed using the Home Flood Protection Pilot Program. The program may evolve in the future to expand eligibility and funding criteria.
- 2.2. The purpose of this policy is to define the operational parameters of the Home Flood Protection Pilot Program, including the eligible home upgrades, qualifying properties, and details regarding funding amounts.
- 2.3. The intent of the Home Flood Protection Pilot Program is to offer financial assistance to homeowners to:
 - 2.3.1. Assess the risk of flooding to their homes and available upgrades to protect their home from that risk; and
 - 2.3.2. Implement eligible upgrades that will reduce the risk of flooding or reduce the impacts of flooding to their home.

3. REFERENCES

- 3.1. Nova Scotia *Municipal Government Act, Section 65C.*

4. DEFINITIONS

- 4.1. "CAC" or "Committee" means the Climate Action Committee of the Municipality.
- 4.2. "CAO" means the Chief Administrative Officer of the Municipality.
- 4.3. "Home Flood Protection Assessment" means an assessment in the form of a written report performed by a qualified individual, as determined by the Municipality, to assess the risk of flooding of a Qualifying Property, and to offer suggested upgrades that may protect the home from the impacts of flooding.

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- 4.4. “Municipality” means West Hants Regional Municipality.
- 4.5. “Qualifying Property” is an existing property that meets all the eligibility requirements in this Policy.

5. QUALIFICATION

- 5.1. To qualify for financial assistance through the Home Flood Protection Pilot Program, the following conditions must be met:
- 5.1.1. The property must be an existing single unit dwelling and not a new construction, located within the boundaries of the Municipality;
 - 5.1.2. The property must be a single unit dwelling, privately owned by an individual or non-profit. The property cannot be owned by the Federal, Provincial or Municipal government;
 - 5.1.3. The owner of the property cannot be in arrears of any Municipal taxes, including penalties and interest;
 - 5.1.4. The proposed upgrade(s) must be suggested as part of a Home Flood Protection Assessment.

6. APPLICATION AND APPROVAL

- 6.1. The Climate Action Committee will evaluate all applications based on *Section 5* and *Section 6.6* of this policy and recommend specific applications for approval to Council. Applications are subject to written approval by Council or its designate.
- 6.2. Applications will be accepted once per year, to be submitted on or before the third Wednesday of March, for the Committee to review.
- 6.2.1. Public notification will be provided of the submission date and application requirements.
 - 6.2.2. Applications must be accompanied by applicable supporting documentation, as noted in Section 6.7.
- 6.3. Applicants will be awarded individually no more than \$20,000 as a grant.

- 6.3.1.** This funding limit includes the cost of a Home Flood Protection Assessment, with the remainder of awarded funds to be used toward upgrade installation costs.
- 6.3.2.** This funding limit in no way excludes the homeowner from performing additional upgrades from their own sources or using applicable Provincial or Federal funding.
- 6.4.** Per the *Municipal Government Act, Section 65*, as amended, successful applicant information will be published on the Municipal website. This includes the applicant's name and the amount of grant funding approved.
- 6.5.** Notwithstanding the *Residential Property Tax Assistance Policy*, successful applicants receiving a grant under the *Home Flood Protection Pilot Program Policy* will not be eligible for grants or contributions in the same fiscal year, under any other grant program established by Council.
- 6.6.** The following scoring criteria will be used by the Committee to prioritize applications and assist in the approval process.

Scoring Criteria for Home Flood Protection Program

Residence	
The dwelling is the owner's primary residence	10 points
Desired Upgrade(s)	
Upgrades are desired for the main dwelling or area immediately surrounding the main dwelling	5 points
Upgrades are desired to protect property access i.e. driveway	3 points
Upgrades are desired for detached outbuildings such as a garage or shed	1 point
Upgrades are desired to the property/lawn, that does not mitigate flooding of the main dwelling	0 points
Maximum Flooding Severity	
Floodwater depth of 2' (feet) or more	3 points
Floodwater depth greater than 3" (inches) and less than 2' (feet).	2 points
Floodwater depth of less than 3' (inches).	1 point
Frequency of Flooding	
Annually, or more frequently.	6 points
Every 2 years.	4 points

Regularly between every 3-10 years.	2 points
Every 10 years or less frequently.	1 point
Further Consideration	
The applicant applied to the program in the previous year but did not receive funding.	3 additional point.

- 6.7.** Supporting documentation will be required to attest to the severity and frequency of flooding, such as photos with a timestamp and/or documents that supported past insurance claims.
- 6.8.** In addition, the CAC may consider the availability of funds for the Municipality to provide financial assistance with the Home Flood Protection Program.

7. ELIGIBLE UPGRADES AND INSTALLATIONS

The following is a list of eligible upgrades and installations under the program. Eligible upgrades must be recommended as part of a Home Flood Protection Assessment.

- 7.1.** Back-flow prevention valve
- 7.2.** Sump pump.
- 7.3.** Window well covers.
- 7.4.** Flood alarms.
- 7.5.** Sealing the building envelope.
- 7.6.** Repairing foundation cracks.
- 7.7.** Drainage improvements, including for property access.
- 7.8.** Eavestrough improvements/repositioning.
- 7.9.** French drains.
- 7.10.** Bioswales and rain gardens.



**WEST HANTS REGIONAL MUNICIPALITY
HOME FLOOD PROTECTION PILOT PROGRAM POLICY**

RCOXX-###.00

I, Deanna Snair, Municipal Clerk of the West Hants Regional Municipality, in the Province of Nova Scotia, do hereby certify that this is a true copy of the Policy as adopted by the Council of the West Hants Regional Municipality at a meeting duly called and held on the ____ day of ____ (month), ____ (year).

Deanna Snair

Adoption	
Notice to Council	Date
Approval	Date
Description	



Attachment B

WEST HANTS REGIONAL MUNICIPALITY REPORT

Information ☒	Recommendation ☐	Decision Request ☐	Councillor Activity ☐
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To: Mayor Zebian and Members of West Hants Regional Municipality Council

Submitted by: _____
John Ogilvie, Climate Action Coordinator

Date: 2024-03-12

Subject: Information Report: Home Flood Protection Program

LEGISLATIVE AUTHORITY

Municipal Government Act (MGA) Sections 81A (1) and 65A, C

DECISION REQUEST

Staff require Council direction on program intent and funding commitment.

BACKGROUND

Property ☒	Public Opinion ☐	Environment ☒	Social ☐	Economic ☒	Councillor Activity ☐
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At the January 23, 2024, Council meeting, Council passed the following motion:

“Council direct staff to create a home flood protection program and present it to Council by the March Committee of the Whole meeting for viewing and/or approval for budgetary implications”.

Based on this motion, staff gathered information and prepared this report to provide Council additional information on a home flood protection program and to gather further feedback from Council such as program intent and funding commitment, to create a complete program for recommendation.

DISCUSSION

Legislative Authority

Upon review of the *MGA*, staff have determined two avenues for a home flood protection program for residents. The first would be to use Section 81A of the *MGA* to allow the Municipality to provide a loan to property owners for specific items mentioned in Sections 81 (1) (c, d). The second option is to create the program as a grant to property owners that meet specific criteria, as determined by Council.

Section 81A (1) of the *MGA* states the following:

“The council may make by-laws imposing, fixing, and providing methods of enforcing payment of charges for the financing and installation of any of the following on private property with the consent of the property owner:

- a) energy-efficiency equipment;
- b) renewable energy equipment;
- c) equipment for the supply, use, storage, or conservation of water; and
- d) on-site sewage disposal equipment”.

This section of the Act provides the legislative authority for the Property Assessed Clean Energy (PACE) program, Switch West Hants. Switch West Hants pays for residential home upgrades directly and enables homeowners to repay the cost of the upgrades over 10-year terms, with an interest rate to cover the cost of financing. Specifically using subsection (c), the same mechanism could be used to finance a specific subset of upgrades that store water and encourage infiltration/absorption, such as rain gardens and bioswales. Subsection (d) may be applicable to items such as backflow prevention valves, which would be beneficial for areas with municipal sewer collection. Borrowing for a home flood protection program will impact the Municipality’s borrowing ratios and debt servicing, depending on program uptake.

Section 65A of the *MGA* gives Council the authority to spend money on items that are included in the Operating or Capital Budgets. Section 65C of the *MGA* states the following regarding grant disclosure policies:

- “1) The council shall adopt a policy that requires the municipality to disclose to the public a list of recipients of grants made by the municipality and the amounts of those grants.
- 2) A policy adopted under subsection (1) must include the
- a) frequency and timing of disclosure;
 - b) content to be included in a disclosure; and
 - c) form in which the disclosure must be made.
- 3) A policy adopted under subsection (1) may include any other matter that the council considers necessary or advisable to carry out effectively the intent and purpose of the policy.”

This section of the Act requires the Municipality to publicly disclose the recipients of grants, and the amount of the grants. Grants could be used to provide home flood risk assessments to residents, which would be the first step in determining potential upgrades to make homes more resilient to flooding.

Programs in Other Jurisdictions

There are various programs other municipalities created to address flooding and erosion damage on private properties, some within Nova Scotia and others across the country.

Colchester County Small Flood Damage Reduction

- Guided by a municipal policy (Attachment A) and overseen by the Flood Advisory Committee.
- Provides cost-sharing on projects based on the property type i.e. residential, commercial, farmland, etc. The percentage of municipal contribution is 75% for residential projects and decreases to a low of 10% for projects that protect vacant land.
- Property owner's contribution constitutes a first lien on the property and is collectible like taxes.
- One-year repayment plan is offered for the participants' contribution.
- Annual municipal budget of ~\$100,000.

Resilient Home Retrofits

- A pilot program offered in the Town of New Glasgow and Spryfield and Upper Hammonds Plains of Halifax Regional Municipality in partnership with Clean Foundation.
- Offers free home flood risk assessments along with home energy assessments for up to 20 households.
- Provides free upgrades to selected homeowners such as repairing foundation cracks, bioswales, rain gardens, gutter alignment, and more.
- Funded by the Province with ~\$400,000.

City of Windsor, Ontario, Home Flood Protection Program

- A pilot program offering subsidized home flood protection assessments to up to 100 households.
- Resident applicants must provide a \$200 refundable security deposit, which is returned following implementation of some recommended upgrades/actions.
- Provided in partnership with AET, an environmental consulting firm.
- Offers a detailed report to homeowners of actions that can be taken.

City of Burlington, Ontario, Home Flood Protection

- Offers subsidized in-person or virtual home flood protection assessments.
- The City provides up to 50% of the cost of the assessment, making homeowner contributions \$212.50 for virtual assessments and \$237.50 for in-person assessments.
- Provided in partnership with AET, an environmental consulting firm.
- Maximum of 20 applicants for the subsidy.

- The City also offers a plumbing permit fee grant program to waive building permit fees associated with installing sump pumps, backwater valves, and repair/replacement of a sanitary line when including installation of a backwater valve. WHRM does not require permits for sump pumps or backwater valves, and so this type of support is not needed.

The Province also has various programs to assist homeowners who meet specific income thresholds. The programs include Homeowner Residential Rehabilitation Assistance, Emergency Repair Program (for rural households), Provincial Housing Emergency Repair Program, and the Small Loans Assistance Program. These programs offer grants or low-interest loans for home repairs related to health and safety, which can include basement foundation and roofing repairs to mitigate water infiltration. Other possible repairs are numerous, and a municipal home flood protection program should complement these existing programs.

Governance and Administration

The establishment of a holistic residential home flood protection program may require an enabling by-law and policy to govern participant eligibility, eligible upgrades, and an outline of the program process. Administering a home flood protection program would require dedicated staff or third-party resources to inspect homes and provide recommendations. As noted above, both the City of Windsor and the City of Burlington have partnered with environmental consulting firm AET to perform home inspections and draft recommendations for homeowners. This process is very similar to home energy assessments performed for the PACE program, which qualify participants for federal and provincial grants/rebates.

Absent a by-law and policy, WHRM is well-placed to amplify messaging about actions homeowners can take to become more resilient to flooding. This could include using the extensive reach of the municipal Facebook page, monthly email updates, quarterly newsletters, and water utility bills. This is currently done but a more dedicated focus on communication would be an immediate action to improve homeowner awareness of flood resiliency, before launching a holistic municipal program.

Homeowner Eligibility

A home flood protection program for the Municipality should include homeowner and property eligibility. These eligibility requirements could consider:

- 1) That the home is located within WHRM;
- 2) Eligibility for existing residential construction (dated as of program launch);
- 3) That the homeowner is in good standing with respect to all municipal taxes, rates, or charges;
- 4) The flood history of a specific area/community;
- 5) The flood history of the applicants' home; and
- 6) That the flooding is specifically impacting homes, not land such as fields, lawns, etc.

These eligibility criteria would help make best use of limited municipal resources and ensure that residents who are the most affected by flooding can get assistance as needed. By excluding new construction, WHRM will not be incentivizing construction that is at risk of flooding; this

will complement any upcoming changes during the Plan Review that discuss coastal protection and potential development restrictions in at-risk areas.

Home Flood Risk Assessment

A municipal home flood protection program should prioritize offering grants to residents for a free home flood protection assessment, as a pilot project. An assessment would review the homeowner's property for opportunities to reduce the risk of flooding and provide a list of suggested upgrades. The report for the homeowner presents projects the homeowner can undertake to reduce flooding risk, the homeowner will select the upgrades they want to undertake, and then get quotes from qualified contractors for the projects. The pilot program could operate for a specific period as determined by Council. If Council opts to provide grants for upgrades that reduce the impacts of flooding to a homeowner, the eligibility should be based on recommendations of the home flood protection assessment.

Offering a pilot project to a specific number of residential properties will allow Council and staff to assess the feasibility of continuing and/or growing the program.

Home Upgrades and Impacts

Possible home upgrades range from low cost with minimal intervention to high cost with greater intervention (Table 1).

Table 1: Home Upgrades to Enhance Flood Resiliency

Low Cost, Potentially Small Intervention	High Cost, Potentially Large Intervention
	Eavestrough improvements/repositioning
Backwater valve	French drains
Window well covers	Bioswales and rain gardens
Flood alarms	Repairing foundation cracks
	Sump Pump
Sealing building envelope	

Many upgrades will have small individual impacts, but when implemented on a community-level scale they can create measurable differences. Upgrades such as sealing the building envelope, backwater valves, sump pumps, and window well covers will help keep water out of homes during rain and flooding events. Larger upgrades such as bioswales and rain gardens are considered green infrastructure that can improve absorption of rain and flood water; these upgrades are generally more feasible on residential properties with enough vacant space to construct these improvements. None of these improvements listed above are mutually exclusive, and they will complement each other.

Funding

As noted elsewhere, home flood protection assessments in Ontario cost approximately \$500. Detailed discussions with qualified home flood risk assessors within Nova Scotia would provide a better cost estimate locally. Starting with a program to provide free home flood protection assessments would give Council and staff an indication of budgetary requirements and program interest, as well as provide recommendations for homeowners to make their own changes. As an example, if Council allocated \$25,000 for a pilot project, WHRM could provide up to 50 home flood protection assessments as long as the cost remains similar to Ontario. Lower-cost upgrades such as a sump pump can range from approximately \$100 to more than \$700, depending on the pump capacity. High-cost upgrades such as drainage improvements would depend on excavation and labour costs but would likely be thousands of dollars.

External funding opportunities may exist for this type of program, such as the Nova Scotia Sustainable Communities Challenge Fund. This fund has a stream for adaptation projects, and I expect it to open for another round of applications this spring. This would require detailed discussions with fund staff to confirm WHRM's project eligibility.

NEXT STEPS

Council needs to provide direction to staff on program intent and funding commitment for staff to continue the development of a municipal home flood protection program.

If Council directs staff to continue exploring a home flood protection pilot program, beginning with home flood risk assessments, staff anticipate:

- Discussing with potential program partners to perform home flood protection assessments, including determining the cost of assessments;
- Drafting an enabling by-law and policy as needed for approval by Council; and
- Exploring external funding opportunities to offset or enhance the Municipal contribution to such a program.

Staff will continue to amplify messaging from other sources about flood risk and resilience.

FINANCIAL IMPLICATIONS

As noted above, based on the examples from Ontario, providing home flood risk assessments may cost \$500 each. A pilot project could be to provide free assessments to up to 50 homes within the Municipality, which would cost approximately \$25,000. These flood risk assessments will provide an indication of the options for residents to mitigate the impacts of flooding and quotes would indicate the costs involved for each project. This information will help Council and staff develop a home flood risk assessment program budget and potential cost-sharing framework.

Staff need to investigate if there are any external funding opportunities available to help pay for a home flood resilience program, which could significantly reduce the impacts on municipal finances.

Depending on Council's direction, any potential costs associated with this program and potential funding sources will need to be added to the operating budget during the 2024-25

budget deliberations. Borrowing for a home flood protection program will impact the Municipality's borrowing ratios, debt servicing, and may limit future borrowing capacity depending on program uptake.

ALTERNATIVES

Council may:

- direct staff to develop a home flood resilience program for approval, beginning with a pilot project offering home flood risk assessments;
- direct staff to continue exploring a home flood resilience program, offering both home flood risk assessments and grants for eligible upgrades;
- request further information on a specific topic; or
- maintain the status quo of staff sharing information from various sources such as Environment and Climate Change Canada.

ATTACHMENTS

Attachment A Colchester County Small Flood Damage Reduction Projects Policy

Attachment B Sample Home Flood Protection Assessment Package

CHIEF ADMINISTRATIVE OFFICER REVIEW

The coordinator's report has been well researched and provides plenty of considerations for Council to review. Loans vs grants or a hybrid, resources required to deliver the program, and applicant eligibility are some of the key topics for discussion. Staff are requesting specific direction or a comment from Council that we are on the right track with this proposed program.

I support the suggestion that a home risk assessment be the foundation for assessing the need for a more encompassing program (a place to start) or as the mandatory requirement as part of a wider scale program (something bigger). The eligibility section highlights six (6) criteria as preliminary considerations. This section and any additional criteria ensure that those having a greater need for assistance are addressed more immediately.

We look forward to Council's comments on the coordinator's work to-date.

Report Prepared by: _____
John Ogilvie, Climate Action Coordinator

Report Reviewed by: _____
Sara Poirier, Director of Planning and Development

Report Reviewed by: _____
Carlee Rochon, Director of Financial Services

Report Approved by: 
Mark Phillips, Chief Administrative Officer

Attachment A
Municipality of the County of Colchester
Small Flood Damage Reduction Projects Policy

1. Introduction

The Flood Advisory Committee approves and manages small flood damage reduction projects in the County on an annual basis. The Committee has limited resources and as such feels it is important for property owners who benefit from this Policy to cost share in projects. This will allow for the completion of more projects per year. The following Policy outlines the process for applying for a small flood damage reduction project as well as the available cost reduction options available to the various landowners.

2. Definitions

In this Policy:

- a. “Active Farmland” is property which is identified as farmland on the Assessment Roll and is currently being farmed.
- b. “Commercial Property” is property which is identified as commercial on the Assessment Roll and has a business located on the property.
- c. “Flood Advisory Committee” is a Committee of Council (the “Committee”).
- d. “Non-Municipal Infrastructure” is infrastructure that is privately owned or publicly owned (by the Province or Federal Government) and which serves the general public, including but not limited to, railway infrastructure and properties, bridges, electric power supply grids, and cable-TV service infrastructure.
- e. “Owner” includes:
 - (i) the person assessed for the property;
 - (ii) a person who holds title to the property including a part owner, joint owner, tenant in common, or joint tenant of the property;
 - (iii) a person having the care or control of the property through adverse possession; and
 - (iv) a person with a life interest in the property.
- f. “Principal Residence” is a family home ordinarily inhabited by owner and which owner has designated as principal residence for legal and tax purposes.
- g. “Residential Property” is property which is identified as residential on the Assessment Roll and is occupied by the owner as the owner’s principal residence.
- h. “Shoreline” is any area which is exposed to the influence of saltwater, including the downstream areas of watercourses which are influenced by the tide.

- i. “Small Flood Damage Reduction Project” is a project which will mitigate or eliminate the negative effects of flooding and erosion on a property and which takes place:
 - (i) Along a watercourse, or
 - (ii) Along a defined stormwater drainage course which carries water from a public road right of way.
- j. “Stormwater” is defined as the runoff generated from precipitation events such as rain and snow melt which flows over land or impervious surfaces and does not soak into the ground.
- k. “Vacant Land” is property which may be identified as residential, commercial or farmland on the Assessment Roll, but which has no principal residence or business located on the property and is not actively being used for farming.
- l. “Watercourse” is the bed and shore of every river, stream, lake, creek, pond, spring, lagoon or any other natural body of water and the water therein, whether it contains water or not. When the presence of a watercourse is unclear, the matter shall be referred to Nova Scotia Environment for a final decision.

3. Budget Amount

On an annual basis, the Municipality will identify an amount to be allocated for Committee projects.

4. Application Process

‘Request for Work’ forms are available from the Municipal Office, 1 Church Street, Truro, or from the Mayor or Councillors. Completed forms must be returned to the Municipality c/o the Committee, for consideration. Applications received after April 30 may not be considered for inclusion in the list of projects for that year and the applicants may be required to re-apply for consideration in subsequent or future year(s).

- a. Members of the Committee and Municipality staff shall carry out site visits to assess the work to be carried out under each proposed project for valid applications received under this Policy.
- b. Following site visits, staff shall process the applications received and prepare a priority list of all proposed projects for applications received under this Policy and present them to the Committee for approval, and for inclusion in an invitation for bids for the work required for the approved projects. Bids for work for the projects shall be invited in accordance with the Municipality’s Policy on Purchasing and Tendering for Goods, Services and Construction Projects and announced through the Municipality’s website and/or local print media. Depending upon budgetary constraints, the Committee may or may not include all projects listed in the priority list in the information package for bidders of work for the calendar year. Any projects that could not be included in the tender announcement shall be carried over to the priority list for the succeeding year and re-prioritized with the project applications received in that year. The Committee may also elect to seek

competitive bids on an hourly rate basis, to be applied to all approved projects within a given fiscal year.

- c. Applicants whose applications have been shortlisted for inclusion in the priority list of projects that will be carried out in the current year shall be advised in writing of the total cost of the project and the applicant's share of the cost of the project determined in accordance with Section 7 of this Policy. Applicants will have two weeks from the date of the letter advising of the approval and cost of the project to:
 - (i) Withdraw their application in writing; or
 - (ii) Confirm their acceptance of the project costs in writing, and to execute the "Agreement for Cost Sharing Expenses" and the "License to Enter upon Land and Release from Liability." If the project is not accepted in writing and if the Agreement and the Liability Release documents are not executed by the date stipulated in this Section, the project will be considered to have been withdrawn by the applicant and will be removed from the priority list of projects to be carried out.
- d. Following response from applicants as required by Section 4(c), staff will present the final priority list of projects for the year to the Committee for approval. Construction work will be awarded to successful bidders based on the final approved priority list of projects under the Policy.

5. Criteria

- a. The Committee will not consider, except in emergency situations, the following:
 - (i) Projects on resource or forest land;
 - (ii) Projects that threaten non-municipal infrastructure;
 - (iii) Projects on property owned by another level of government;
 - (iv) Projects whose purpose is to alter a naturally changing watercourse in which no flooding is threatened; or
 - (v) Projects necessitated due to shoreline erosion.
- b. The Committee will have the authority to pay:
 - (i) The full cost of any approved project(s) submitted by not-for-profit organizations for work on their property; and
 - (ii) The full cost of any approved project the Committee deems appropriate.

6. Prioritizing Projects

- a. In order to assist the Committee in the recommendation process, applications will be prioritized as follows:

Type of Property Threatened	Priority
residential property	1
commercial property	2
active farmland	3
vacant land	4

7. Project Cost Reduction

- a. Once projects have been approved by the Committee, the following reductions will be applied to the final project cost, reducing the portion of the cost payable by the applicant:

Property Type Threatened	Available Reduction in Applicant's Costs
residential property	75%
commercial property	50%
active farmland	25%
vacant residential land	10%
vacant commercial land	10%
vacant farmland	10%

- b. Other public funding:

- (i) It is the intent of this Policy that the Municipality will provide funding up to the maximum reduction in costs as set out in this Policy. The Applicant's costs will be those costs not covered by the Municipality's funding ("Applicant's Costs"). Should the Applicant receive funding for the approved work from another public agency(ies), the Applicant may apply that funding to the Applicant's Costs provided the amount of funding does not exceed the total of the Applicant's Costs. If the funding available to the Applicant from another public agency(ies) exceeds the Applicant's Costs, then the Municipality's costs shall be reduced by the full amount of excess funding or if the costs have already been paid the Applicant shall reimburse the Municipality the full amount of excess funding.
- (ii) The Applicant shall immediately advise the Municipality of other sources of public funding available for the approved work, whether the funding is received before or after signing the Cost Sharing Agreement.
- (iii) In all cases, and regardless of the total cost of the project, if the structure being threatened is a principal residence, the property owners will not be required to pay more than \$2,500 for the project.

- c. Applicants will be required to execute an “Agreement for Cost Sharing Expenses” to receive a reduction in accordance with this section.

8. Payment of Costs by Property Owners

- a. Property owners will be notified, in writing, of their actual cost of the project, based on staff estimates or bids received and as calculated in Section 7. Should the property owners accept the costs and agree to sign the “Agreement for Cost Sharing Expenses” and the “License to Enter upon Land and Release from Liability” as per Section 4(c) of the Policy, property owners shall be required to:
 - (i) Pay 50% of their share before any work is carried out on their property,
 - (ii) Pay the remaining 50% of their share of the project cost in a lump-sum amount if they have opted for the single lump-sum payment plan in the “Agreement for Cost Sharing Expenses”, or
 - (iii) Pay the first installment of the remaining 50% of their share of the project cost if they have opted for the one-year repayment plan in the “Agreement for Cost Sharing Expenses.”
 - (iv) If the Applicant(s) receive funding from another public agency(ies) in advance of the approved work being carried out, they will be required to deposit the entire amount of public funding received in lump sum from the third party at the time of signing of the “Agreement for Cost Sharing Expenses.” The applicant(s) will have the option to pay the balance amount of their share of the project cost either in a lump sum amount or in installments as specified in (ii) and (iii) above. The amount deposited against third-party assistance received by the applicant(s) shall not count towards the first installment if the applicant(s) decide to exercise their option as per (iii) above.
- b. Property owners shall be required to pay their share of the costs of the project as per Section 8(a) by March 1 in the fiscal year the project is completed. Should property owners fail to meet this deadline, the outstanding amounts shall be placed as a lien on the property.

9. First Lien

- a. The property owner’s outstanding cost for a project shall constitute a first lien against the property from the time the cost is due on March 1 in the fiscal year the project is completed, and is collectible in the same manner as other taxes, and, at the option of the Municipal Treasurer may be collected at the same time and in the same proceedings as other taxes. The lien remains in effect until the costs, and any interest thereon, has been paid in full.
- b. In the event of subdivision after a first lien comes into being, the lien shall attach to the lot or parcel bearing the same Property Identification Number as the original property, or to such other property as may be determined or deemed by the Municipality to be the successor property.

10. Payment of Costs over Time and Interest

- a. If the property owner(s) opt to pay their remaining 50% share of the total project costs in installments as permitted by Section 8, the costs may be paid in 1 to 12 monthly installments together with interest on the unpaid balance at 7% per annum or such other interest rate determined by Council by resolution, compounded annually, computed from March 1 in the fiscal year the project is completed, subject to the provisos that:
 - (i) In the event of default of payment of any installment, the entire unpaid balance, including interest, becomes due and payable;
 - (ii) In the event of default of payment of any installment, the interest on the amount of the default shall be computed at the same rate prescribed for the late payment of other real property taxes payable to the Municipality; and
 - (iii) A property owner may pay off their cost of the project and extinguish the lien at any time by paying the entire balance, including interest.

Clerk's Annotation For Official Policy Book

~~Date of Notice to Council Members of Intent to Consider (7 days minimum):~~ January 10, 2022

Date of Passage of Current Policy: January 27, 2022

I certify that this Policy was adopted by Council as indicated above.

Rob Simonds
Municipal Clerk

February 15, 2022
Dated

*amended January 27, 2022
amended November 28, 2019
amended January 31, 2019
amended January 29, 2015
amended November 24, 2011
originally approved September 24, 2009*

Attachment B

Prepared for
Sally Homeowner
113 Lucky Lane, Kitchener, ON



Date Completed: November 15, 2018
Assessor Name: Sample Assessor
Assessor Email: sample@aetgroup.ca
1-519-123-4567

Prepared on behalf of AET Group
www.aet98.com
1-877-876-9235

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INTRODUCTION TO REPORT

What Does This Report Include?

This report includes an easy to read summary of top ranked items for priority action that have received a “poor/ needs further investigation” score or require specific mention based on questions asked by the homeowner. It also provides a record of all gathered information and provides additional helpful resources to help homeowners take action to reduce flood risk.

How Are Assessed Features Scored?

Assessors use the standardized assessment tool provided to guide them through a visual assessment of the property and to ask a list of preventative maintenance questions to homeowners. The information gathered is then compared to the tool’s scoring definitions, developed by the University in Waterloo in concert with a wide variety of national experts in the area of basement flood risk reduction. Assessed Features are assigned scores of “Good- Best Practice”, “Intermediate” or “Poor/ Needs Further Investigation” based on where they fall within these definitions. Any Assessed Features not accessible for observation and any preventative maintenance questions that are not completed by the homeowner are marked “Not Recorded.”

What Does This Report Not Include?

Beyond summarizing the report findings related to assessed items that received a score of “poor/needs further investigation” or require specific mention based on questions asked by the homeowner the report does not formally state a prioritized approach for addressing deficiencies. It is up to Homeowner to decide which actions they will take and in what order.

To ensure program impartiality the report does not recommend specific contractors, suppliers or products. The report also does not provide in-depth drawings or tailored step-by-step instructions to complete projects at the home to address deficiencies.

How Was Information for this Report Gathered?

The contents of this report have been gathered by examining the physical condition of a variety of features inside and outside the home using simple tools such as a moisture meter, humidity gauge, flashlight and measuring tape. A verbal preventative maintenance questionnaire has also been completed with the homeowner or their designate.

Reporting Time Frame

This report documents the observed condition of physical features of the home and the preventative maintenance information gathered from the Homeowner on the day of the Assessment only.

Follow-Up Support Provided

Your assessment fee includes the equivalent of a 15 minute email follow-up conversation with your Assessor. Our customer service team can also answer your basic questions at 1-877-876-9235. For ongoing support, visit homefloodprotect.ca to register for our e-newsletter that includes important preventative maintenance reminders. For do-it-yourself tips and Homeowner Success stories, like us on Facebook@HomeFloodProtect.

What is Included in the Additional Resources Section?

A list of easy to read, highly practical, online links is provided to help Homeowners take action to reduce flood risk. These include how-to fact sheets and videos, local subsidy information, questions to ask your insurance provider and tips about hiring contractors.

DEFINITION OF TERMS

Scoring of Assessment

Each assessed item is assigned a score based on the standardized criteria laid out in the Home Flood Protection Assessment ranking system.

Score	Description
Good – Best practice	Observed or reported in good condition or reported maintenance practice
Intermediate	Observed or reported in intermediate condition or reported maintenance practice
Poor / Needs Further Investigation	Observed or reported in poor condition or reported maintenance practice or needs further investigation
Not Reported	Unobserved or unreported observed condition or reported maintenance practice
Out of Scope	Out of scope for this assessment but worthy of further consideration

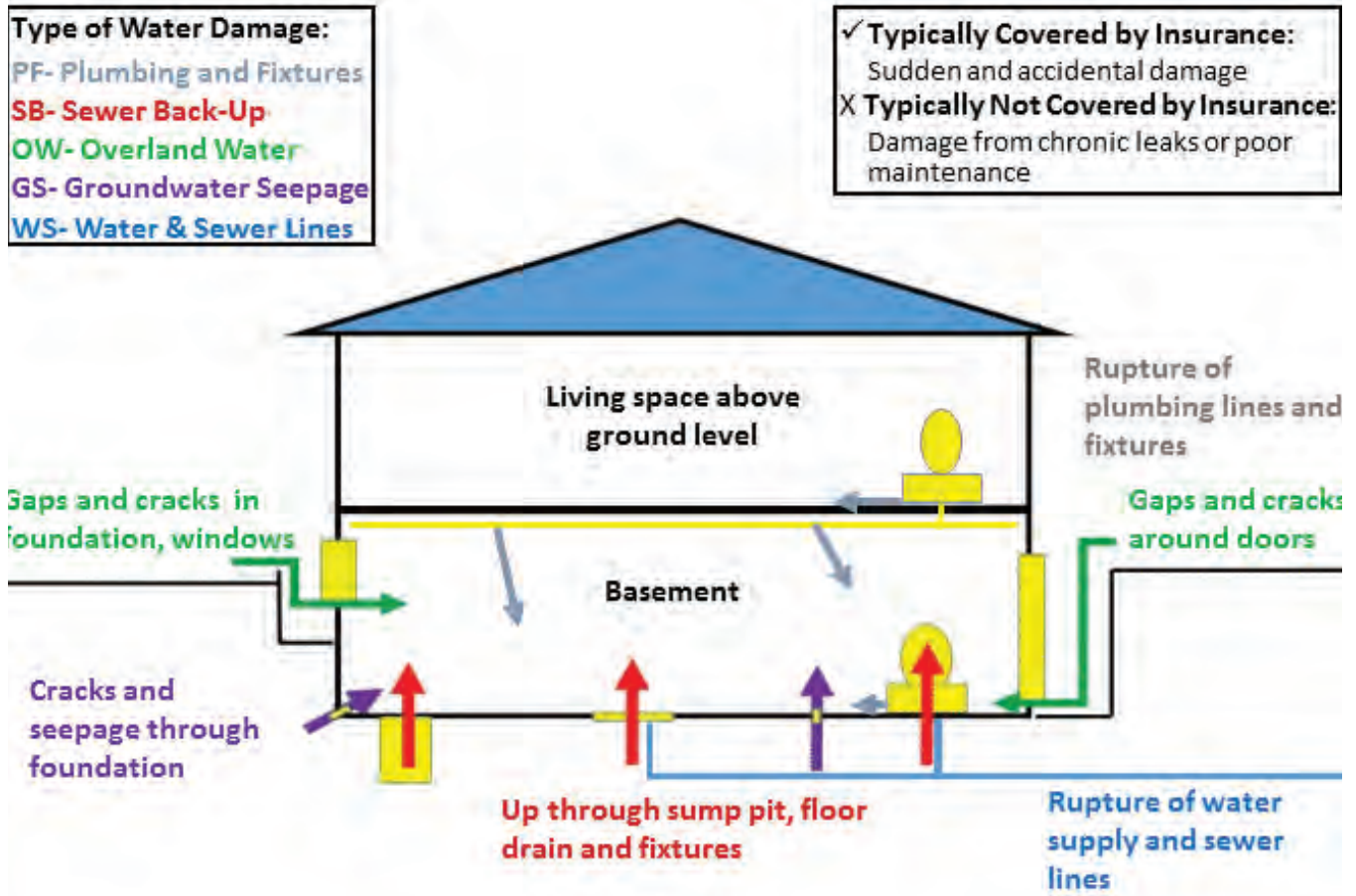
UNDERSTANDING DIFFERENT TYPES OF WATER DAMAGE RISKS AT YOUR HOME

The diagram and the definitions below are provided to help you understand the types of water damage that may affect any home due to deterioration of physical features, lack of preventative maintenance or water backup from municipal sewer systems during extreme weather events.

These water damage types are referenced in your Home Flood Protection Assessment Report to help you understand the types of water damage risks that have been identified at your home and your opportunities to reduce risk. Please see the customized list of maintenance best practices listed in your report to help you develop your preventative maintenance routine.

Insurance Coverage Considerations:

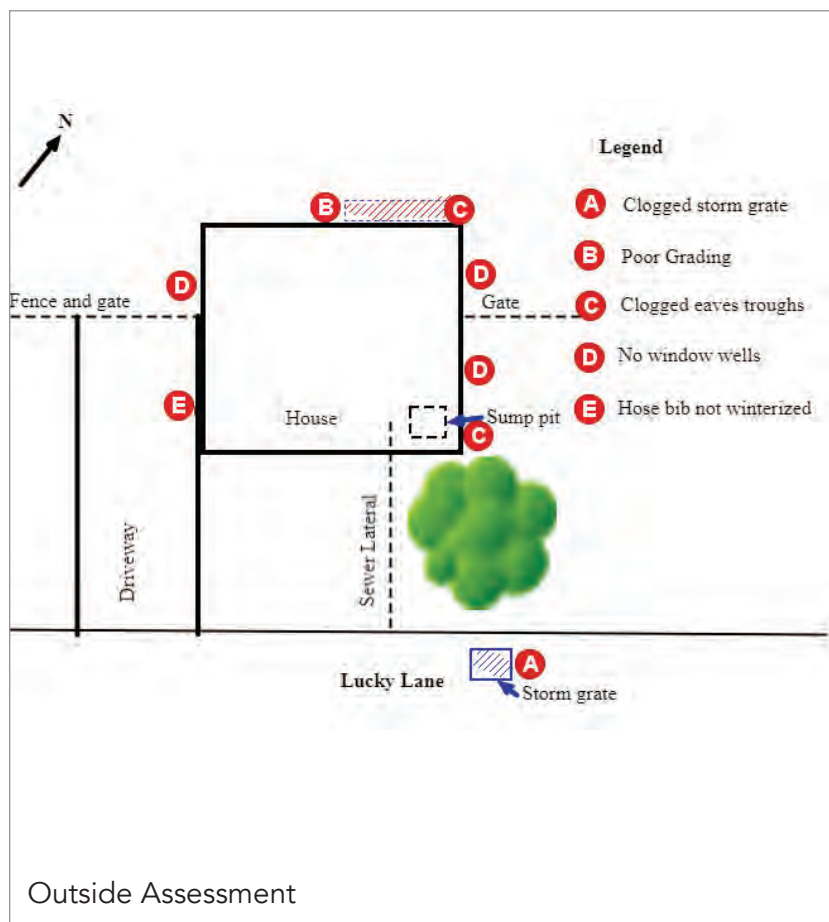
Sudden and accidental water damage is typically covered by insurers, however damage due to slow leaks or lack of preventative maintenance is typically not covered. Since there is no industry-wide, standard language used to define water damage types you may find using the terms and descriptions in this document helpful when working with your insurer to determine which coverage is best for you. Please note that not all insurance companies provide all types of coverages for all homes. See the “Questions for Your Insurance Provider” document in the Additional Resources section of the report for additional information.



Typical Insurance Policy Coverage for Sudden and Accidental Damage	Code	Type of Water Damage	Simple Definition
Included	PF	Plumbing and Fixtures	Water that enters your home from a tear or rupture of plumbing pipes or fixtures (e.g. toilets, hot water heaters, dish washers)
Optional	SB	Sewer Back-Up	Water that flows from the sanitary or storm sewer or your home's foundation drains and backs up into your home through the sump pit, toilets and drains
Optional	OW	Overland Water	Water that flows from a lake or river, heavy rain or rapid snow melt and enters through cracks and gaps in your home's exterior from a point at or above ground level
Optional	GS	Ground Water	Water that has saturated the ground and enters your home below ground level through gaps, cracks and seepage through your home's foundation
Optional	WS	Water and Sewer Lines	Water that enters your home due a tear or rupture of a water supply and/or sewer lines

OUTSIDE ASSESSMENT SUMMARY TOP-RANKED OPPORTUNITIES TO REDUCE FLOOD RISK

All features and maintenance practices that were assessed as “poor/ needs further investigation”, require specific mention based on questions asked by the homeowner or are marked as “out of scope” but deserve further consideration, have been compiled into this summary.



ASSESSED FEATURES

Fig	Assessed Feature and Best Practice	Type of Water Damage	Assessment	Opportunity to Reduce Risk
B	Grading at foundation- After a heavy rain, does the grading within 1.8m (6') of your foundation walls direct water away or do you see water pooling? The grading within 1.8 m (6') of the foundation walls slopes a minimum of 5% to direct water away from the foundation. The foundation surface does not easily soak up water.	OW, GS	The grading is flat or slopes toward the foundation OR The foundation surface is highly water absorbent OR Needs further investigation.	See B on Outside Assessment diagram. The grading beside your home directs water toward the foundation. The line in the soil indicates eaves troughs are overflowing and adding additional risk. Correct grading to achieve at least a 5% slope away from the foundation. Consider replacing the surface with non-water absorbent material. See comments related to eaves trough maintenance.
D	Window wells - Are window wells installed in such a way that they reduce flood risk? For each window that is less than 10-15cm (4-6") above the ground surface, a window well is present and sits at least 10-15cm (4-6") above grade. The window well is sealed at the foundation and the grading adjacent to wells slopes away from the home at a minimum of 5%. Consider installing window wells covers to further reduce risk.	OW	For each window that is less than 10-15cm (4-6") above the ground surface, a window well is not present. OR Window wells sit less than 10-15cm (4-6") above grade or are not sealed at foundation or grading at the window wells does not slope away from home at a minimum of 5%. Window well covers are not present OR Requires further investigation.	See D on Outside Assessment diagram. The windows are only 2.5 cm above grade and there is no formal window well, placing windows at higher risk of water inflow during heavy rains and spring melts. Work with a qualified professional to install a window well with adequate drainage. Correct grading adjacent to the window wells to slope 5% away from home. Consider installing window well covers to further reduce risk.

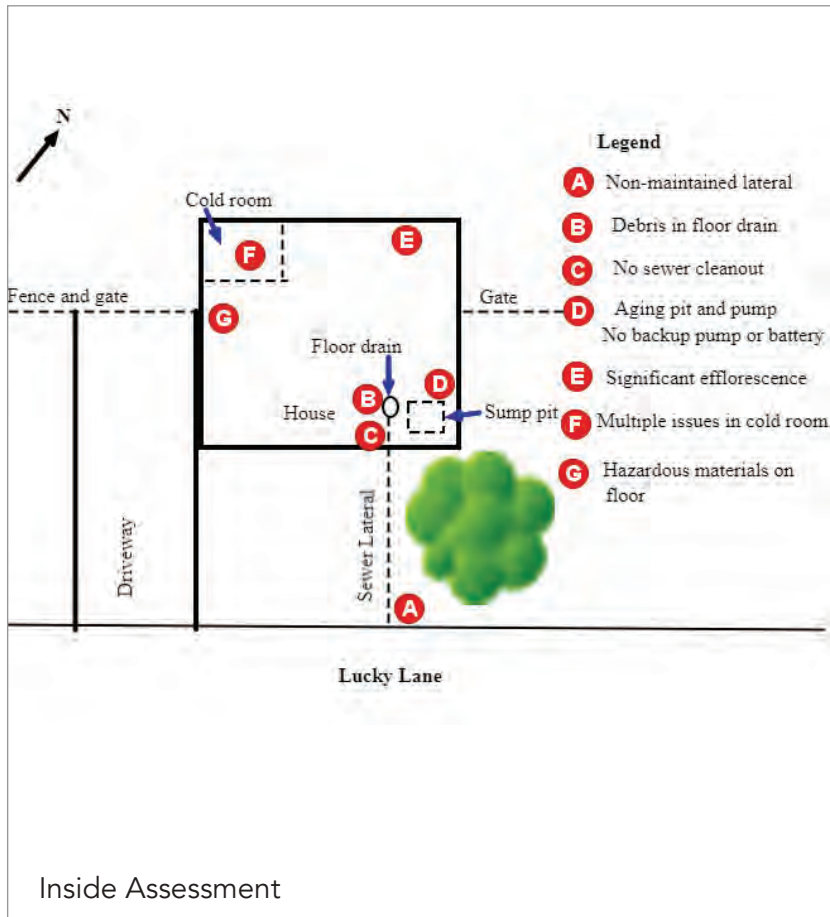
ASSESSED MAINTENANCE

Fig	Maintenance Feature and Best Practice	Type of Water Damage	Assessment	Opportunity to Reduce Risk
A	Overland drainage maintenance – Once per season or when major storm events are predicted, the homeowner checks for and removes debris and obstructions from the water flow paths including swales, nearby storm drains, culverts and drainage ditches.	OW	The homeowner never checks for or removes debris and obstructions from the water flow paths including swales, nearby storm drains, culverts and drainage ditches.	See A on Outside Assessment diagram. Once per season or when major storm events are predicted, check for and remove debris and obstructions from the water flow paths including swales and nearby storm drains. If nearby storm drains are free of debris but are still not draining within 24 hours, contact the government department with jurisdictional authority.
	Grading at foundation maintenance – Each season the homeowner checks for signs of water pooling or ice formation and corrects grading to achieve at least 5% slope away from the foundation	OW, GS	The homeowner never checks for signs of water pooling or ice formation nor corrects grading to achieve at least 5% slope away from the foundation.	Each season, check for signs of water pooling or ice formation at foundation. Correct grading to achieve at least 5% slope away from foundation.

C	Eaves trough maintenance – Each season during heavy rainfalls, the homeowner checks the eaves troughs for leaks, debris and blockage. Repairs and debris removal are completed as needed.	GS	The homeowner never checks the eaves troughs for leaks, debris and blockage. Repairs and debris removals are not completed as needed.	See C on Outside Assessment diagram. Each season during heavy rainfalls, check for leaks, debris and blockage. Repair, replace and clean out as needed.
	Downspout maintenance – Once per season the homeowner checks to make sure the downspout extensions are secured, free of leaks, depositing water at least 1.8m (6') from the foundation or to a drainage swale and that water is not flowing onto adjacent properties	GS	The homeowner never checks to make sure the downspout extensions are secure, free of leaks, depositing water at least 1.8m (6') from the foundation or to a drainage swale and that water is not flowing onto adjacent properties.	Once per season check to make sure the downspout extensions are secure, free of leaks, deposit water at least 1.8m (6') from the foundation or to a drainage swale and that water is not flowing onto adjacent properties.
	Window maintenance – Once per season the homeowner checks the condition of the frames, glass and seals, and completes repairs as necessary.	OW	The homeowner never checks the condition of the frames, glass and seals, or completes repairs as necessary.	Once per season check the condition of the frames, glass and seals. Repair as necessary.
	Hose bib maintenance – Spring, summer and fall the homeowner checks for leaks and completes repairs as necessary. Before winter, the outdoor water supply is shut off and the water line is drained. The hose is drained and removed.	OW, GS	The homeowner never checks for leaks or completes repairs as necessary. They never shut off the exterior water supply, drains the line or remove the hose.	See E on Outside Assessment diagram. Spring, summer and fall check for leaks and complete repairs as needed. Before winter freeze up shut off the outdoor water supply and drain the water line. Drain and remove the hose.

INSIDE ASSESSMENT SUMMARY TOP-RANKED OPPORTUNITIES TO REDUCE FLOOD RISK

All features and maintenance practices that were assessed as “poor/ needs further investigation”, require specific mention based on questions asked by the homeowner or are marked as “out of scope” but deserve further consideration, have been compiled into this summary.



ASSESSED FEATURES

Fig	Assessed Feature and Best Practice	Type of Water Damage	Assessment	Opportunity to Reduce Risk
	Sanitary sewer lateral- Is your sanitary sewer lateral in good condition and is it free of blockages? Inspection of sanitary sewer lateral with a closed circuit television (CCTV) is best practice if a home is over 25 years old, if the home has experienced sewer backup or if the home experiences chronic drain backup. Note: Determining the condition of the sewer lateral is outside the scope of this assessment. Consult a qualified professional.	SB, WS	Note: Only a qualified professional can formally identify the condition and the connection status of this item. Note: Work with a qualified professional and check with the government department having jurisdictional authority to determine the availability and your eligibility for any subsidies.	You have noted that you sometimes get drain backups when you do laundry. This indicates restricted flow through your lateral. Consider a closed circuit television (CCTV) inspection by a qualified professional for assessment and repair or replacement to address this issue.
	Basement sanitary sewer lateral cleanout – A basement sanitary sewer lateral cleanout is present and easily accessible.	SB	A basement sanitary sewer lateral cleanout is not accessible OR not present OR Needs further investigation.	See C on Inside Assessment diagram. Consider working with a plumber to install an easily accessible hatch to improve inspection and maintenance access. This will make it more cost-effective for regular inspection, maintenance and repair.
	Backwater valve- Is a backwater valve appropriate for use in your home or if it is in place, is it in good condition? Consider working with a qualified professional to determine if a backwater valve is suitable for your home or to evaluate the condition of your backwater valve. If you have a backwater valve or install one, consider installing an alarm to let you know when the valve is closed to prevent flooding from in-home sources. Note: This item is outside of scope of this assessment. Consult a qualified professional.	SB	Note: Only a qualified professional can formally identify if a backwater valve would be right for your home and the condition of an existing unit. Note: Check with the government department having jurisdictional authority to determine the availability of a subsidy for installation and your eligibility.	Consider working with a qualified professional to determine if a backwater valve is suitable for your home. If you install a backwater valve remember to complete seasonal maintenance and consider installing a backwater valve alarm to let you know when the valve is closed to prevent flooding from in-home sources. Check with your insurance provider regarding eligibility for premium discounts for installing a backwater valve and/or an alarm.

	Foundation drain- Is a foundation drain (weepers) present? Is foundation drain functioning properly to drain water away from your foundation? Note: Foundation drains are not common before 1960. Depending on the age of your house it may or may not have a foundation drain or it may have a drain that is old and in poor condition. Missing or clogged drains increase the risk of basement infiltration flooding. Foundation drains that are connected to sanitary or storm sewers increase the risk of sewer backup related flooding. Note: Determining the condition and the plumbing connection of the foundation drain is outside the scope of this assessment. Consult a qualified professional	GS, OW, SB	Note: Only a qualified professional can formally identify the condition of this item or recommend if one would be right for your home. Note: Check with the check with the government department having jurisdictional authority to determine the availability of a subsidy and your eligibility.	The foundation weepers that enter your sump pit are made of clay. It is likely that these are over 50 years old. Symptoms such as dampness where the basement wall meets the floor are common when these are in poor condition so please monitor these areas regularly. Consider working with a qualified professional to inspect and/or repair your foundation drains to improve the rate of removal of water from your foundation. Check with the government department having jurisdictional authority to determine the availability of subsidy and your eligibility.
D	Sump pit- Does your sump pit have a sealed cover and is it in good repair? The sump pit has a sealed cap, is in good condition (free of cracks and holes) and is free of debris.	SB	The sump pit is in poor condition (cracks, holes greater than 6mm (1/4") present), there is no sealed cap, a large amount of debris is evident OR Needs further investigation.	See D on Inside Assessment diagram. You have an older sump pit without plastic walls and without a sealed plastic lid. Consider upgrading your sump pit to improve storage capacity and to decrease humidity levels in the basement by installing a unit with a sealable lid. Work with a qualified professional to complete this work.
	Sump pump- Is your sump pump in good condition and does it run infrequently? A sump pump is present and the homeowner reports it is functioning well and runs a maximum of 5 times per year. Consider installing an alarm to reduce flood risk.	SB	A sump pump is present and the homeowner reports it is not functioning well. AND/ OR The sump pump runs more than 10 times per year OR Needs further investigation.	Your sump pump is over 20 years old and you report that it does not always function well. Consider replacing your sump pump. Consider installing a ground fault interrupter (GFI) outlet to reduce the risk of electric shock. Hire a qualified professional for installation. Consider installing and maintaining alarms to reduce flood risk. Note: Check with the government department with jurisdictional authority regarding availability and eligibility for subsidy. Also check regarding plumbing permits requirements. Check with your insurance provider about discounts for installing alarm systems.

	Back-up sump pump- Is there a backup sump pump and is it in good condition? A back-up sump pump is present and the homeowner reports it is functioning well.	SB	A back-up sump pump is NOT present OR Back-up sump pump is present but the homeowner reports it is not functioning well OR Needs further investigation.	Purchase a back-up sump pump. Consider hiring a qualified professional for installation.
	Back-up power source – A back-up battery or generator is present, can generate electricity for a minimum of 72 hours and is reported by the homeowner to be functioning properly. A backup power source is elevated above anticipated flood levels. Consider installing an alarm to further reduce risk.	SB	There is no back-up power supply. OR A back-up battery or generator is present and is reported by homeowner to be functioning poorly AND/OR it is not elevated above the anticipated flood level OR Needs further investigation.	Purchase and install a 72 hour back-up power supply and maintain it each season. Raise the power source above the anticipated flood level. Consider installing and maintaining an alarm to reduce flood risk. Check with your insurance professional about discounts for installing sump pump backup batteries and alarm systems.
E	Unfinished wall efflorescence- Is there evidence of efflorescence on your walls, indicating water movement through the foundation? Foundation walls are free of efflorescence.	GS	There is significant evidence of efflorescence (large areas of solid coverage of white flakes) OR Needs further investigation.	See E on Inside Assessment diagram. Significant evidence of efflorescence was noted at the rear of the house where the grading is poor. Correct drainage, clean out eaves troughs and remove snow in winter. Remove efflorescence and seal the surface with masonry waterproofing paint.
F	Cold Rooms- Are cold rooms properly ventilated, with all surfaces maintaining consistent temperature to reduce mold and mildew risk? The door, frame and seals are all in good condition and there is no evidence of water entry. The door is adequately insulated. The air circulation level is good with adequate venting and all items are off the floor and away from walls by at least 15cm (6"). Space is unheated.	OW	Door, frame and seals are in poor condition, evidence of significant water entry and/or door is not insulated, air circulation is poor with restricted venting and items are stored against the walls or on the floor OR Needs further investigation.	See F on Inside Assessment diagram. Seal cracks in the door, frame and repair/replace seals. Improve insulation of the door or consider replacing them. Improve ventilation and raise items off of floor and away from walls by a minimum 15cm (6"). Consider working with a qualified contractor to remove plywood from the walls, to examine and address sources of water infiltration.

	Finished walls- Are water stains or high moisture levels indicating source of water infiltration? Walls are free of water stains. There is no evidence of mold (smell or visual evidence). The audible moisture meter indicates no concerns	GS	Walls show major evidence of water entry, clear evidence of mold (smell or visual evidence), moisture meter indicates higher concern OR Needs further investigation.	Major evidence of moisture has been noted on plywood walls inside cold room. Remove the source of water buildup at the foundation as needed (correct drainage, repair eaves troughs and/or remove snow in winter, seal foundation from outside in extreme cases). Remove and replace damaged materials. Consult a professional if you are concerned about mold. If you are considering refinishing your basement, refer to Water-Resistant Building Materials fact sheet.
	Furniture and electronics- Are furniture and electronics at risk of damage in the event of a flood? Furniture items have non-absorbent surfaces up to 30cm (12") and electronics are stored at least 30cm (12") off the floor (or to exceed anticipated flood levels).	N/A	Furniture items have absorbent surfaces in contact with the floor and electronics are stored on the floor OR Needs further investigation.	Carpet on floors, couches with absorbent legs and electronics on the floor are at risk of damage in the event of a flood. Select furniture items that have non-absorbent surfaces up to 30cm (12") and store electronics at least 30cm (12") off the floor (or to exceed anticipated flood levels).
	Relative humidity, air movement and temperature - Are the moisture, humidity and temperature levels in your basement optimum to reduce mold and mildew risk? A 30-50% relative humidity reading is taken in the basement. Air circulation is good. A minimum regular temperature above 15C (60F) is maintained.	N/A	Over 60% relative humidity reading is taken in basement OR Air movement is highly restricted OR The temperature is kept below 10C (50F) OR Needs further investigation.	The relative humidity reading is 65. This exceeds the recommended maximum of 50%. Reduce sources of moisture and run one or more dehumidifiers to maintain 30-50% relative humidity. Improve air circulation. Maintain minimum temperature of 15C (60F).
G	Hazardous materials- Are hazardous materials stored in a way that represents a contamination risk during a flood? No hazardous materials are stored in the basement and/or materials are stored in waterproof containers at least 30 cm (12") off the floor (or to exceed anticipated flood levels). Heating fuel tanks are secured to the floor.	N/A	Hazardous materials are not sealed in waterproof containers and/or are stored on the floor and/or heating fuel tanks are not secured to the floor OR Needs further investigation.	See G on Inside Assessment diagram. Remove paint, chemicals and other hazardous material from basement or seal hazardous materials in waterproof containers and store at least 30 cm (12") off the floor (or to exceed anticipated flood levels).

ASSESSED MAINTENANCE

Fig	Maintenance Feature and Best Practice	Type of Water Damage	Assessment	Opportunity to Reduce Risk
	Sanitary sewer lateral maintenance – If the home is over 25 years of age, has experienced sewer backup or has experienced chronic drainage issues, the homeowner has completed closed circuit television (CCTV) inspection of the sanitary sewer lateral. Based on recommendations of a qualified professional, the homeowner has cleaned out, lined or replaced damaged lateral as needed. The homeowner prevents clogging by preventing fats, oils, flushable wipes and grease from going down the drain.	SB, WS	Homeowner has a sanitary sewer lateral that is over 25 years old AND/OR has experienced sewer lateral backup but has not completed a camera inspection or related repairs and upgrades. OR Needs further investigation. The homeowner regularly puts fats, oils, flushable wipes and grease down the drain.	See A on Inside Assessment diagram. Once a home has reached 25 years of age, a camera inspection of the sanitary sewer lateral is recommended every 5-10 years as a preventative measure. Based on the recommendations of a qualified professional, clean out, line or replace a damaged lateral as needed. Prevent clogging by preventing fats, oils, flushable wipes and grease from going down the drain.
B	Floor drain maintenance – Each season the homeowner removes obstacles to water flowing freely to the drain, tops up standing water in the trap and removes any debris from the drain. In case of blockage, strange smell, lack of water in trap, the homeowner contacts a licensed plumber.	SB	The homeowner never removes obstacles to water flowing freely to the drain, tops up standing water in trap or removes any debris from the drain. In case of blockage, strange smell, lack of water in trap, they do not contact a licensed plumber.	See B on Inside Assessment diagram. Each season remove obstacles that prevent water from flowing freely to the drain, top up standing water in the trap and remove any debris from the drain. In case of blockage, strange smell and/or lack of water in trap, contact a licensed plumber.
	Sump pit maintenance – Each season the homeowner checks the sump pit, repairs cracks or damage, and removes debris.	SB	The homeowner never checks the sump pit, repairs cracks or damage or removes debris.	Each season check the sump pit, repair cracks or damage and remove debris.

Sump pump(s) maintenance – Each season, before vacation and when an extreme rain or melt event predicted, sump pump(s) and alarms are tested, repaired or replaced as required.	SB	Sump pump(s) are never tested, repaired or replaced as required.	Each season, before vacation and when an extreme rain or melt event is predicted, test the sump pump(s). Clean, repair or replace these items as required. Consider installing and maintaining an alarm each season to further reduce risk.
Unfinished wall efflorescence maintenance – Once per season the homeowner checks for evidence of efflorescence, addresses sources of water buildup at foundation, and cleans and repaints with masonry waterproofing paint as required.	GS	The homeowner never checks for evidence of efflorescence, addresses the sources of water buildup at the foundation, cleans and repaints the surface with masonry waterproofing paint as required.	Once per season check for evidence of efflorescence. Address sources of water buildup at the foundation. Clean and repaint the surface with masonry waterproofing paint as required.
Finished wall maintenance – Each season homeowner checks for high levels of moisture and water stains. If high levels of moisture or water damage and/or mold is evident, consults a professional for remediation. Monitor during heavy downpours and spring melts for signs of dampness.	GS	The homeowner never checks for high levels of moisture and water stains. If high levels of moisture or water damage and/or mold is evident, they do not consult a professional for remediation. The homeowner does not monitor for signs of dampness during heavy downpours and spring melts.	Each season check for high levels of moisture and water stains. If high levels of moisture or water damage and/or mold is evident, consult a professional for remediation. Monitor for signs of dampness during heavy downpours and spring melts.
Indoor plumbing and fixtures maintenance – Each season toilets, taps, pipes and water heaters are inspected by the homeowner and are repaired by a plumber as needed. Consider installing and maintaining flood alarms.	PF	Toilets, taps, pipes and water heaters are not inspected by the homeowner or repaired by a plumber as needed.	Each season inspect toilets, taps, pipes and water heaters for leaks and signs of wear. Repair or replace items with the assistance of a plumber as needed. Consider installing and maintaining flood alarms to reduce flood risk. Check with your insurance professional about discounts for installing alarm systems.

ADDITIONAL FLOOD PROTECTION RESOURCES

Regional Resources

[Saskatoon Key Flood Protection Resources](#)

[Saskatoon Contractor List](#)

[Burlington Key Flood Protection Resources](#)

[Burlington Contractor List](#)

[Toronto Key Flood Protection Resources](#)

[Get Emergency Ready Guide- City of Toronto](#)

[Toronto Contractor List](#)

[Oakville Key Flood Protection Resources](#)

[Hamilton Key Flood Protection Resources](#)

[Waterloo Region Flood Protection Resources](#)

National Resources

[Self-Help Resources for Outside and Inside the Home](#)

[Seasonal Maintenance Checklist](#)

[Infographic- Top Tips For Reducing Flood Risk](#)

[Infographic- Understanding Flood Insurance Coverage](#)

[Questions to Ask Your Insurance Providers](#)

[Estimated Cost Ranges for Completing Flood Protection Projects](#)

[Water Resistant Building Materials for Your Basement](#)

[Temporary Flood Barriers for Your Home](#)

[CMHC Guide for Understanding and Fixing Interior Moisture Problems](#)

[Emergency Preparedness Resources](#)



APPENDICES

Appendix A. Client Information Summary

Type of Home	Single Detached
Ownership	Owner
Type of Ownership	Freehold
Consents To Study	No
Length of Time in Home	0-5 years
Plan to Stay in Home	Over 10 years
Year Home Was Built	1950
Era of Neighbourhood development	Between 1940 and 1970
Home Layout	1.5 Storey
Home Size	Between 1000 to 2000 sq ft
Lot Size	Between 1/4 acre and 1/2 acre
Basement Type	Partly finished
Foundation Type	Rubble
Soil Type	Sand
Property within CA Regulated Area	No
Water Supply	Municipal
Sewage Service	Municipal
Weather Conditions	Clear and 5C

Appendix B. Reported Past Water Damage Summary

Past Water Damage to Your Lot and Exterior Structures	
Have you experienced any type of water damage to your lot and/or exterior structures (decks, garages, sheds) in the past?	No
What was the cause of the water damage?	
What category would the water damage fit into (total damage to structures or content)	\$0
What actions did you take to reduce your risk of future water damage outside your home?	
What is your level of concern about experiencing water damage to your lot or exterior structures in the future?	Low
Please list your top 2 water damage-related questions you have about your lot or exterior structures	Is there anything I should do to protect my windows from leaking? How often should I clean out my eaves troughs?
Past Water Damage To Your Home	
Have you experienced water in your basement or any type of water damage inside your home in the past?	Yes
What was the cause of the water damage?	Leaking pipes or appliances, Sewer backup through toilet or drains, Sump pump failure, High humidity causing mould or mildew growth.
What category would the water damage fit into (Total damage to structures or content)	Under \$5,000
What actions did you take to reduce your future risk of indoor water damage?	Completing maintenance activities.
What is your level of concern about experiencing water damage to your home is in the future?	Medium
Please list top 2 water-damage related questions you have about your home	How do I keep water from backing up through my floor drain? How do I make sure my sump pump will work when I need it in the spring?

Appendix C. Outside Assessment Form

Assessed Feature and Best Practice	Type of Water Damage	Assessment	Opportunity to Reduce Risk
Overland Drainage of Property			
Overland drainage of property – Twenty four hours after a heavy rain do you see ponding or pooling on your property or in nearby storm drains or drainage ditches? Twenty four hours after a heavy rain, water does not pool on the subject property or in nearby storm drains or drainage ditches. If drainage swales are present on the property they are unblocked and are at least 15cm (6”) deep.	OW	Twenty four hours after a heavy rain, some water pooling is seen on the subject property or in nearby storm drains or drainage ditches. If drainage swales are present on the property, they are unblocked and are at least 15cm (6”) deep.	Homeowner reports water pooling near the storm drain for several hours after a heavy rain. Contact the government department with jurisdictional authority if storm drain is not emptying within 24 hours. Please see preventative maintenance comment below.
Overland drainage maintenance – Once per season or when major storm events are predicted, the homeowner checks for and removes debris and obstructions from the water flow paths including swales, nearby storm drains, culverts and drainage ditches.	OW	The homeowner never checks for or removes debris and obstructions from the water flow paths including swales, nearby storm drains, culverts and drainage ditches.	See A on Outside Assessment diagram. Once per season or when major storm events are predicted, check for and remove debris and obstructions from the water flow paths including swales and nearby storm drains. If nearby storm drains are free of debris but are still not draining within 24 hours, contact the government department with jurisdictional authority.

Landscaping			
Condition and location of trees – Would falling limbs due to strong winds or ice accumulation pose any risk of property damage to the home or hydro lines? Does their location pose potential risk to the home's foundation or sewer lateral? Trees appear to be in good condition. Their limbs do not hang over the home, driveway or hydro lines. Trees are in a position where the risk of root damage to the home's foundation or sewer lateral is unlikely.	SB, WS, GS	Trees appear to be in good condition. Their limbs do not hang over the home, driveway or hydro lines. Trees are in a position where they likely do not pose a root damage risk to the home's foundation or sewer lateral.	No action is required.
Tree maintenance – Once per season, the homeowner checks the condition of trees, prunes as required and waters during drought periods.	SB, WS, GS	Once per season the homeowner checks the condition of trees, prunes as required and waters during drought periods.	Once per season, check the condition of trees and prune as required. Water during drought periods. If concerned about a tree on public property, contact the government department with jurisdictional authority for assistance. If concerned about a tree on your property, contact a certified arborist for help.
Garden beds adjacent to home – Do garden beds leave a minimum of 20 cm (8") of your foundation exposed? Do foundation plantings provide adequate light exposure and air movement to foundation? Foundation plantings provide good light and air circulation between the plantings and the foundation. A minimum 20 cm (8") of foundation remains exposed. Trees that will reach a height of 10m (30') or more are a minimum of 5m (15') from the foundation and shrubs are a minimum of 1.8m (6') from the foundation. Water drains freely away from the foundation.	GS	Foundation plantings allow for good light and air circulation between the plantings and the foundation. A minimum 20cm (8") of foundation remains exposed. Trees that will reach a height of 10m (30') or more are minimum of 5m (15') from the foundation and shrubs are minimum of 1.8m (6') from the foundation. Water drains freely away from the foundation.	No action required

Landscaping maintenance – Once per year the homeowner removes barriers which impede water flowing away from the foundation. Consider applying mulch to garden beds and aerating the lawn to improve the ability of the soil to soak up water.	GS	Once per year homeowner removes barriers which impede water flowing away from foundation.	Once per year remove barriers which impede water from flowing away from the foundation. Consider applying mulch to garden beds and aerating lawns to improve the ability of the soil to soak up water.
Driveways, Walkways and Patios			
Impermeable (waterproof surface such as asphalt and interlocking pavers) driveway – Is your driveway free of cracks and does it slope away from your home at a minimum of 1-2%? The driveway is sloped away from the foundation walls at a slope of 1-2% and is free of cracks and gaps.	GS	The impermeable driveway directs water away from the foundation (1-2% slope) and is free of cracks and gaps.	No action is required.
Impermeable (waterproof) driveway maintenance – Once per season the homeowner checks for evidence of pooling and ice buildup, repairs grading, seals cracks, fills gaps and removes weeds.	GS	Once per season the homeowner checks for evidence of pooling and ice buildup, repairs grading, seals cracks, fills gaps, and removes weeds.	Once per season check for evidence of pooling and/or ice buildup. Repair grading, seal cracks, fill gaps and remove weeds.
Walkways and patios – Do your walkways and patios slope a minimum of 1-2% away from foundation walls? Are they free of cracks and gaps? The walkway slopes a minimum of 1-2% to direct water away from foundation and is free of cracks and gaps.	OW, GS	Walkway slopes a minimum 1-2% to direct water away from the foundation and is free of cracks and gaps.	No action is required.
Walkways and patios maintenance – Once per season the homeowner checks for evidence of pooling and ice buildup. Grading is repaired, cracks and gaps are sealed, and weeds are removed.	OW, GS	Once per season the homeowner checks for evidence of pooling and ice buildup. They repair grading, seal cracks, fill gaps and remove weeds.	Once per season check for evidence of pooling and/or ice buildup. Repair grading, seal cracks, fill gaps and remove weeds. Replace if the surface is in very poor condition.

Grading at Foundation			
Grading at foundation – After a heavy rain, does the grading within 1.8m (6') of your foundation walls direct water away or do you see water pooling? The grading within 1.8 m (6') of the foundation walls slopes a minimum of 5% to direct water away from the foundation. The foundation surface does not easily soak up water.	OW, GS	The grading is flat or slopes toward the foundation OR The foundation surface is highly water absorbent OR Needs further investigation.	See B on Outside Assessment diagram. The grading beside your home directs water toward the foundation. The line in the soil indicates eaves troughs are overflowing and adding additional risk. Correct grading to achieve at least a 5% slope away from the foundation. Consider replacing the surface with non-water absorbent material. See comments related to eaves trough maintenance.
Grading at foundation maintenance – Each season the homeowner checks for signs of water pooling or ice formation and corrects grading to achieve at least 5% slope away from the foundation.	OW, GS	The homeowner never checks for signs of water pooling or ice formation nor corrects grading to achieve at least 5% slope away from the foundation.	Each season, check for signs of water pooling or ice formation at foundation. Correct grading to achieve at least 5% slope away from foundation.
Eaves Troughs and Downspouts			
Eaves troughs – Are eaves troughs adequately sized and in adequate condition to reduce flood risk? Eaves troughs wrap around the entire building, are in good repair and have downspouts placed a minimum of 9-12m (30-40'). Eaves trough of 13cm (5") are present for asphalt shingles or 15cm (6") for a metal roof.	GS	Eaves troughs wrap around the entire building, are in good repair, and have downspouts placed a minimum of every 9-12m (30-40'). Eaves trough of 13cm (5") is present for asphalt shingles or 15cm (6") for metal roof.	No action is required.
Eaves trough maintenance – Each season during heavy rainfalls, the homeowner checks the eaves troughs for leaks, debris and blockage. Repairs and debris removal are completed as needed.	GS	The homeowner never checks the eaves troughs for leaks, debris and blockage. Repairs and debris removals are not completed as needed.	See C on Outside Assessment diagram. Each season during heavy rainfalls, check for leaks, debris and blockage. Repair, replace and clean out as needed.

Disconnected downspouts – Are downspouts (that are not presently connected into underground pipes) directing water at least 1.8m (6') away from your home or the nearest drainage swale? For downspouts that have been disconnected, caps are securely in place to block the movement of water into underground pipes. The downspouts extend at least 1.8m (6') away from the foundation or to a drainage swale. Water is not directed onto hard surfaces or adjacent properties.	GS	For downspouts that have been disconnected, caps are securely in place to block the movement of water into underground pipes. Downspouts extend at least 1.8m (6') away from the foundation or to a drainage swale. Water is not directed onto hard surfaces or adjacent properties.	Consider connecting downspouts to a French drain, rain garden, bioswales or infiltration gallery to soak up water at least 5m (15') away from foundation. Check with government department with jurisdictional authority about drainage by-laws if any significant change to grading or drainage of property is being considered.
Downspout maintenance – Once per season the homeowner checks to make sure the downspout extensions are secured, free of leaks, depositing water at least 1.8m (6') from the foundation or to a drainage swale and that water is not flowing onto adjacent properties.	GS	The homeowner never checks to make sure the downspout extensions are secure, free of leaks, depositing water at least 1.8m (6') from the foundation or to a drainage swale and that water is not flowing onto adjacent properties.	Once per season check to make sure the downspout extensions are secure, free of leaks, deposit water at least 1.8m (6') from the foundation or to a drainage swale and that water is not flowing onto adjacent properties.
Foundation			
Foundation structure – Is your foundation free of cracks and gaps? The foundation appears to be in good condition and is free of cracks and finishing gaps (e.g. missing parging). Foundation penetrations are well sealed and sit above anticipated flood levels.	GS	The foundation appears to be in good condition and is free of cracks and finishing gaps (e.g. no missing parging). The foundation penetrations are well sealed and sit above anticipated flood levels.	No action is required.
Foundation structure maintenance – Once per season the homeowner checks for cracks and gaps, and completes repairs as required.	GS	Once per season the homeowner checks for cracks and gaps, and completes repairs as required.	Once per season check for cracks and gaps, complete repairs as required. Contact a qualified foundation repair contractor to repair cracks greater than 6mm (1/4").

Foundation clearance maintenance – Stored items are kept at least 15cm (6”) from the foundation. As dictated by snow storm events, the homeowner clears snow 1m (3’6”) away from the foundation, keeps window openings clear of snow and ensures that vents are clear.	GS	Stored items are kept at least 15cm (6”) from the foundation. As dictated by snow storm events, the homeowner clears snow 1m (3’6”) away from the foundation, keeps window openings clear of snow piles and ensures that vents are clear.	Store item at least 6” from foundation. At intervals dictated by snow storms, regularly keep snow piles 3’ (1m) away from foundation and keep window openings clear of snow piles. Ensure vents are clear.
Foundation efflorescence – Are there signs of efflorescence on the foundation that could indicate moisture problems? Efflorescence (mineral deposits) indicate water moving through masonry, evaporating and leaving minerals behind. The presence of efflorescence can indicate water issues that can lead to spalling or structural damage.	GS	There is minor evidence of efflorescence.	Reduce the flow of water to the masonry by correcting the grading, maintaining eaves troughs, repairing foundation drains, sealing cracks on driveway, shoveling snow away from the walls in the winter, and minimizing salt use.
Efflorescence maintenance – Once per season the homeowner checks for evidence of efflorescence, addresses the sources of water buildup at foundation, and cleans and repaints the surface with masonry waterproofing paint as required.	GS	Once per year the homeowner checks for evidence of efflorescence, addresses the sources of water buildup at the foundation, and cleans and repaints the surface with masonry waterproofing paint as required.	Once per season check for evidence of efflorescence. Address the sources of water buildup at the foundation. Clean and repaint the surface with masonry waterproofing paint as required.
Foundation moisture content – Is your foundation showing high levels of water retention? Low levels of moisture at the surface are indicated.	GS	Moderate levels of moisture at the surface are indicated.	Reduce the flow of water to masonry by correcting the grading, maintaining eaves troughs, repairing foundation drains, sealing cracks on driveway, and shoveling snow away from walls in the winter. Improve drying of the foundation by referring to the landscaping best practices. Contact a qualified foundation repair contractor if the problem persists.
Windows			
Condition of windows – Are windows in adequate condition to help reduce risk of basement flooding? Frames, glass and seals are all in good condition.	OW	Frames, glass and seals are all in good condition.	No action is required.

Window maintenance – Once per season the homeowner checks the condition of the frames, glass and seals, and completes repairs as necessary.	OW	The homeowner never checks the condition of the frames, glass and seals, or completes repairs as necessary.	Once per season check the condition of the frames, glass and seals. Repair as necessary.
Window wells – Are window wells installed in such a way that they reduce flood risk? For each window that is less than 10-15cm (4-6”) above the ground surface, a window well is present and sits at least 10-15cm (4-6”) above grade. The window well is sealed at the foundation and the grading adjacent to wells slopes away from the home at a minimum of 5%. Consider installing window wells covers to further reduce risk.	OW	For each window that is less than 10-15cm (4-6”) above the ground surface, a window well is not present. OR Window wells sit less than 10-15cm (4-6”) above grade or are not sealed at foundation or grading at the window wells does not slope away from home at a minimum of 5%. Window well covers are not present OR Requires further investigation.	See D on Outside Assessment diagram. The windows are only 2.5 cm above grade and there is no formal window well, placing windows at higher risk of water inflow during heavy rains and spring melts. Work with a qualified professional to install a window well with adequate drainage. Correct grading adjacent to the window wells to slope 5% away from home. Consider installing window well covers to further reduce risk.
Exterior Water Sources			
Hose bib maintenance – Spring, summer and fall the homeowner checks for leaks and completes repairs as necessary. Before winter, the outdoor water supply is shut off and the water line is drained. The hose is drained and removed.	OW, GS	The homeowner never checks for leaks or completes repairs as necessary. They never shut off the exterior water supply, drains the line or remove the hose.	See E on Outside Assessment diagram. Spring, summer and fall check for leaks and complete repairs as needed. Before winter freeze up shut off the outdoor water supply and drain the water line. Drain and remove the hose.
Sump pump discharge – Does your sump pump drain pipe deposit water at least 1.8m (6') from foundation or to the nearest drainage swale? Does pipe exit the home's exterior above anticipated flood levels? Sump pump drain pipe is present and deposits water at least 1.8m (6') from foundation or to drainage swale. It does not direct water onto a hard surface or onto adjacent property. The discharge pipe's exit point through the home's exterior is above anticipated flood levels.	OW, GS	Sump pump drain pipe is present and deposits water at least 1.8m (6') from foundation or to drainage swale and is not directing water onto a hard surface or adjacent property. The discharge pipe's exit point through the home's exterior is above anticipated flood levels.	No action is required.

Appendix D. Inside Assessment Form

Assessed Feature and Best Practice	Type of Water Damage	Assessment	Opportunity to Reduce Risk
Sewer and Storm Lateral			
Sanitary sewer lateral – Is your sanitary sewer lateral in good condition and is it free of blockages? Inspection of sanitary sewer lateral with a closed circuit television (CCTV) is best practice if a home is over 25 years old, if the home has experienced sewer backup or if the home experiences chronic drain backup. Note: Determining the condition of the sewer lateral is outside the scope of this assessment. Consult a qualified professional.	SB, WS	Note: Only a qualified professional can formally identify the condition and the connection status of this item. Note: Work with a qualified professional and check with the government department having jurisdictional authority to determine the availability and your eligibility for any subsidies.	You have noted that you sometimes get drain backups when you do laundry. This indicates restricted flow through your lateral. Consider a closed circuit television (CCTV) inspection by a qualified professional for assessment and repair or replacement to address this issue.
Sanitary sewer lateral maintenance – If the home is over 25 years of age, has experienced sewer backup or has experienced chronic drainage issues, the homeowner has completed closed circuit television (CCTV) inspection of the sanitary sewer lateral. Based on recommendations of a qualified professional, the homeowner has cleaned out, lined or replaced damaged lateral as needed. The homeowner prevents clogging by preventing fats, oils, flushable wipes and grease from going down the drain.	SB, WS	Homeowner has a sanitary sewer lateral that is over 25 years old AND/OR has experienced sewer lateral backup but has not completed a camera inspection or related repairs and upgrades. OR Needs further investigation. The homeowner regularly puts fats, oils, flushable wipes and grease down the drain.	See A on Inside Assessment diagram. Once a home has reached 25 years of age, a camera inspection of the sanitary sewer lateral is recommended every 5-10 years as a preventative measure. Based on the recommendations of a qualified professional, clean out, line or replace a damaged lateral as needed. Prevent clogging by preventing fats, oils, flushable wipes and grease from going down the drain.

Floor Drain			
Floor drain – Is your floor drain clear of physical barriers to water flow and in adequate condition to reduce flood risk? Note: Some homes built before 1950 do not have a floor drain. A floor drain is present and demonstrates a clear flow path of water to the drain. The drain is in good condition, free of debris and standing water is present in trap.	SB	A floor drain is present but demonstrates a partly blocked water flow path to the drain. The drain appears to be in moderate condition, minor debris is evident, and standing water is present in the trap.	Some minor debris was seen in the floor drain and an oily film water noted on the surface of the water. Remove stored boxes blocking path of water flow to drain, clean out debris in trap. Repair the drain as needed.
Floor drain maintenance – Each season the homeowner removes obstacles to water flowing freely to the drain, tops up standing water in the trap and removes any debris from the drain. In case of blockage, strange smell, lack of water in trap, the homeowner contacts a licensed plumber.	SB	The homeowner never removes obstacles to water flowing freely to the drain, tops up standing water in trap or removes any debris from the drain. In case of blockage, strange smell, lack of water in trap, they do not contact a licensed plumber.	See B on Inside Assessment diagram. Each season remove obstacles that prevent water from flowing freely to the drain, top up standing water in the trap and remove any debris from the drain. In case of blockage, strange smell and/or lack of water in trap, contact a licensed plumber.
Basement sanitary sewer lateral cleanout – A basement sanitary sewer lateral cleanout is present and easily accessible.	SB	A basement sanitary sewer lateral cleanout is not accessible OR not present OR Needs further investigation.	See C on Inside Assessment diagram. Consider working with a plumber to install an easily accessible hatch to improve inspection and maintenance access. This will make it more cost-effective for regular inspection, maintenance and repair.
Backwater Valve			
Backwater valve – Is a backwater valve appropriate for use in your home or if it is in place, is it in good condition? Consider working with a qualified professional to determine if a backwater valve is suitable for your home or to evaluate the condition of your backwater valve. If you have a backwater valve or install one, consider installing an alarm to let you know when the valve is closed to prevent flooding from in-home sources. Note: This item is outside of scope of this assessment. Consult a qualified professional.	SB	Note: Only a qualified professional can formally identify if a backwater valve would be right for your home and the condition of an existing unit. Note: Check with the government department having jurisdictional authority to determine the availability of a subsidy for installation and your eligibility.	Consider working with a qualified professional to determine if a backwater valve is suitable for your home. If you install a backwater valve remember to complete seasonal maintenance and consider installing a backwater valve alarm to let you know when the valve is closed to prevent flooding from in-home sources. Check with your insurance provider regarding eligibility for premium discounts for installing a backwater valve and/or an alarm.

Foundation Drain (Weepers)			
Foundation drain – Is a foundation drain (weepers) present? Is foundation drain functioning properly to drain water away from your foundation? Note: Foundation drains are not common before 1960. Depending on the age of your house it may or may not have a foundation drain or it may have a drain that is old and in poor condition. Missing or clogged drains increase the risk of basement infiltration flooding. Foundation drains that are connected to sanitary or storm sewers increase the risk of sewer backup related flooding. Note: Determining the condition and the plumbing connection of the foundation drain is outside the scope of this assessment. Consult a qualified professional.	GS, OW, SB	Note: Only a qualified professional can formally identify the condition of this item or recommend if one would be right for your home. Note: Check with the check with the government department having jurisdictional authority to determine the availability of a subsidy and your eligibility.	The foundation weepers that enter your sump pit are made of clay. It is likely that these are over 50 years old. Symptoms such as dampness where the basement wall meets the floor are common when these are in poor condition so please monitor these areas regularly. Consider working with a qualified professional to inspect and/or repair your foundation drains to improve the rate of removal of water from your foundation. Check with the government department having jurisdictional authority to determine the availability of subsidy and your eligibility.
Sump Pit and Pump			
Sump pit – Does your sump pit have a sealed cover and is it in good repair? The sump pit has a sealed cap, is in good condition (free of cracks and holes) and is free of debris.	SB	The sump pit is in poor condition (cracks, holes greater than 6mm (1/4") present), there is no sealed cap, a large amount of debris is evident OR Needs further investigation.	See D on Inside Assessment diagram. You have an older sump pit without plastic walls and without a sealed plastic lid. Consider upgrading your sump pit to improve storage capacity and to decrease humidity levels in the basement by installing a unit with a sealable lid. Work with a qualified professional to complete this work.
Sump pit maintenance – Each season the homeowner checks the sump pit, repairs cracks or damage, and removes debris.	SB	The homeowner never checks the sump pit, repairs cracks or damage or removes debris.	Each season check the sump pit, repair cracks or damage and remove debris.
Sump pump connection – Does your sump pump discharge water to the surface of your property and does it have a backflow valve? The sump pump discharges water to the lot surface and has a backflow preventer installed.	OW, GS	The sump pump discharges water to the lot surface and has a backflow preventer installed.	No action required.

Sump pump – Is your sump pump in good condition and does it run infrequently? A sump pump is present and the homeowner reports it is functioning well and runs a maximum of 5 times per year. Consider installing an alarm to reduce flood risk.	SB	A sump pump is present and the homeowner reports it is not functioning well. AND/ OR The sump pump runs more than 10 times per year OR Needs further investigation.	Your sump pump is over 20 years old and you report that it does not always function well. Consider replacing your sump pump. Consider installing a ground fault interrupter (GFI) outlet to reduce the risk of electric shock. Hire a qualified professional for installation. Consider installing and maintaining alarms to reduce flood risk. Note: Check with the government department with jurisdictional authority regarding availability and eligibility for subsidy. Also check regarding plumbing permits requirements. Check with your insurance provider about discounts for installing alarm systems.
Back-up sump pump – Is there a backup sump pump and is it in good condition? A back-up sump pump is present and the homeowner reports it is functioning well.	SB	A back-up sump pump is NOT present OR Back-up sump pump is present but the homeowner reports it is not functioning well OR Needs further investigation.	Purchase a back-up sump pump. Consider hiring a qualified professional for installation.
Sump pump(s) maintenance – Each season, before vacation and when an extreme rain or melt event predicted, sump pump(s) and alarms are tested, repaired or replaced as required.	SB	Sump pump(s) are never tested, repaired or replaced as required.	Each season, before vacation and when an extreme rain or melt event is predicted, test the sump pump(s). Clean, repair or replace these items as required. Consider installing and maintaining an alarm each season to further reduce risk.
Back-up power source – A back-up battery or generator is present, can generate electricity for a minimum of 72 hours and is reported by the homeowner to be functioning properly. A backup power source is elevated above anticipated flood levels. Consider installing an alarm to further reduce risk.	SB	There is no back-up power supply. OR A back-up battery or generator is present and is reported by homeowner to be functioning poorly AND/OR it is not elevated above the anticipated flood level OR Needs further investigation.	Purchase and install a 72 hour back-up power supply and maintain it each season. Raise the power source above the anticipated flood level. Consider installing and maintaining an alarm to reduce flood risk. Check with your insurance professional about discounts for installing sump pump backup batteries and alarm systems.
Exposed Foundation Walls, Floors and Cold Rooms			
Unfinished wall cracks – Are your foundation walls free of cracks and stains? Foundation walls are free of cracks and water stains.	GS	The foundation walls are free of cracks and water stains.	No action is required.

Unfinished wall crack maintenance – The homeowner checks for cracks once per season, fills cracks and removes sources of water buildup at the foundation as needed (corrects drainage, repairs eaves troughs and/or removes snow in winter, seals foundation from outside in extreme cases). The homeowner consults with a qualified professional in case of major problems.	GS	Once per year the homeowner checks for cracks, fills cracks and removes the sources of water buildup at the foundation as needed (corrects drainage, repairs eaves troughs and/or removes snow in winter, seals foundation from outside in extreme cases). The homeowner consults with a professional in case of major problems.	Once per season, check for cracks, fill cracks and remove sources of water buildup at the foundation as needed (correct drainage, repair eaves troughs and/or remove snow in winter, seal foundation from outside in extreme cases). Consult with a qualified professional in case of major problems.
Unfinished wall efflorescence – Is there evidence of efflorescence on your walls, indicating water movement through the foundation? Foundation walls are free of efflorescence.	GS	There is significant evidence of efflorescence (large areas of solid coverage of white flakes) OR Needs further investigation.	See E on Inside Assessment diagram. Significant evidence of efflorescence was noted at the rear of the house where the grading is poor. Correct drainage, clean out eaves troughs and remove snow in winter. Remove efflorescence and seal the surface with masonry waterproofing paint.
Unfinished wall efflorescence maintenance – Once per season the homeowner checks for evidence of efflorescence, addresses sources of water buildup at foundation, and cleans and repaints with masonry waterproofing paint as required.	GS	The homeowner never checks for evidence of efflorescence, addresses the sources of water buildup at the foundation, cleans and repaints the surface with masonry waterproofing paint as required.	Once per season check for evidence of efflorescence. Address sources of water buildup at the foundation. Clean and repaint the surface with masonry waterproofing paint as required.
Unfinished wall moisture – Are there high levels of moisture on the surface of your walls below windows, near cracks and where walls meet floor? Low moisture levels are indicated on all tested areas of the wall surface. Monitor for signs of dampness during heavy downpours and spring melts.	GS	Moderate moisture levels are present on noted areas of the wall surface.	Moderate moisture levels were noted where the wall meets the floor at the rear of the home. Examine sources of moisture from inside and outside the home. Hire a qualified professional as needed to diagnose and repair moisture or mold problems. Monitor for signs of dampness during heavy downpours or spring melts.
Unfinished floor cracks – Are there cracks in your floor that provide potential water entry sites to your basement? Unfinished floors are free of cracks and water stains.	GS	Unfinished floors are free of cracks and water stains.	No action is required.

Unfinished floor crack maintenance – Once per season homeowner checks for cracks, fills cracks, removes source of water buildup at foundation as needed (corrects drainage, repairs eaves troughs and/or removes snow in winter, seals foundation from outside in extreme cases). Homeowner consults with professional regarding major concerns.	GS	The homeowner checks for cracks once per season, fills cracks and removes source of water buildup at the foundation as needed (corrects drainage, repairs eaves troughs and/or removes snow in winter, seals foundation from outside in extreme cases). The homeowner consults with a qualified professional regarding major concerns.	Check for cracks once per season, fill cracks, and remove the source of water buildup at the foundation as needed (correct drainage, repair eaves troughs and/or remove snow in winter, seal foundation from outside in extreme cases). Check with a qualified professional regarding major concerns.
Unfinished floor efflorescence – Is there evidence of efflorescence on floors, indicating water movement through the foundation? Floors are free of efflorescence.	GS	Floors are free of efflorescence.	No action is required.
Unfinished floor efflorescence maintenance – Once per season the homeowner checks for evidence of efflorescence, addresses sources of water buildup at foundation, and cleans and repaints with masonry waterproofing paint as required.	GS	Once per year the homeowner checks for evidence of efflorescence, addresses sources of water buildup at foundation, cleans and repaints with masonry waterproofing paint as required.	Once per season check for evidence of efflorescence. Address sources of water buildup at the foundation. Clean and repaint with masonry waterproofing paint as required.
Unfinished floor moisture – Are there high levels of moisture, indicating water entry into the basement? Low moisture levels are present on the floor surface. Monitor for signs of dampness during heavy downpours and spring melts.	GS	Low moisture levels are present on the floor surface.	Monitor for signs of dampness during heavy downpours and spring melts.
Cold Rooms – Are cold rooms properly ventilated, with all surfaces maintaining consistent temperature to reduce mold and mildew risk? The door, frame and seals are all in good condition and there is no evidence of water entry. The door is adequately insulated. The air circulation level is good with adequate venting and all items are off the floor and away from walls by at least 15cm (6"). Space is unheated.	OW	Door, frame and seals are in poor condition, evidence of significant water entry and/or door is not insulated, air circulation is poor with restricted venting and items are stored against the walls or on the floor OR Needs further investigation.	See F on Inside Assessment diagram. Seal cracks in the door, frame and repair/replace seals. Improve insulation of the door or consider replacing them. Improve ventilation and raise items off of floor and away from walls by a minimum 15cm (6"). Consider working with a qualified contractor to remove plywood from the walls, to examine and address sources of water infiltration.

Finished Walls and Floors			
Finished walls – Are water stains or high moisture levels indicating source of water infiltration? Walls are free of water stains. There is no evidence of mold (smell or visual evidence). The audible moisture meter indicates no concerns.	GS	Walls show major evidence of water entry, clear evidence of mold (smell or visual evidence), moisture meter indicates higher concern OR Needs further investigation.	Major evidence of moisture has been noted on plywood walls inside cold room. Remove the source of water buildup at the foundation as needed (correct drainage, repair eaves troughs and/or remove snow in winter, seal foundation from outside in extreme cases). Remove and replace damaged materials. Consult a professional if you are concerned about mold. If you are considering refinishing your basement, refer to Water-Resistant Building Materials fact sheet.
Finished wall maintenance – Each season homeowner checks for high levels of moisture and water stains. If high levels of moisture or water damage and/or mold is evident, consults a professional for remediation. Monitor during heavy downpours and spring melts for signs of dampness.	GS	The homeowner never checks for high levels of moisture and water stains. If high levels of moisture or water damage and/or mold is evident, they do not consult a professional for remediation. The homeowner does not monitor for signs of dampness during heavy downpours and spring melts.	Each season check for high levels of moisture and water stains. If high levels of moisture or water damage and/or mold is evident, consult a professional for remediation. Monitor for signs of dampness during heavy downpours and spring melts.
Finished floors – Are there high levels of moisture, indicating water entry into basement? Low levels of moisture are present, there is no evidence of mold or mildew and no musty smell is present.	GS	Low levels of moisture are present on floors, no evidence of mold or mildew I present and no musty smell is present.	No action is required. If you are considering refinishing your basement, refer to Water-Resistant Building Materials fact sheet.
Finished floor maintenance – Each season homeowner the checks for water damage and signs of mold growth. If water damage and/or mold is evident, the homeowner consults with a professional for remediation.	GS	Each season the homeowner checks for water damage and signs of mold growth. If water damage and/or mold is evident, they consult a professional for remediation.	Each season check for water damage and signs of mold growth. If water damage and/or mold are evident, consult a professional for remediation.
Windows			
Basement windows – Are windows in adequate condition to reduce risk of overland flooding? Glass, frames and seals are all in good condition and there is no evidence of water entry.	OW	Glass, frames and seals are all in good condition. There is no evidence of water entry.	No action is required.

Basement window maintenance – The homeowner checks once per season for cracked glass, broken seals and rotting frames. They repairs and/or replaces these as required.	OW	The homeowner checks once per year for cracked glass, broken seals and rotting frames, repairs AND/OR replaces these as required.	Once per season check for cracked glass, broken seals and rotting frames. Repair AND/OR replace these as required.
Plumbing Fixtures			
Indoor plumbing and fixtures maintenance – Each season toilets, taps, pipes and water heaters are inspected by the homeowner and are repaired by a plumber as needed. Consider installing and maintaining flood alarms.	PF	Toilets, taps, pipes and water heaters are not inspected by the homeowner or repaired by a plumber as needed.	Each season inspect toilets, taps, pipes and water heaters for leaks and signs of wear. Repair or replace items with the assistance of a plumber as needed. Consider installing and maintaining flood alarms to reduce flood risk. Check with your insurance professional about discounts for installing alarm systems.
Additional Considerations for Limiting Risk of Water Damage, Mold and Mildew Growth			
Furniture and electronics – Are furniture and electronics at risk of damage in the event of a flood? Furniture items have non-absorbent surfaces up to 30cm (12") and electronics are stored at least 30cm (12") off the floor (or to exceed anticipated flood levels).	N/A	Furniture items have absorbent surfaces in contact with the floor and electronics are stored on the floor OR Needs further investigation.	Carpet on floors, couches with absorbent legs and electronics on the floor are at risk of damage in the event of a flood. Select furniture items that have non-absorbent surfaces up to 30cm (12") and store electronics at least 30cm (12") off the floor (or to exceed anticipated flood levels).
Stored valuables – Are your valuables at risk of damage during a flood or at risk of mold and mildew growth? Valuables are stored in sealed, non-absorbent containers at least 30cm (12") off the floor (or to exceed anticipated flood levels), at least 15cm (6") away from walls to provide good air circulation OR no valuables are stored in the basement.	N/A	Valuables are stored in sealed, non-absorbent containers at least 15cm (6") off the floor, at least 10cm (3") away from walls that provide moderate air circulation.	Store items in sealed, non-absorbent containers at least 30 cm (12") off the floor (or to exceed anticipated flood levels) and 15 cm (6") away from walls. Consider moving most valuable items above the basement.
Relative humidity, air movement and temperature – Are the moisture, humidity and temperature levels in your basement optimum to reduce mold and mildew risk? A 30-50% relative humidity reading is taken in the basement. Air circulation is good. A minimum regular temperature above 15C (60F) is maintained.	N/A	Over 60% relative humidity reading is taken in basement OR Air movement is highly restricted OR The temperature is kept below 10C (50F) OR Needs further investigation.	The relative humidity reading is 65. This exceeds the recommended maximum of 50%. Reduce sources of moisture and run one or more dehumidifiers to maintain 30-50% relative humidity. Improve air circulation. Maintain minimum temperature of 15C (60F).

Indoor Sources of Moisture–Are indoor sources of moisture limited to reduce mold and mildew risk? If a bathroom with a shower is present, a fan is present and when it is running it is strong enough to hold a piece of tissue. Fan is run for 30-60 minutes after a bath or shower. Furnace humidifiers do not operate in the summer. Wood is not stored, laundry is not hung, boots are not dried etc. in the basement.	N/A	If a bathroom with a shower is present, a fan is present and when running it is strong enough to hold a piece of tissue. The fan is run for 30-60 minutes after bath or shower use. Furnace humidifiers do not operate in the summer. Wood is not stored, laundry is not hung, boots are not dried etc. in the basement.	No action required.
Hazardous Materials			
Hazardous materials – Are hazardous materials stored in a way that represents a contamination risk during a flood? No hazardous materials are stored in the basement and/or materials are stored in waterproof containers at least 30 cm (12”) off the floor (or to exceed anticipated flood levels). Heating fuel tanks are secured to the floor.	N/A	Hazardous materials are not sealed in waterproof containers and/or are stored on the floor and/or heating fuel tanks are not secured to the floor OR Needs further investigation.	See G on Inside Assessment diagram. Remove paint, chemicals and other hazardous material from basement or seal hazardous materials in waterproof containers and store at least 30 cm (12”) off the floor (or to exceed anticipated flood levels).