Agenda
City Council Work Session
City of Edina, Minnesota

Tuesday, October 15, 2019
5:30 PM

I. Call To Order

II. Roll Call

III. Snow Clearing Ordinance for Sidewalks

IV. Flood Risk Reduction Strategy Development Check-in

V. Adjournment

The City of Edina wants all residents to be comfortable being part of the public process. If you need assistance in the way of hearing amplification, an interpreter, large-print documents or something else, please call 952-927-8861 72 hours in advance of the meeting.
ACTION REQUESTED:
None; discussion only.

INTRODUCTION:
Staff will discuss the current process for responding to snow removal complaints on privately maintained sidewalks in the City's right-of-way. Staff will seek direction for an ordinance revision.

ATTACHMENTS:

Staff's Presentation
Sidewalk Snow Removal

October 15, 2019
Edina Current Policy

- All snow and ice should be removed from a sidewalk within 48 hours from the cessation of the precipitation.
- The City is responsible, by ordinance, to remove the snow from any sidewalk that funded with Municipal State Aid money or located in State or County right of way.
- After 48 hours, snow that remains is declared a nuisance.
- After notice is delivered, property owner has 7 days to self perform, and then the City can assess the cost of the snow removal.
Edina - Considerations

- There is no reference to the Safe Routes to School sidewalks
- It takes more than 24 hours for the City to remove snow from those sidewalks that it is currently responsible.
- After 48 hours, snow that remains is declared a nuisance.
- Snow deposition onto private property is illegal.
- Most sidewalks are placed on the Right of Way line.
- Current practice is to blow snow onto private property and has been since the City has removed snow from sidewalks.
- If challenged, ordinance will need to be changed again.
Other communities

- Eden Prairie – 24 hours for SF and duplex housing, 8 daytime hours for commercial or MF housing; 8 am – 5 pm (daytime hours); 24 hours to self perform
- Minneapolis – 24 hours for SF and duplex housing, 4 daytime hours for commercial or MF housing; 8 am-5 pm (daytime hours); no time to self perform and the homeowner is guilty of a petty misdemeanor for each and every hour after the time that it should have been done.
- Hopkins – 12 hours for all public sidewalks, 24 hours notice.
- Plymouth – 48 hours; Petty misdemeanor and $100 fine
Discussion topics

• Proactive enforcement vs. complaint basis
• Reasonable amount of time from snow cessation
• Land use component or straight time
• Ability to respond to complaints
• Notice duration
Date: October 15, 2019

To: Mayor and City Council

From: Jessica V. Wilson, Water Resources Coordinator

Subject: Flood Risk Reduction Strategy Development Check-in

ACTION REQUESTED:
None; discussion only.

INTRODUCTION:
See attached Task Force Report and Staff Report.

ATTACHMENTS:
Staff Report: Flood Risk Reduction Strategy Development Check-in
Task Force Report
Flood risk reduction strategy process and purpose

Flooding can affect people, damage property, threaten health and safety, and disrupt transportation and business. The City of Edina manages a variety of programs that affect the risk of flooding in the long term and respond to flooding and its aftermath in the short term. When flood risk aware, residents and property owners are empowered to adapt, prepare, and mitigate the worst effects of flooding. To this end, a Flood Risk Reduction Strategy was outlined within the 2018 Comprehensive Water Resources Management Plan (CWRMP) to reduce flood risk within the City of Edina. In 2019, a Task Force was convened to capture resident values and perspectives related to flood risk and City services.

Many residents and commercial businesses throughout the City of Edina experience flooding issues from creeks, lakes, ponds, low areas, and runoff from neighboring properties. In recent years, increasing knowledge around stormwater management and regulation of the floodplain have improved the ability of decision-makers to recognize issues and make tough decisions; however, there is currently no comprehensive strategy for the City of Edina that defines or prioritizes issues. Additionally, there remains a gap between the level of service residents expect from the City and what is provided; residents expect stormwater infrastructure to handle more water than it effectively can, and/or for staff to anticipate and resolve issues before impacts occur. The reality is that the infrastructure and the ability to respond fall short of expectations. Feedback on the urgency of this issue and the desire for transformational change was iterated by Council on multiple occasions and was incorporated into the 2018 Comprehensive Water Resources Management Plan (CWRMP), to be addressed through development of a Flood Risk Reduction Strategy.

Flooding has historically been considered a technical problem, requiring a technical solution. Land ownership, space, legislation, and hydrology are interwoven with values about problem ownership, water stewardship, service tradeoffs, and transferring risk. What was once considered purely a technical problem may be more of a mix of a technical, scientific, political, and social one. This type of problem requires a different set of strategies, skill sets, and tools.
The following sections of this report describe:

1. The primary drivers of flood risk
2. Task Force role and process
3. Staff Perspective: City of Edina’s role in flood risk management
4. Staff perspective: How should the City’s role change?
   o 4.1 Key areas of opportunity – people and private property
   o 4.2 Key areas of opportunity – public infrastructure and programs
5. Final thoughts, next steps

I. Primary drivers of increasing flood risk

Flooding issues within the City of Edina continue to increase in frequency and severity. Flood risk will continue to get worse, and changing climate and weather patterns are out of our control. The following have been identified as primary drivers leading to increased flood risk, listed from most to least impactful:

**Climate change and changing weather patterns:**
- Climatologists indicate that large, intense rainfall events are occurring more frequently, and models predict that large rainfall events will become more intense in the future. This increase is also impacting neighboring communities, is occurring at the international, national, state, and watershed levels, and is expected to get much worse.

**Aging infrastructure and increasing service level expectations:**
- Infrastructure is aging, and much is in poor repair, stretching maintenance and operations staff thin. Current resources dictate a reactive approach instead of a proactive approach.
- Modeling of storms and flood risk, and visualization of that risk has improved dramatically in recent decades, leading to better community perception of risk.
- Demand for well-drained landscapes has led to private and public drain line and gutter expansion. This expansion directly connects the landscape and the water generated there to downstream properties and waterbodies.
- The current stormwater system was built for a different time and standard. Climate change has already increased the risk and made most of the system obsolete.
- Needs far exceed available resources. Flooding issues are extensive and affordable improvements that address the 1%-annual-chance storm are often out of reach at current levels of funding.

**Changing development patterns:**
- There is demand for more intense use of land.
- There is an increasing trend of imperviousness in the City of Edina. Specifically, within the focal area of Morningside, nearly one million square feet of impervious surfaces (homes, structures, driveways, patios, swimming pools, etc.) have been added since 1950. This equates to about 14% of the total size of occupied parcels in the Morningside neighborhood (2019, City of Edina staff).
2. Task Force role and process

In order to ensure that the Flood Risk Reduction Strategy represents the voice of Edina residents, a volunteer Task Force was formed to seek community input and insight. The Task Force is composed of eight members, out of which two co-chairs were selected. Task Force members first met in July of 2019 and continued to meet bi-weekly to understand the issue and answer the charge presented by City Council. Members represent homeowners with a range knowledge and experience. Most have experienced flooding on their properties or have engaged with flood issues in the larger community. Members come from all across the City of Edina, including the focal area of the Morningside neighborhood.

The Morningside neighborhood was selected as the focal area of study due to the presence of significant modeling and research in the area. The Morningside neighborhood faces a range of flooding challenges that past efforts have struggled to address.

The Task Force’s charge was to “Provide recommendations to inform a Flood Risk Reduction Strategy to be considered for adoption by the City Council and incorporation as a major amendment to the City’s Comprehensive Water Resources Management Plan.” The products of this process including meeting agendas, minutes, and analyses are available for review in the Water Resources Library on the City of Edina website.

To better understand the nature of the issue, Task Force members requested and were presented with the following:

- Overview of the focal area of Morningside neighborhood, its historical and current flood challenges, and previous efforts to evaluate flood risk reduction options.
- A technical exploration of City-owned stormwater infrastructure, maintenance operations, levels of service, and the stormwater utility.
- Regulatory options that have been implemented in other comparable communities and associated challenges and trade-offs.
- Modeled sensitivity analysis completed by Barr Engineering to explore the potential impact of two potential strategies; comprehensive hard-cover requirements, and enhanced infrastructure including larger pipes and stormwater storage.
- Communications strategies that promote preparedness and connect residents with resources during flood events.
- Overview of the City’s floodplain management ordinance and participation in the National Flood Insurance Program.
- The City’s policy and standards for stormwater management through the permit process, related to development and redevelopment.
- A conversation with maintenance staff to understand routine operation and maintenance as well as storm response.

3. Staff Perspective: City of Edina’s role in flood risk management

The City currently addresses flood risk across multiple sectors. These areas of work and the current state of practice are spelled out in greater detail in the water resources chapter of the Comprehensive Plan and the Comprehensive Water Resources Management Plan.
Infrastructure: building, renewing, operating and maintaining assets over their lifecycle.

Regulatory program: grading, floodplain development, floodplain preservation, utility connection, stormwater and erosion control plans and permits.

Information, engagement and outreach: technical support, project management, planning, communication, facilitating.

Emergency services: responding to threats of structural damage, supplying sand bags, executing Hennepin County All-Jurisdiction Hazard Mitigation Plan.

4. Staff perspective: How should the City’s role change?
Interacting directly with the Task Force has provided staff members with insight into public perception of their role in flood risk reduction. During these conversations, staff began to see certain discrepancies between the following City assumptions; perception of risk, interpretation of the term ‘flooding’, and the role of City services.

How does the City define flood risk? Flood risk has been seen as a combination of the statistical probability of a flood event happening and the potential community-wide losses that occur as a consequence of that event. In the City of Edina, the increasing value of homes located within the floodplain is occurring in tandem with changing weather patterns that increase intensity of storm events, both of which increase the overall risk. The City’s idea of current flood risk is also being shaped by changing community expectations for service.

Defining “flooding” is similarly complicated by social perception. FEMA defines flooding as “A general and temporary condition of partial or complete inundation of 2 or more acres of normally dry land area or of 2 or more properties…” When intense rain events occur, the ability for water to soak into the ground diminishes and water runs off the land. Local flooding happens when the systems designed to route water runoff away are overwhelmed. A wet basement, flooded garage, or standing water may not fit FEMA’s definition, but each impacts the community and was considered “flooding” by Task Force members.

City services play a critical role in the following common flooding issues; creeks outside their banks, curb lines flowing full, storm drains clogging, pipes running full, low points in streets or yards filling up and threatening structures, flow paths eroding, sump pumps flowing, basement foundations leaking, and sanitary sewers backing up. Community service expectations are mismatched with available resources for preventative maintenance and timely emergency response to these issues.

In the next two subsections, staff will discuss key areas of opportunity in the private and public spheres and present insights staff gained through the Task Force process.

4.1 Key areas of opportunity – people and private property
Empowering people to adapt to flood risk, prepare for flood events, and mitigate the impacts of climate change all contribute to a more resilient community. Adaptation and preparedness work to mitigate the consequences of flooding.
4.1.1 Adaptation for resilience

When people understand the risks of flooding, they can take actions to reduce the consequences of flooding. Actions could range from simple things, like moving valuables to higher floors, to more complex retrofit improvements like flood proofing and sanitary sewer backflow prevention.

**Risk Awareness:** Could be encouraged by improved distribution of information products like the existing flood risk map available on the City’s website. This local map is industry leading, with few small cities producing and publicly sharing detailed local flooding information. Although the information has been public for a long time, it’s been in a format that required some technical knowledge to interpret. With new mapping tools, increasingly detailed digital stormwater system data, and more precise data about topography of the landscape, we’re better able to visualize risk. The City could consider extensions to these products that further visualize flood risk and promote awareness with the public. Stormwater professionals anticipate that when the real estate and insurance industries begin to recognize this publicly available flood risk data, there will be a market effect. The City could consider promoting awareness with these two key market players.

**Private improvements:** Improvements including drainage systems, foundation drains, sump pump systems, sanitary sewer backflow prevention, flood proofing, landscaping and grading, and other site improvements are happening. Good design with technical support can make these investments in private property more resilient, able to withstand more water, and able to recover when floods do occur. The City could consider providing engagement and outreach around the potential for these improvements by engaging landscapers, water proofers, and home contractors.

**Redevelopment:** Provides a once in a generation opportunity to build in resilience. City staff are actively engaged with the development community through regulatory programs and provide technical support to permitted and affected private parties. In response, new structures or additions can be required to meet minimum elevations for low floors (such as basements) or low openings (such as windows wells). Another response to redevelopment includes requiring durable flow paths to route water away from structures. The City could consider enhancing standards for resilience in redevelopment plans or encourage a deeper risk conversation with the development community to promote resilient decision-making within the permit process. Increased regulation of redevelopment in Edina would reduce risk. A tradeoff would be that a change in regulation could impose additional costs to developers and impact overall market conditions.

**Pace of redevelopment:** Currently driven by owners of at-risk properties. The City could establish a program including eligibility and standards for purchasing, redeveloping to a flood-resilient standard, and selling properties.

**Technical support:** This service is available for flood issues through a grant program in its first year. Technical support is limited to staff availability and is reactive for residents. The City could consider a proactive outreach and engagement strategy focused on residential neighborhoods.

**Future flooding:** It is projected to get worse. The models that predict flood risk use data from the past to estimate precipitation. The City could consider a flood risk standard that incorporates future risk due to climate change to match the lifecycle of the private improvements that rely on
them. By planning street flood storage, lowering roads, managing overflow paths, and taking other actions based on a future flood risk level due to climate change, capacity could be built into the system to make them future ready for their expected design lives.

4.1.2 Preparedness and Response
When even resilient systems are overwhelmed, people must react. A plan of action and knowledge of available public and private resources can provide both peace of mind, and a head start in an emergency.

**Flood Preparedness:** Sand bags are available for delivery, information resource links are provided to regional and national resources, and the City responds to emergency calls. The capacity of utility group is quickly overwhelmed in large events. The City could consider creating a homeowner preparedness toolkit with resources and topics to consider before the flood as part of a proactive outreach and engagement strategy focused on residential neighborhoods.

**Emergency planning:** Outreach and engagement to people at risk can encourage preparedness. Internal emergency planning and triage exercises may identify and treat weaknesses before the storm. The City could consider a proactive outreach and engagement strategy focused on residential neighborhoods.

4.1.3 Climate Change Mitigation
City staff is working to scope a process for creating a Climate Action Plan for Edina. The Energy and Environment Commission recently completed a study and report on a timeline and parameters for such a plan, including the City’s leadership role. Undoubtedly, carbon reduction in both the private and public sectors will be an area of opportunity. In order to meet community-wide emission reduction goals, it will take a process that includes the community to understand what actions are important and how to prioritize them. There is a clear overlap between addressing flood risk and mitigating climate change. To that end, it is prudent that the Flood Risk Reduction Strategy inform the larger Climate Action Plan work of the City’s Sustainability Manager and Energy and Environment Commission.

4.2 Key areas of opportunity – public infrastructure and programs
Enhancing public infrastructure by building new, retrofitting old, and keeping what we have in working condition is a key approach to reducing the probability of flooding.

4.2.1 Emergency preparedness and communications
The City’s role in emergency situations include responding to life, health and safety calls and supporting or restoring the operation of the utilities. When floods occur the ability to respond effectively quickly degrades as phone lines and other communications channels fill with requests and reports. The ability to sort and serve these requests goes into triage with critical system function and support measures competing with urgent requests from the public.

The City could provide increased messaging before, during, and after a flood to include forecasting, preparedness tips, City response, and reporting on any disruptions. The community desire for more prompt communication in response to requests for service presents an opportunity to clarify level of service so that callers can be given appropriate advice to protect life, health and safety, know that resources are being applied to support or restore system function, and that get a sense for where their issue ranks during a flood response.
Spring snowmelt related flooding and creek flooding can have some warning, or periods of heightened risks that allow preparation. The City provides sand bags at no cost, including delivery and pick-up. More communication can be done to let people know the service is available.

Private property owners can reduce flood losses by preparing for a flood. FEMA has several resources for flood preparedness; [www.floodsmart.gov](http://www.floodsmart.gov) lists practical before and after tips. Flood insurance through the National Flood Insurance Program is available for anyone who lives in the City to purchase. The City could assist in dispelling the myth that flood insurance is only available in certain circumstances.

### 4.2.2 Land use and regulatory program

Land use is often cited as a key sector for managing flood risk, though fully developed communities such as Edina may not be able to realize the same returns in this sector as a less developed community. Many of the decisions about land use in Edina have already been made – that is to say that neighborhoods emerged in places and at times that might not have otherwise happened if those land use decisions were made today.

The regulatory program remains an effective way to reduce the consequences of flooding for the developing property. The City could consider further enhancing the outreach to property owners, builders and developers to promote resilient design.

**Where they work:** As private improvements are made, or properties redevelop, the City provides flood risk information and holds standards that control or mitigate the probability or consequence of flooding through its regulatory program. Existing controls through the regulatory program are working to raise the low elevations or low opening of structures. This raising of structures reduces the consequence of flooding.

**Where they don’t work:** While the regulatory program is good to prevent the consequences of flooding and reducing risk to the property or improvement that is changing, it is a poor tool to reduce the probability of flooding downstream.

The concepts of reducing impervious surfaces or requiring private storage infrastructure were explored in more detail in sensitivity analyses and are summarized here.

*From ‘ill-drained’ to impervious: impervious surface analysis*

The Task Force wanted to explore the impact of hard-cover requirements or impervious limits as part of the permitting or redevelopment process. Barr Engineering evaluated the impact of decreased imperviousness across the Morningside neighborhood. This analysis report ([Map of Edina 1908](191015 Map of Edina 1908.PDF) and [Impervious surface analysis](191015 Impervious surface analysis.PDF)) is available for review in the Water Resources Library on the City of Edina website.

Barr’s analysis showed an impervious limit would have little impact on flood risk in the Morningside neighborhood. Although an impervious limit or reduction supports other values such as open space, room for trees, neighborhood character, and limiting heat island effect, the case for flood risk reduction was weak. Additionally, changes to hard cover requirements or setting impervious limits would require a large financial investment.

Barr was asked to review model-predicted impacts in the focal area of the Morningside neighborhood, and to review the sensitivity of those impacts to the magnitude of imperviousness (the hard surfaces that prohibit water infiltration). For reference, the impervious area that is directly connected to the storm sewer
system in the Morningside neighborhood is estimated to be about 25% of the total land area, in aggregate. Barr tested the sensitivity by modifying the stormwater model so that the imperviousness of the entire contributing drainage area was increased, decreased, and even lowered all the way to 0%, which reflects a pre-development condition. This sensitivity test was also completed for a range of storm events, from the 20%-annual-chance storm event (5-year storm) to the 1%-annual-chance storm event (100-year storm). As expected, the imperviousness sensitivity test showed that less impervious area generates less stormwater runoff and more impervious area generates more stormwater runoff. However, the magnitude of the runoff changes generated by adjusting imperviousness were not as impactful as may have been expected. For reference, in the Weber Pond subwatershed, the 1%-annual-chance storm event flood level would need to be reduced by just over 4 feet in order to remove the 5 lowest homes from potential structural impacts from flood inundation. Based on Barr’s imperviousness analysis, reducing or increasing impervious area by half (50%) tends to cause the peak water level to decrease or increase by up to approximately half a foot. This effect is more significant for small storm events, and less so for larger storm events. While affecting the flood level by 6 inches may seem like a big gain, this change removed one home at most from the flood inundation area around Weber Pond. Again, this low level of impact would require the entire contributing area (all of the Morningside neighborhood) to reduce imperviousness by half (i.e., road widths are cut in half, driveway widths are cut in half, roof area cut in half and/or downspouts redirected). A more realistic approach of reducing imperviousness by 5% moving forward through policy changes would have little to no impact on flood levels.

*Keep your water to yourself: private infrastructure analysis*

Barr Engineering provided a summary of the impact of comprehensive stormwater storage in the Morningside neighborhood. The following are the results of Barr Engineering’s review of enhanced infrastructure including underground storage methods within private property, the right of way, or under streets. This evaluation was conducted as a result of Task Force discussions about the potential impacts of requiring private homeowners to store stormwater running off from their impervious areas on site similar to requirements for commercial development. This analysis report ([191015 Private infrastructure analysis.PDF](#)) is available for review in the Water Resources Library on the City of Edina website.

Barr reviewed the benefits achieved by storing the first 1-inch, 2-inches, and 3-inches of precipitation from storm events of varying size, from the 20%-annual-chance storm event (5-year storm) to the 1%-annual-chance storm event (100-year storm). For the private storage evaluation (underground storage vaults under a portion of each of the 570 residential parcels), storage was assumed for every parcel within the Morningside neighborhood. Barr found that storing the first 1-inch of storms of this magnitude had a negligible impact on flood levels. Storing the first 2-inches and 3-inches showed a more significant benefit with regards to reduction in peak flood levels. Depending on the storm event, and depending on the location within the neighborhood, the results varied anywhere from flood level decreases of a few inches to decreasing nearly a foot and a half. However, this apparent benefit comes at an initial cost of approximately $15,000 per inch of stormwater stored per residential parcel. To store 2-inches of runoff in the entire neighborhood would cost approximately $17 million. The results of Barr’s private storage analysis is summarized in the table below. In addition, while the flood levels may be lowered, the number of homes that are removed from potential impacts from flood inundation is small. For example, one home may potentially be removed from flood inundation at Weber Pond depending on the storm event. Finally, the management and maintenance of these underground stormwater storage vaults distributed throughout an entire neighborhood is expected to be complicated and unprecedented.
This is all to say, this solution would provide a moderate benefit for a very high cost. Additionally, a preliminary look at the compounding effect of climate change suggests that any improvement realized by implementing additional storage in the Weber Pond subwatershed would be taken back by climate change (i.e., increased precipitation amounts).

<table>
<thead>
<tr>
<th>Inches of Runoff Stored on Private Property</th>
<th>Approximate Cost for All Parcels in Morningside to Store Runoff</th>
<th>Flood Level Reduction Benefit (in feet) for Weber Pond Subwatershed (MS_40)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>5-yr Storm (3.6” of precipitation)</td>
</tr>
<tr>
<td>1 inch</td>
<td>$8,550,000</td>
<td>0.1</td>
</tr>
<tr>
<td>2 inches</td>
<td>$17,100,000</td>
<td>0.6</td>
</tr>
<tr>
<td>3 inches</td>
<td>$25,650,000</td>
<td>0.7</td>
</tr>
</tbody>
</table>

The two analyses lead staff to the conclusion that while pervious surfaces and private stormwater infrastructure play an important role to route and mitigate stormwater flow and provide other social goods such as tree canopy, open space, sound dampening, heat island mitigation, etc., they play a very minor role in managing large floods.

4.2.3 Infrastructure

Stormwater systems route water to low areas where it is temporarily stored, and then they work to convey water on downstream. The stormwater system is made up of 127 miles of gravity main ranging from 12-84” in diameter, 6800 manholes, 900 outlets, 38 miles of small diameter sump drain, 11 stormwater lift stations, one half mile of stormwater force main, and 150 ponds and wetlands (2018 Draft Comprehensive Plan Chapter 7.)

The City’s stormwater system was designed to convey a certain amount of water and protect against impacts at a certain level. This “level of protection” is based on the capacity of public infrastructure to handle stormwater and on the likelihood, or probability, that a storm will occur. When storms are bigger or more intense than the infrastructure is designed to handle, or when it clogs, there are consequences such as disruptions to services, facilities, or damage to property. The relationship between the probability of these storm events occurring (defined by climate and infrastructure) and the resultant consequences (defined by vulnerabilities of public or private infrastructure) determines the overall community flood risk.

Risk is changing primarily because climate (probability) is changing and the level of protection for design is a moving target. Designs from the past are undersized for today and there is a growing realization in technical circles that even if designs were revised to reflect today’s probability of storm events they would quickly be obsolete due to the changing risk brought by climate change. Should engineering designs be based on the climate models of today or some future condition? The trade-off for future-sizing a design would likely mean higher costs.
Go Big, Go Bigger: infrastructure analysis

To test the possible scale of implementation in the face of projected climate change impacts, City staff and Barr Engineering conducted a preliminary evaluation and conceptual design of potential flood risk reduction options for the Morningside neighborhood in 2018. This work also included planning-level construction cost estimates. This concept analysis report (191015 Infrastructure analysis_1of2.PDF and 191015 Infrastructure analysis_2of2.PDF) is available for review in the Water Resources Library on the City of Edina website.

Barr conducted a cursory evaluation of potentially impacted structures for each potential flood risk reduction option to assess which options provided the greatest level of flood risk reduction (in terms of a reduction in the number of impacted structures). This was completed for a range of storm events from the 20%-annual-chance storm event (5-year storm which is 3.6 inches in 24 hours) to the 1%-annual-chance storm event (100-year storm which is 7.5 inches in 24 hours). Infrastructure options that were evaluated included increasing storm sewer pipe sizes for main trunk lines along some key roads, constructing flood walls in key locations, creating additional flood storage by excavating (lowering) the ballfield area of Weber Park and then reconstructing the fields, creating additional flood storage by excavating the wooded area north of Weber Pond and excavating and re-grading existing low areas (e.g. low area at Lynn Avenue and Kipling Avenue north of West 42nd Street), excavating backyards in key locations, installing predictive pumping systems for a few key pond areas (including Weber Pond), and installing underground storage to provide additional flood storage. Seven infrastructure options were developed using combinations of some of the mitigation options identified above with planning-level costs estimated between $3.4M and $31.6M.

The option with the largest benefit in terms of homes that would no longer be at risk of flood damage up to the 1%-annual-chance storm event (Option 7b, the ‘Go Bigger’ option) has an estimated cost of $8.5M and completely removes approximately 24% of the homes potentially impacted under existing conditions. In other words, if the goal is to remove all homes in Morningside from potential damage during a 1%-annual-chance storm event, spending $8.5M in substantial infrastructure projects only gets the City about a quarter of the way to that goal. The next best infrastructure option (Option 2b, the ‘Go Big’ option) removes approximately 16% of the homes currently impacted and would cost approximately $4.5M.

While the costs for the options described above are concept level, they are in range with stormwater costs for new development in commercial areas and residential subdivisions. These costs would be borne by the public and are not associated with a land use change.

**Baseline:** the current replacement value of stormwater infrastructure in the City is about $70M. Over 16 square miles this is approximately;
- $6,800/acre

**The ‘Go Big’ option** contemplated a $4.5M project serving about 630 properties and 185 acres.
- $24,300/acre (a cost 3.6 times larger than the baseline)

**The ‘Go Bigger’ option** contemplated an $8.5M project serving about 630 properties and 185 acres.
- $45,900/acre (a cost 6.7 times larger than the baseline)

In addition to costs, the projects come with tradeoffs, contemplating major changes in parks, open spaces, existing water bodies, and piping and utility operations changes. The projects also present opportunity for co-planning around park and sustainability improvements as they renew sections of aging infrastructure.
The City should take this concept analysis further in developing options for the 2022 and 2023 reconstruction areas in the focal area of Morningside to confirm the conclusion that infrastructure improvements remain the foundation of providing flood risk reduction services, but the scale of climate change will make transformational change a challenge. It should be noted that incremental changes can still provide value and some strategies that don’t scale for flood risk reduction can provide other benefits to the community.

**Getting to scale: a challenging problem made even more challenging, climate change impact analysis**

Through the Task Force process, staff heard the sentiment, “stop studying the problem, you have the answer, it’s time to act.” While action is needed now, this report rebuts the sentiment that we have the answers. Our new understanding of risk in the 2018 Comprehensive Water Resources Management Plan show the system is overloaded. We now can more easily see how ‘solving’ a problem in one area can make a downstream problem worse, and ‘solutions’ need to review downstream risk and be packaged together comprehensively. Packaging problems requires a scale of effort that has not been attempted in Edina, and the scales contemplated still do not totally ‘solve’ the problem; instead they may be only keeping up with climate change.

Additionally, growing understanding of climate change means the target is changing. That is to say, solutions of today have to accommodate more water than in the past, and solutions that can withstand the effects of climate change in the future would need to accommodate even more. The problem now requires a new approach to planning. The past strategy was largely to solve problems by moving the water somewhere else. Now, those spaces for water storage are mostly full within, upstream, and downstream of Edina. It is necessary to shift the approach for risk reduction because the system is essentially at capacity and projected to receive even more water.

That is to say; the flood problems are big, the impact of strategies needs to be sufficiently big to matter, and strategies need to consider the big picture (look comprehensively at impacts to downstream properties). On top of this, climate change may be making problems worse at a faster pace than some strategies can make things better.

Some graphics developed by Barr help to visually show the impact of climate change. The products ([191015 Climate visualization_1of2.PDF](191015%20Climate%20visualization_1of2.PDF) and [191015 Climate visualization_2of2.PDF](191015%20Climate%20visualization_2of2.PDF)) are available for review in the Water Resources Library on the City of Edina website.

As shown in section 4.1.3 of this report, climate change mitigation is a key area of opportunity. Development of a Climate Action Plan would further outline and prioritize actions.

**4.2.4 Operations and maintenance**

The operations and maintenance of public infrastructure is a key component of providing flood protection. Operations includes inspection and condition assessment, street cleaning, catch basin clog clearing, pipe and outlet clog clearing, sediment control, pump and power system monitoring, and emergency operations. Maintenance includes catch basin repair, pipe repair, outlet repair, sediment removal, tree removal, and other actions.

Stormwater models that predict flood problems assume that all pipes, catchbasins, inlets, and outlets are in good working order and free from obstructions. The reality is that material and debris often enter the
system before or during storms and can cause service disruptions. Aging infrastructure also lends to more failures.

Staff prioritizes their stormwater operation and maintenance work based on opportunity and requests for service within the constraints of their resources. Opportunities include repairing and renewing stormwater infrastructure in areas where other work is already planned. For example, crews inspect and repair stormwater catchbasins in neighborhoods where street improvements are planned, thereby extending the life of the street improvement and providing real value to the public. Requests for service also get prioritized. As storm events occur, staff evaluate the risk and respond as resources allow.

Operations and maintenance staff were invited to talk about their work with the Task Force. Some themes related to the challenges and opportunities emerged.

**Challenges related to operation and maintenance:**
- Much of the system aside from pump and power systems are managed with reactive, run-to-failure approach and there is significant deferred maintenance in the system leading to small items remaining unaddressed, leading to larger issues.
- The program for evaluating maintenance needs meets the minimum regulatory standard. It is not comprehensive.
- The system is aging, much of it originating in the 1950s and 1960s.
- During events, stormwater systems and sanitary sewer systems are stressed at the same time. When flood events coincide with snow and ice events, staff are further stretched to provide services and must make decisions about priorities, constrained by their resources.
- Some stormwater features in the city have been installed to intentionally capture pollutants and debris in order to protect clean water. When not properly maintained, they can interfere with overlapping drainage and flood protection services.
- Service levels are not clearly defined. During the peak of events, staff are receiving, prioritizing, responding to, and communicating on requests for service. Residents often don’t know where their issue ranks or what service level they can expect.

**Opportunities for operation and maintenance:**
- Proactive maintenance, the benefits of which go beyond flood protection. Proactively cleaning and maintaining stormwater infrastructure can support clean water goals by properly managing accumulated pollutants.
- Increased street sweeping to keep stormwater conveyances clear. This also has a clean water benefit.
- Promotion of the new metro-wide adopt-a-drain program to augment city street sweeping. Residents are asked to adopt a storm drain in their neighborhood and keep it clear of leaves, trash, and other debris to reduce water pollution. The program also works to provide flood protection. Often, once a system is flooded, the primary objective for maintenance staff is to clear the obstruction. At this point, the opportunity to clear and dispose of clogging debris before its transported to downstream waterbodies is largely lost.
- High value infrastructure retrofits. In some cases, maintaining and optimizing existing can be more cost effective than new infrastructure.
- Better definition of service levels residents can expect for given issues.
- More general communication about the City’s flood response during and after events.
• Continued investment in the sanitary sewer system and its resiliency during floods.

An increase in resources dedicated to public works staff would be required in order to address issues and capitalize on opportunities in operations and maintenance.

5.0 Final thoughts, next steps

The process to-date has reiterated the need to address flooding with a range of strategies that span technical, scientific, political, and social approaches. Many communities are struggling with managing increasing flood risk. City staff anticipate this work to be at the forefront of flood risk reduction in the wake of climate change and a means for advancing the conversation regionally.

Key takeaways at this point are:

• The Flood Risk Reduction Strategy is needed to fill a gap. There currently is no comprehensive strategy or framework for prioritizing or resourcing actions.
• Residents have high expectations for service.
• The current stormwater model helps to better visualize where the issues are; they are extensive, interwoven, and difficult to solve. The existing stormwater system is overloaded and the strategy to put water somewhere else is limited. More creative ideas such as manipulating the timing of the peak flood may provide some value.
• Climate change impacts are significant. Adaptation and mitigation are key strategies.
• There are opportunities to empower people and institutions to adapt, prepare, and mitigate.
• Other promising opportunities exist for operation and maintenance, public infrastructure (though climate change will make transformational change a challenge), and redevelopment standards anchored in resiliency.

Lastly, and arguably most importantly, there is an opportunity to knit together the emerging Flood Risk Reduction Strategy with the existing Living Streets Plan and forthcoming Climate Adaptation Plan. Bringing these efforts into focus and examining strategies through an equity lens are necessary to deliver high-value benefits to the community.

Next steps include compiling and developing some materials and beginning to engage the Morningside neighborhood on flood awareness, preparedness, response, and adaptation and mitigation. Gathering feedback on risk, community values, City services, strategies, and responsibilities from the neighborhood will be used to further refine recommendations for the Flood Risk Reduction Strategy. Those recommendations are anticipated to be brought to Council in early 2020 in the form of a major amendment to the Comprehensive Water Resources Management Plan.
Flood Risk Reduction Task Force – City Council Update, October 15, 2019

Purpose: Support the City’s Development of a strategy to address flood risk and resiliency.

Task Force Members:

Kathy Amlaw (Co-chair) 4820 Larkspur Lane. Home backs up to landlocked basin attached to Arneson Acres. In 1987 basin flooded and caused 18 inches of water to flood the basement. In 2019, due to snowmelt/rain, basin overflowed and again flooded home. Serious damage averted by neighbor pumping water out of basin. Concerned about the future. 33 year Edina resident.

Nora Davis (Co-Chair) 6921 Southdale Road. Concerned about water issues in the city, both now and into the future. 8 feet of water in home during flood of 1987. 43 year Edina resident.

Roxane Lehmann 4801 E Sunnyslope Road. Home backs up to Minnehaha Creek’s Mill Pond. Has firsthand knowledge and experience about flood risk and resiliency gained during 2014 flooding. Wants to be part of the solution. Edina resident for 23 years.

Greg Lincoln 4108 France Avenue. Watches water levels rise in Weber Pond with each rainfall. 3 feet of water in home during flood of 1987, had to replace all mechanical equipment. Looking for a solution from the city regarding this ongoing threat. Greg’s wife has lived in Edina for 36 years, Greg has lived in Edina two years.

Richard Manser 5024 Edinbrook Lane - a practicing Hydrogeologist, interested in all things water, including smart planning for city of Edina regarding storm water and flood control practices. Returned to Edina in 2011.


Louise Segreto 6720 Indian Hills Road - lives on landlocked Arrowhead Lake and has witnessed the flooding. Has served on the Edina Park Board, 9 Mile Creek Watershed District, and other State and local environmental boards & commissions. 30 year resident of Edina.

Richard Strong 6112 St John’s Avenue. Interested in water issues from a personal & professional viewpoint. Edina resident for 27 years.
**Meetings**

Our Task Force has been meeting bi-weekly since July. We’ve explored a variety of topics, from risk levels, increased rainfall issues, to development and redevelopment challenges. Members have watched the PBS series “Sinking Cities,” explored the concept of sponge cities and read articles on local water issues. We’ve discussed land use and cost versus benefit issues. Other topics included resiliency, maintenance issues, service expectations, and what residents can do to protect their homes. Surrounding communities entered our conversations, along with watershed issues. We’ve met with a number of experts including Barr Engineering and City of Edina Engineering and Public Works staff. Staff has provided us with many relevant resources and reports.

There has been thoughtful discussion about values, risks and the issues Edina residents face now and into the future. We approached our task with a sense of urgency and are cognizant of the future risks climate change will bring. There is a general consensus that what has evolved over many years may not be solved overnight.

**Urgency**

Increased rainfall, coupled with early snow melt and rising ground water levels, has put our community at risk. We are experiencing historic levels of rainfall—**as of October 6th, we’ve received 37.12 inches, 11.20 inches above normal** – and more rain is forecasted. We are not alone – surrounding communities are dealing with the same issue. Flooding is an issue on 35W, and ground water is bubbling up through cracks in the concrete along 494 at Penn Avenue. Although our work encompasses the entire city – we were asked to focus first on the Morningside area and to develop tools that would be applicable to other areas as well.

**Edina History**

Settlers first arrived in Edina in the 1800’s and by the end of 1854 all the land in Edina had been claimed. Much of the western portion was part of the “Big Woods” – with elm, basswood, maple and oak trees. The terrain was uneven and much of the area was poorly drained and swampy. Over time many of the hills were bulldozed, trees felled, the wetlands filled in – and development began. Two hundred years of development has profoundly affected storm water management and is a major factor in our current flooding problems.

**Morningside**

Morningside was platted for development in 1905 by the descendants of Jonathan Grimes. At that time Morningside consisted of farmland, orchards and extensive wetlands. The wetlands were soon filled in and houses were built. Morningside grew quickly due to the proximity of the streetcar line. Water has been an issue in the area for some time – in early years one could canoe from what became 42nd and France all the way to Bde Maka Ska (Lake Calhoun). In the December 30, 1954 edition of the *Minneapolis Star* – in an article entitled “Morningside grew
out of a Hole in the Mud” – there was discussion about the muddy streets and the “swamp”. Today the area consists of approximately 700 homes on a twenty-one block area.

**Task Force Major Discussions/Concerns**

Our Task Force acknowledges the difficulty of “flood proofing” the city but understands the urgency of climate change and the need to begin a process of addressing our flooding issues.

At this point in our work we look to you, our City Leaders, for feedback and direction.

**Under discussion -**

- **Development of a Flood Plan**
  - Prioritize Service & Capital projects
  - “Tool Box” for staff for dealing with flooding issues throughout the city
  - Emergency Plan

- **Land Use Policies**
  - Increase green space for temporary storage
  - Voluntary acquisition
  - Policies to limit imperviousness and improve tree retention

- **Outreach and Education**
  - Outreach to Edina residents regarding flood risk and what they can do to mitigate that risk
  - Information about what is available from the city, i.e., sandbags and technical assistance.
  - Resources available, including flood insurance information.

**Next Steps**

Over the next several months we will reach out to the community for additional input, beginning in the Morningside Neighborhood.

We will also continue our research and discussions to further refine our recommendations. A final report will be presented to the Edina City Council in February 2020.
City of Edina in 1908