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City of Saskatoon's Flood Control Strategy

Mitigating Flooding in Historically Flood-prone Areas of Developed Neighbourhoods through Construction of Storm Water Storage in Existing Park Space

Aaron Omelan, P.Eng., PMP
2026 SEIMA SustainTech Conference
March 18-19, 2026

Outline

- Introduction
- Background
  - The Problem
  - The Solution
  - Methodology
- The Projects
  - Completed
  - In-progress
  - Future
- Lessons Learned
- Outcomes & Conclusion

Introduction

- Aaron Omelan
- Storm Water Infrastructure Engineer
  - Saskatoon Water Department, City of Saskatoon
- Storm Water Utility
  - Funds storm water management and flood protection services
  - Manages Flood Control Strategy

Background

2010 Flooding (Global News)

Storm swamps city

Saskatoon residents are continuing the cleanup from the torrents of water that rolled through the city early Wednesday morning, leaving hundreds of basements flooded, dozens of vehicles destroyed and a multitude of businesses mopping up in the aftermath of the worst flooding in decades.

DAVID HUTTON, CASSANDRA KYLE, ALANNA ADAMKO AND CAM FULLER Updated: July 2, 2010

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ADJUST

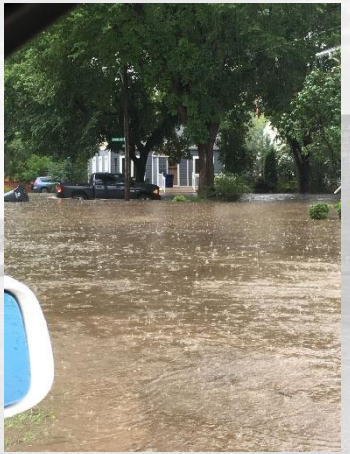
COMMENT

Saskatoon residents are continuing the cleanup from the torrents of water that rolled through the city early Wednesday morning, leaving hundreds of basements flooded, dozens of vehicles destroyed and a multitude of businesses mopping up in the aftermath of the worst flooding in decades.

Among the wild events: A manhole cover shot through the bottom of a moving city bus; small vehicles and garbage containers were reportedly floating down streets in Confederation Park, where flood water submerged cars; and nearly one metre of storm water rushed down streets and into businesses and offices in the city centre.

The StarPhoenix News Article July 2, 2010

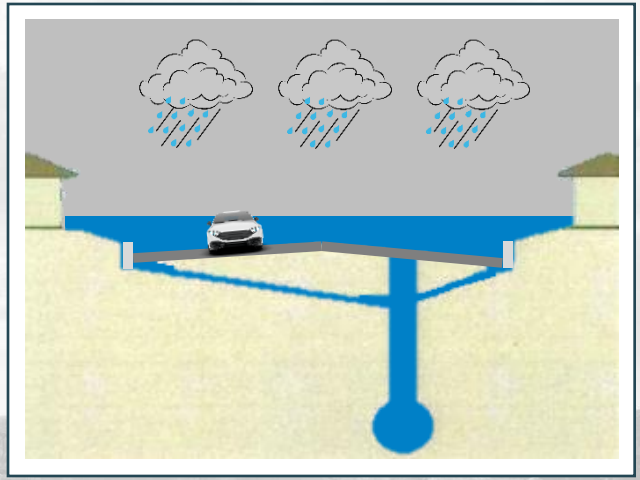
- Multiple storms in Saskatoon in early 2010s caused flooding
- After large storm in 2014, City Council directed administration to investigate solutions to reduce flood risk
  - 30 flood zones were modelled and prioritized
- In 2017, two localized intense storms again caused significant flooding
  - Calls for City to take action



2017 Flooding

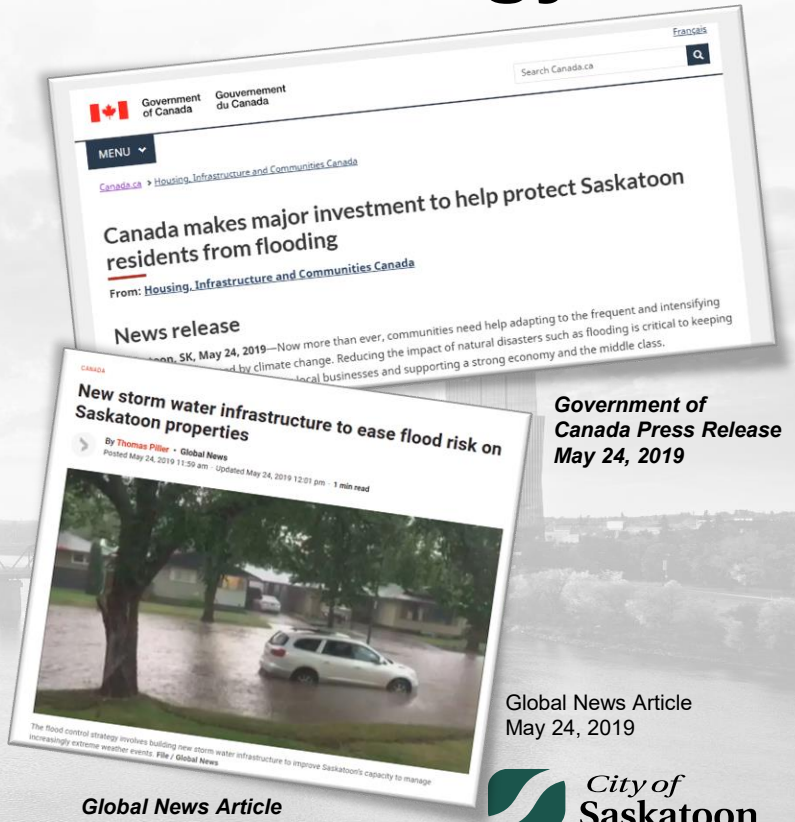
The Problem: Overland Flooding

- Underground storm pipes are only designed to handle up to a 1-in-2-year storm event
  - “Minor System”
- Since 1989, neighbourhoods are designed with “major system”
  - Flood mitigation up to 1-in-100-year storm
- Neighbourhoods developed prior to 1989 do not have a major system
  - Creates increased flood risk in low lying areas
  - Increasing risk due to climate change



The Solution: Flood Control Strategy

- In 2018, City Council approved the Flood Control Strategy (FCS) and application for external funding
- In 2019, Government of Canada approved funding through the Disaster Mitigation and Adaptation Fund (DMAF)
- Nine-year, $54 million Flood Control Strategy (FCS)
  - 40% ($21.6 M) funded through DMAF
  - 60% ($32.5 M) funded through Storm Water Utility
- 9 projects mitigating at least 10 locations
  - Combination of storm pipes, dry ponds, and underground storage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Canada makes major investment to help protect Saskatoon residents from flooding
From: Housing, Infrastructure and Communities Canada
News release
New storm water infrastructure to ease flood risk on Saskatoon properties
By Thomas Piller • Global News
Posted May 24, 2019 11:59 am · Updated May 24, 2019 12:01 pm · 1 min read
The flood control strategy involves building new storm water infrastructure to improve Saskatoon's capacity to manage increasingly extreme weather events. File / Global News

Government of Canada Press Release May 24, 2019

Global News Article May 24, 2019

Global News Article
May 24, 2019

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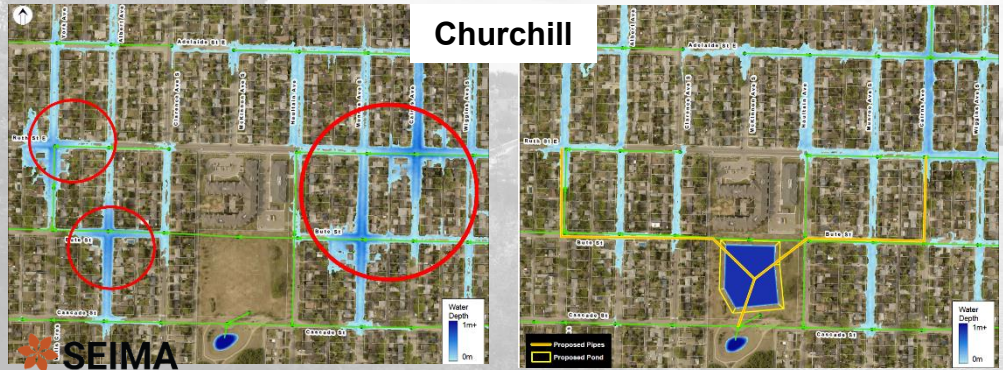
Methodology: Location Selection

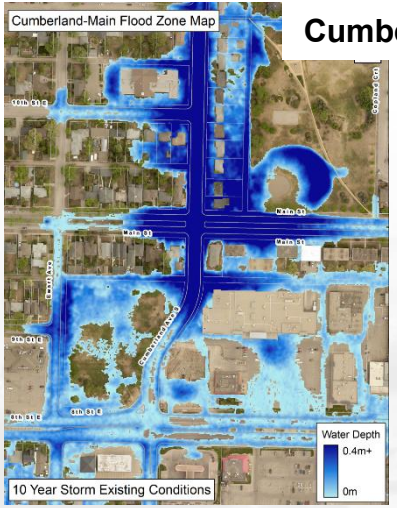
- Prioritized based on number of properties impacted and estimated cost
  - Initially focused on 1-in-10-year design storm
  - Later evolved to annual average for full spectrum of design storms
  - $250K cap throughout strategy
- Focus on mitigating building flooding rather than strictly roadway flooding

Flooding at Bute St & Dufferin Ave (2022)

Flooding at Early Dr & Tucker Cres (2022)

Methodology: Flood Mitigation





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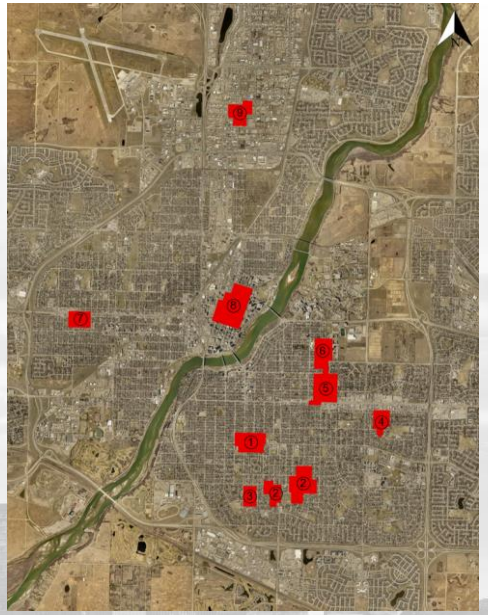
Methodology: Strategy Approach

The Projects

	Project No.	Flood Intersections	Project Location	Construction Year
Completed	1	1st St E & Dufferin Ave 1st St E & Lansdowne Ave Broadway Ave & Taylor St E	W.W. Ashley Park	2021
	2	Ruth St E & Cairns Ave Bute St & Munroe Ave Ruth St E & York Ave Bute St & Albert Ave	Churchill Park	2022
	3	Cascade St & Dufferin Ave Bute St & Dufferin Ave	Weaver Park	2023
	4	Tucker Cres & Early Dr	Brevoort Park South	2024
In-progress	5	Main St & Cumberland Ave S	Cumberland Park	2025
	6	14th St E & Cumberland Ave S	USask Land	2025
Future	7	21st St W & Ave W S	Cahill Park	2026
	8	24th St E & 3rd Ave N	N/A	2026-2027
	9	46th St E & 1st Ave N	RCAF Pond (Existing)	2027



Flood Control Strategy Project Locations Map

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Completed Projects

Project 1: W.W. Ashley Park

Project 2: Churchill Park

Project 3: Weaver Park

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Project 4: Brevoort Park South

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In-Progress Projects

Project 5: Cumberland Park

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Project 6: USask Land

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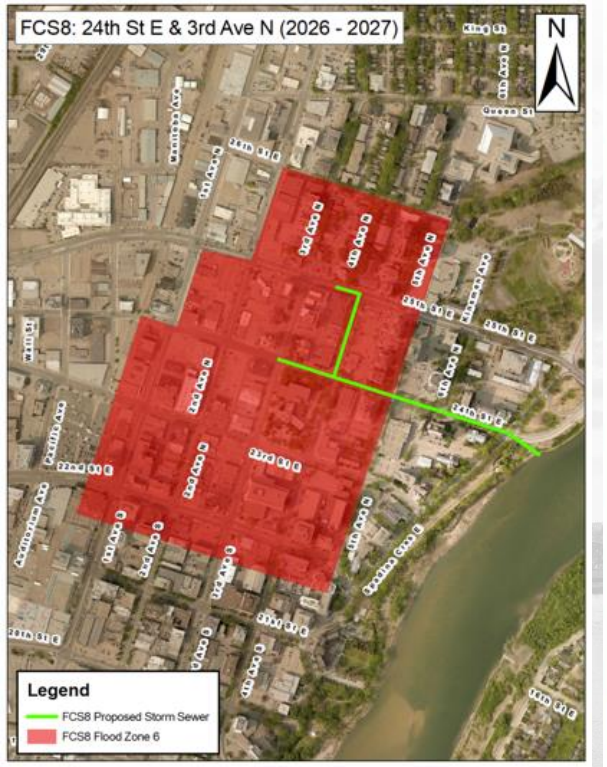
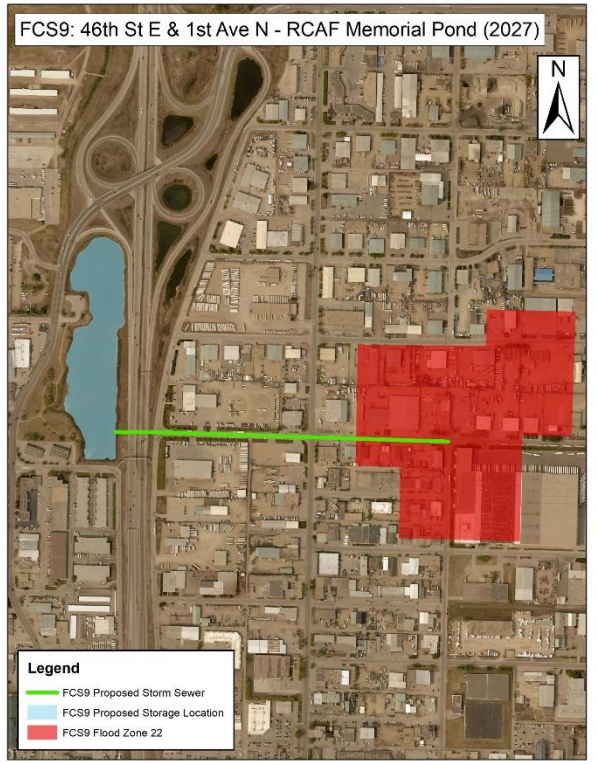
Future Projects

Project 7: Cahill Park

Project 8: 24th Street Storm Sewer



Project 9: 46th Street Storm Sewer



Project Successes

Project 1: W.W. Ashley Park

- June 20, 2022
  - Approx 60 mm of rain over 1 hour
  - Between 1-in-5 year and 1-in-25 year storm
- W.W. Ashley Dry Pond is put to the test
  - Successfully took in water and mitigated nearby flooding

W.W. Ashley Park during June 20, 2022 Rain Event

Lansdowne Ave & 1st St E

August 2017

June 2022

Dufferin Ave & 1st St E

August 2017

June 2022

Broadway Ave & Taylor St E

August 2017

June 2022

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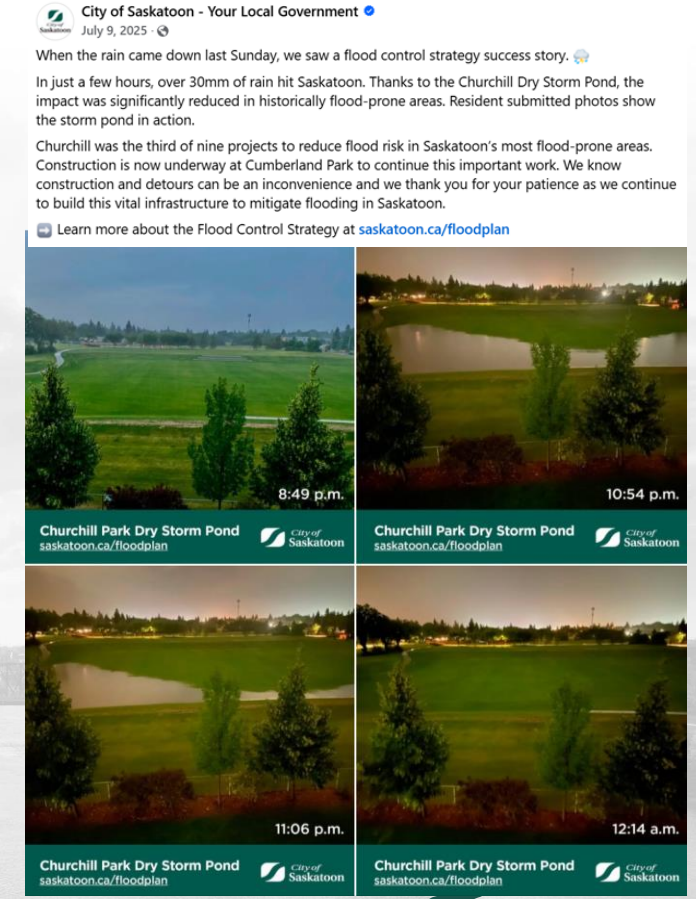
Project 2: Churchill Park

June 2023



July 2025

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Lessons Learned

Design Constraints	Challenges of working in mature neighbourhoods
Schedule	Multiple moving parts to coordinate
Communications	Importance throughout design and construction
Costs	Creative solutions at times required to mitigate costs
Trees	Mitigating impact to existing trees
Collaboration	Many internal and external groups involved
Celebrating Success	Helping mitigate flood risk and creating enhanced spaces

Outcomes & Conclusion

- New Infrastructure
  - 6 dry storm ponds
  - 1 underground storage system
  - Approx. 73,000 m^3 of storm water storage
  - Approx. 5,000 m of new storm sewer
- 250+ properties protected in a 1-in-10 year storm
- Upgraded Parks & Recreation
- Quality of Life & Socio-Economic Impacts

Saskatoon

Saskatoon park doubles as storm pond to manage flooding in at-risk neighbourhood

Churchill Park dry storm pond 2nd of 9 to be completed by 2027

Dayne Patterson · CBC News · Posted: Sep 08, 2023 6:00 AM CST | Last Updated: September 8, 2023

Monday's downpour first test of $57 million flood control strategy

New pond passes with flying colours. Wastewater treatment plant reports small leak.

By Bryn Levy

Published Jun 24, 2022 3 minute read Join the conversation

"Our basement often floods when any heavy rain comes down. I was expecting the worst when it started raining on June 20, 2022. I was thrilled to see that there was no water even near our house or on the street. All of the water was in the storm pond doing its job. Fantastic Work! I can't even imagine the impact it had on other houses in the community."

- Resident near Project 1

Thank you!

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