PG ISMP Public Engagement Report

City of Prince George

60628231

October 2021

Delivering a better world

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AECOM: 2015-04-13

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1. About this Report

A Public Engagement Plan was developed by AECOM to support the Integrated Stormwater Management Plan (ISMP). The plan identified two phases of public engagement; the first phase to be conducted in 2021 and the second phase to be conducted in the future.

Phase 1 engagement focused on introducing the community, key stakeholders and internal City staff and Councillors to the ISMP Guiding Document and Roadmap, while providing broad education and outreach on the importance of stormwater management in the City of Prince George. The plan also provided the City of Prince George (the City) with recommendations for ongoing education on the importance of stormwater management and engagement tactics for future initiatives and studies during Phase 2.

This report aims to present the results of the Phase 1 engagement process to internal and external stakeholders and audiences. It summarizes input received and explains how it has been or will be integrated into the ISMP development and stormwater management initiatives and studies.

2. About the Consultation Process

In July 2021, AECOM developed a Public Engagement Plan to support the Integrated Stormwater Management Plan (ISMP). It set the foundation for educating the community now on the ISMP (Phase 1), and provided the City of Prince George with recommendations for ongoing education on the importance of stormwater management and engagement tactics for future stormwater management initiatives and studies (Phase 2).

In August 2021 AECOM developed a Logistics Plan to outline the implementation of Phase 1 of the Public Engagement Plan. The following Phase 1 activities were then implemented in September and October through a collaborative effort by the City, AECOM and Ethelo:

1. Online Survey (Sept 22 – Oct 4)
2. Updated City webpages with information on stormwater management, including the ISMP, and links to other engagement activities
3. Development of a StoryMap that provided information on the City's stormwater system and the ISMP
4. Social Media posts (Facebook, Twitter, Linked)
5. YouTube video informing the public on stormwater and the ISMP
6. Council Meeting Update

3. About the Engagement Activities

3.1 Online Survey

An online survey was created using the City's Ethelo engagement platform to obtain feedback from the residents and business/property owners of Prince George regarding stormwater management in their community. The survey was launched on September 22 for two weeks. The survey was promoted on the City's Facebook, LinkedIn, and Twitter pages. It was also promoted through the local media such as CKPGToday, who produced an article[1] and accompanying video on September 22, which spoke about the ISMP, stormwater funding needs and the online survey.

CKPGToday and the PG Daily News reported on the ISMP and consultation process.

The survey included the following nine (9) questions:

1. How well do you know what stormwater is?
2. How important to you is the service of stormwater management in our community?
3. Have you ever been directly affected by stormwater in Prince George?
4. If you've had a chance to read the Integrated Stormwater Management Plan, what do you think about it? Is anything missing?
5. What concerns, comments or questions do you have about stormwater management in Prince George?
6. Are you a resident of Prince George?
7. How long have you lived in Prince George?
8. If you are resident, in which part of Prince George do you live?
9. Do you own a business or property in the City of Prince George?

The City received 116 survey responses, the results of which are summarized in **Section 4** and the details are provided in **Appendix A.**

3.2 City of Prince George Webpages

Prior to launching the online survey, the City developed a Stormwater page (accessed from the City's Utilities page) that includes information on stormwater management[2]. **Figure 1** shows the landing page for the City's Stormwater webpage. As can be seen in the figure, the webpage contains information about stormwater and the importance of stormwater management. It also contains a link to the ISMP.

[1] https://ckpgtoday.ca/2021/09/22/stormwater-plan-coming/

2. https://www.princegeorge.ca/City%20Services/Pages/Utilities/Stormwater.aspx

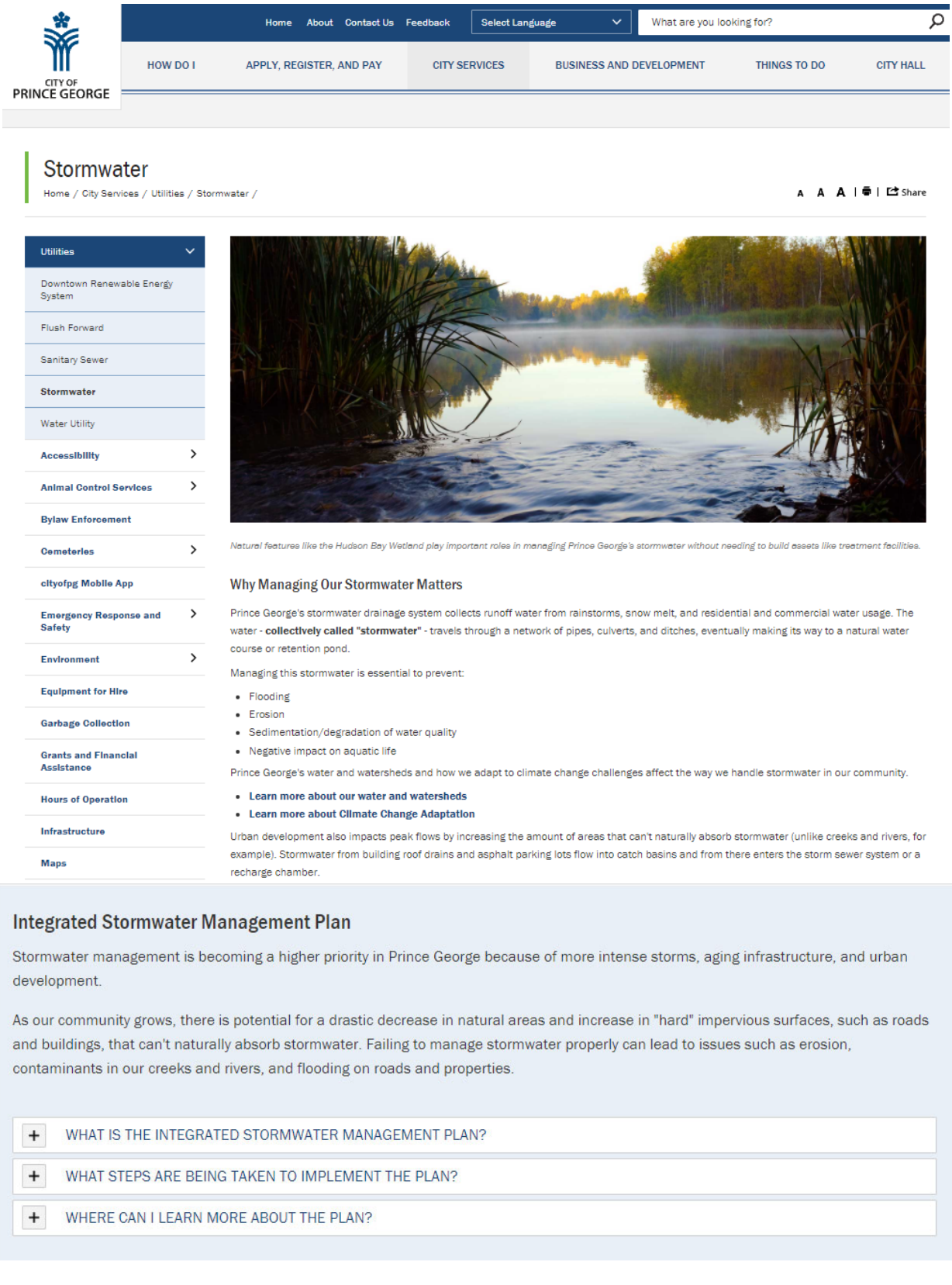


Figure 1: City of Prince George Stormwater Landing Page

ISMP content was added to two additional webpages on the City's website (Get Involved and News pages) for the duration of the public consultation period (September 22 to October 4) to inform the public about the online survey and ISMP education materials.

During the two-week public consultation period, all three webpages received a total of 376 views with an average viewing time of 2 minutes and 24 seconds. More information about the webpage views is provided in **Appendix D**.

3.3 StoryMap

To visually educate and communicate about the ISMP, the City's stormwater system (e.g., number and location of storm pipes, catch basins, and culverts) and what the potential impacts of stormwater management are, AECOM and the City developed a Stormwater ArcGIS StoryMap. The Stormwater StoryMap is a web-based application that enables viewers to explore maps, text, and multimedia in a scrolling curated narrative.

This tool tells the story of stormwater and stormwater management in the City of Prince George that includes:

- Descriptions of stormwater and stormwater management process and infrastructure
- Statistics about stormwater management assets
- Photos and multimedia showcasing stormwater management assets and processes in Prince George

This StoryMap was accessible during the two-week ISMP consultation period. The StoryMap was developed to be utilized beyond Phase 1 and not specifically linked to the ISMP consultation and survey. It will soon be made accessible from the City's Utilities' Stormwater webpage to provide ongoing education on stormwater management in Prince George. A summary of the StoryMap as an Adobe PDF is provided in **Appendix B**.

3.4 Social Media

To inform Prince George residents about stormwater management, the Integrated Stormwater Management Plan (ISMP) and the online survey, AECOM and the City developed key messaging for use on the City's social media platforms and website. The key messaging development was guided by the consultation objectives with stormwater education at the heart of all messaging.

The key messaging was tailored to the ISMP and the online survey while including educational information about stormwater and stormwater management specific to the City of Prince George. The social media and website key messaging can be found in **Appendix E.**

The City utilized the messaging on their website as well as on the City's Facebook, Twitter, and LinkedIn accounts via regular and paid promotion posts. More information about each social media platform is provided in the following sections.

YouTube

The City created a video titled "Why Managing Stormwater in Prince George Matters" (see **Figure 2**). This video was posted on YouTube[3] and linked from the City's website, social media sites and an article from PG Daily News[4]. The PG Daily News article is presented in **Appendix F.**

[3] https://www.youtube.com/watch?app=desktop&v=EVLeJMalm4g&feature=youtu.be

4. *https://pgdailynews.ca/index.php/2021/09/23/get-involved-with-stormwater-management-in-prince-george/*

During the two-week consultation period, the video was viewed 85 times directly from YouTube with an average watch duration of 52 seconds (i.e., most people watched about 72% of the video). The video received two likes and one comment on YouTube. The comment expressed concerns about urban sprawl and the decision to amalgamate in the 1970s (see **Appendix C** for detailed comments). The video received more comments on other social media sites such as Facebook (see below). In total, across all social media and website placements, over 4,300 online users viewed all or a portion of the City's stormwater video.

Over 4,300 views of the City's stormwater video.

The video is still available on YouTube and has received more views since the two-week consultation period. Since the video does specifically mention the ISMP consultation and survey, it should be amended as the consultation period and survey are finished. With that reference removed, the video can continue to be an important tool for educating the public on stormwater management in the City of Prince George.

Figure 2: Why Managing Stormwater in Prince George Matters (YouTube Post)

Facebook

The City advertised the ISMP consultation on its Facebook page. The Facebook post titled 'Get Involved with Stormwater in Prince George' included the video 'Why Managing Stormwater in Prince George Matters' and a link to the City's 'Get Involved' webpage and stormwater survey. With the assistance of a paid Facebook boost over 21,000 people viewed the post. The post received 71 reactions, 29 comments and 10 shares. The detailed comments are provided in **Appendix C**. The comments addressed many topics including support for densification rather than urban sprawl, concerns that stormwater hasn't been sufficiently funded through taxes, a misconception that the water utility funds stormwater management, support for the use of on-site stormwater management techniques (i.e., treat

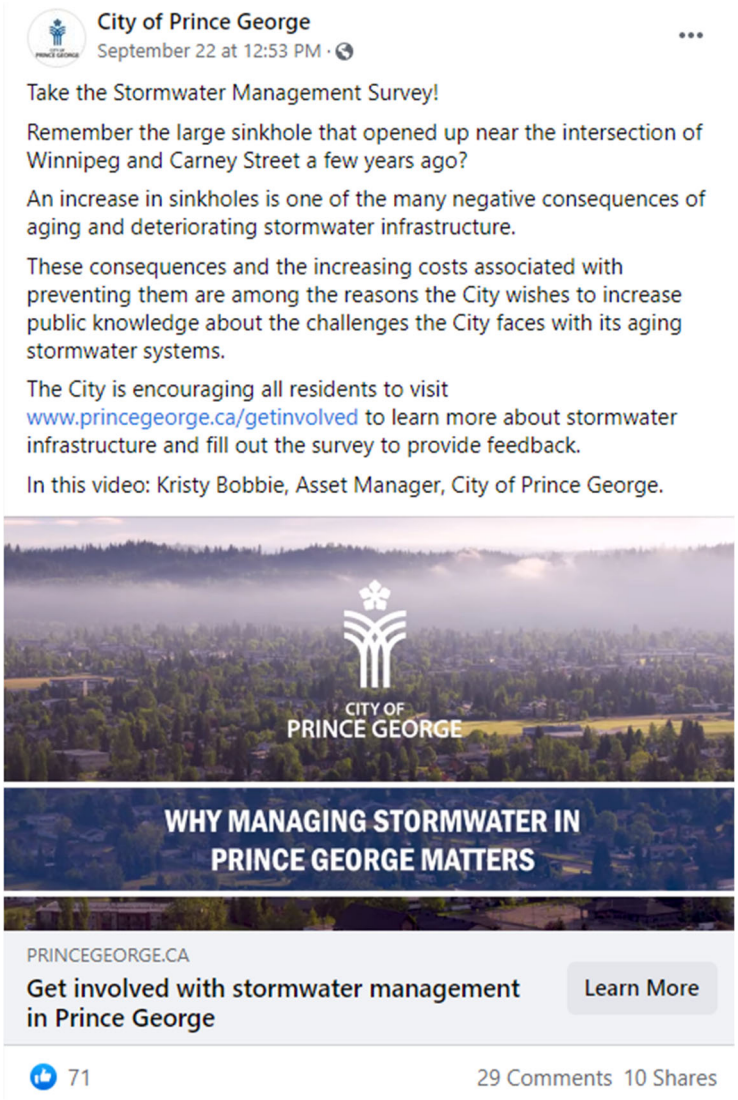
Over 21,000 views of the City's Facebook post about stormwater, the ISMP and consultation process

stormwater where it falls) and detention ponds, the need for forward thinking budgets and an appreciation of the information provided by the video.

679 people clicked the link on the Facebook post to take the survey or visit the 'Get Involved' webpage. 2,000 people clicked the 'read more' link to browse more of the post. 669 people watched the entire video and approximately 3,500 people watched between 15 seconds and 1 minute of the video.

Figure 3 shows the City's 'Get Involved with Stormwater' Facebook Post.

Figure 3: Get Involved with Stormwater (Facebook Post)



Twitter

The City sent out a tweet directing residents to the City's 'Get Involved' webpage to learn more about stormwater and to complete the survey. The post included the 'Why Managing Stormwater in Prince George Matters' video. The tweet received 665 views, over 200 views of the video and 35 engagements (e.g., clicks, replies, clicks to view

more of the post and profile visits). The tweet received 2 likes, 3 re-tweets and 2 comments. The City's Twitter post is presented in **Appendix D**.

LinkedIn

The City advertised the public consultation on its LinkedIn page. The post received 82 views, 311 impressions, nine clicks, and one comment. The City's LinkedIn post is presented in **Appendix D** and the comment I presented in **Appendix C**.

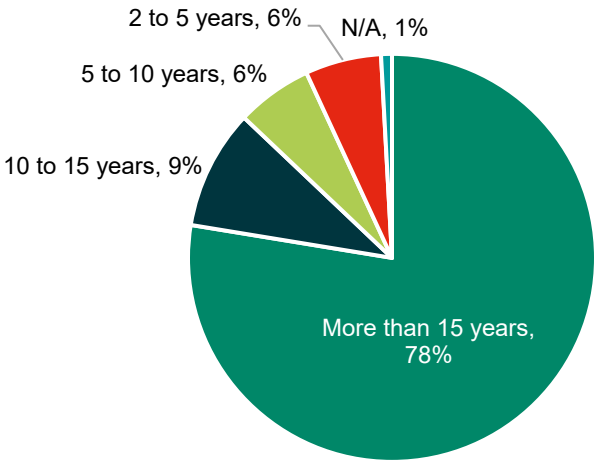
4. Survey Summary

This section summarizes some of the key findings from the 116 survey responses received.

4.1 Demographics

Overall, 97% of respondents indicated they were residents of Prince George. Over 78% indicated they had lived in the City for more than 15 years (**Figure 4** below).

Figure 4: Length of Time that Survey Respondents have lived in Prince George

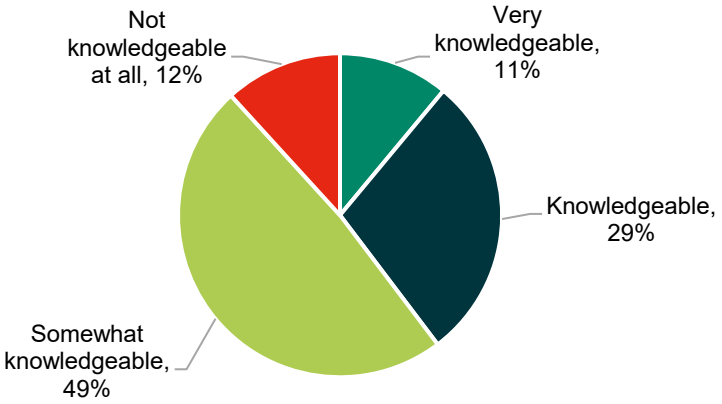


The survey presented 22 different neighbourhoods within the City of Prince George from which survey respondents could indicate where they live. Approximately half (51%) of respondents indicated they live in one of the following four (4) areas of the City: College Heights (20%), West Bowl (15%), Hart Highlands (9%), and North Nechako (7%).

The majority of respondents (91%) identified as property owners and 9% of respondents indicated they owned a business.

When asked '*How well do you know what stormwater is?'* the majority of respondents (88%) indicated they were at least somewhat knowledgeable about stormwater (see **Figure 5**). Some of the respondents indicated that they were professionals (e.g., engineers or planners) who had a good working knowledge of stormwater management. Each comment received as part of this survey can be found in **Appendix A** of this report.

Figure 5: Survey Respondents' Knowledge of Stormwater

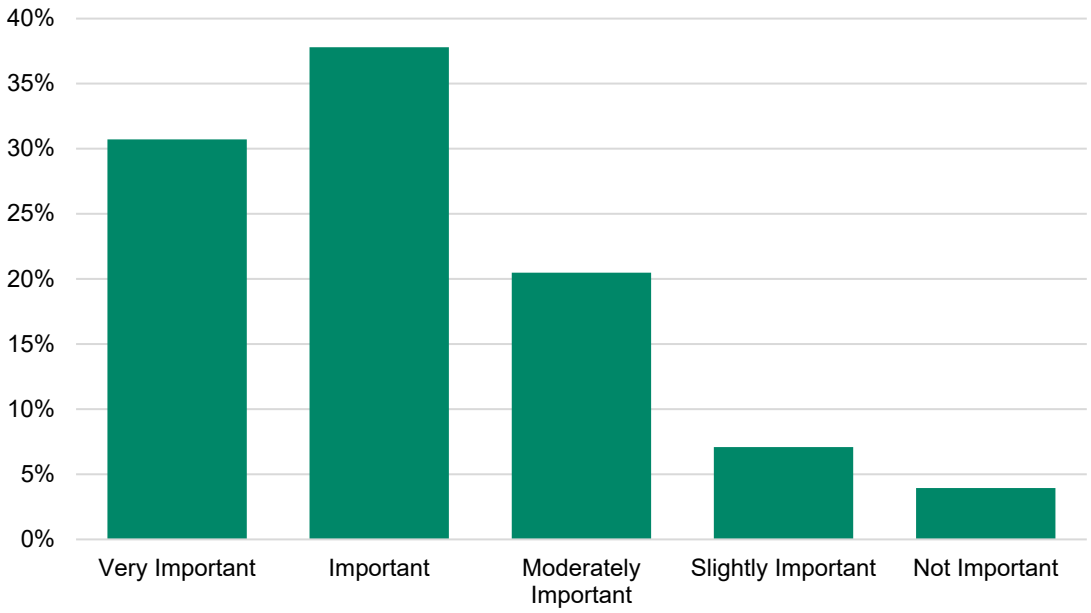


4.2 Importance of Stormwater Management to Residents

89% of survey respondents feel that the service of stormwater management in their community is moderately to very important

When asked '*How important to you is the service of stormwater management in our community?'* nearly 90% of respondents feel that the service of stormwater management in their community is at least moderately important (see **Figure 6)**. This shows that survey respondents are generally aware of the importance of managing stormwater in their community.

Figure 6: Importance of Stormwater Management to Survey Respondents



When providing additional comments related to the importance of stormwater management in Prince George, the survey respondents commented on the importance of protecting the natural environment, preventing flooding, preparing for climate change, and addressing aging infrastructure to avoid sinkholes and emergency work. The comments have been grouped into three themes and are summarized below.

- **Protecting natural environment –** Respondents believe that stormwater management is crucial for maintaining and improving the health of watersheds and mitigating the environmental impact of stormwater runoff. Respondents are concerned about the impacts of increased urbanization, aging infrastructure, and climate change on the natural environment. Several respondents suggested that the City invest in the most effective stormwater management system necessary to protect local ecosystems.
- **Cost of stormwater management –** The majority of respondents believe that stormwater management and maintaining stormwater infrastructure is essential. Several respondents suggested proactive measures should be implemented in maintaining the stormwater system to reduce the impacts and costs associated with damage caused by flooding and stormwater runoff. Three of the 116 respondents placed little value on stormwater management and were concerned about increasing City costs.
- **Flooding concerns -** Respondents believe that the topography of Prince George is prone to flooding and efficient stormwater management is necessary to ensure proper drainage to protect properties

from flooding and to maintain safe roads. They also noted that the Bowl neighbourhood is within a floodplain and urge the City to discourage new developments within that community.

Each comment is presented individually in **Appendix A**.

4.3 Stormwater Impacts in Prince George

When asked '*Have you ever been directly affected by stormwater in Prince George?'* respondents noted that driving through large puddles, enjoying natural watercourses or wetlands within the City limits, and observing sinkholes, were among the three most frequently noted ways in which they had been directly affected by stormwater in Prince George, with over 70% of respondents saying they had experienced all three of these.

Many of the respondents who provided additional comments expressed concerns over stormwater issues that they stated were due to construction of new development. Detailed comments can be found in **Appendix A**.

Table 1 summarizes the percentage of respondents that selected each of the stormwater related impacts outlined in the following table.

Table 1: % of Survey Respondents Who Had Experienced Stormwater Impacts

Stormwater Impacts	% of Respondents who had Experienced the Impact
Driven through large puddles on the road during rain	90%
Enjoyed natural watercourses or wetlands within the City limits (i.e., walking, picnicking, bird watching etc.)	72%
Observed sinkholes	70%
Observed drains backing-up	61%
Observed muddy water entering a catch basin	45%
Observed cloudy creek water	39%
Observed mudslides	26%
Fished within the City limits or on the Fraser/Nechako Rivers	24%
Experienced flooding in your yard or driveway during rain or snowmelt	22%
Experienced flooding in your home or business during rain or snowmelt	16%

When providing additional comments related to how stormwater affects residents in Prince George, the survey respondents provided insight that can be summarized in the following themes: safety and flooding.

- **Safety** – A few respondents reported safety concerns directly linked to stormwater management in Prince George. This includes manhole covers blown out after heavy rain and a mudslide on University Heights during construction activities.
- **Flooding** – Some respondents with older properties in Prince George are concerned about the increased occurrence of flooding in recent years.

4.4 Comments on the ISMP

When asked if they've had a chance to read the Integrated Stormwater Management Plan, what they think about it and if anything is missing, 10 survey respondents gave detailed responses about how they reviewed and

understand the information provided, agree with the need to address climate change and see the value in protecting natural areas that help manage stormwater. Each response is provided in **Appendix A**.

The comments presented the need to address flooding in existing residential neighbourhoods, to preserve greenspace and to improve public awareness. More description about these comments are presented below.

- **Consider all building types** – A few respondents believe that the Integrated Stormwater Management Plan is designed to mitigate the risk of flooding to public parks, commercial areas and new residential developments and neglects existing residential buildings. They would like to see more information on stormwater management that targets all building types.
- **Highlight the importance of greenspace** – A respondent suggested that residential homes should be required to retain an area of greenspace to protect their property from increased rain and snowmelt. The respondent noted the benefits of nearby greenspace helping to absorb and direct the rain and snowmelt from their property during spring runoff.
- **Improve public awareness –** A few respondents believe that from observing the impacts of climate change, more action is required to manage the existing stormwater infrastructure. They noted that that information on Prince George's Integrated Stormwater Management Plan may not be easily available and encourage the City to invest in more educational materials and programs.

4.5 Additional comments about stormwater management in Prince George

Survey respondents were asked if they had any concerns, comments, or questions about stormwater management in Prince George. The comments presented the need to improve the development application process, and the importance of ongoing maintenance. More description about these comments are presented below.

- **Importance of ongoing maintenance –** Multiple respondents highlighted the need for the City of Prince George to provide stormwater management staff with enough funding to maintain public infrastructure. They believe that poor maintenance costs taxpayers more because of emergency response costs and replacement costs associated with aging infrastructure.

5. Lessons Learned and Recommendations

Phase 1 of the City's public engagement for the ISMP was comprehensive as it utilized traditional media, various social media platforms, visual tools, facts, and narratives. It served to both educate and consult. As a result of the Phase 1 public engagement efforts, the City successfully educated a significant portion of the public on the importance of stormwater management in Prince George as well as provided opportunities for consultation (e.g., survey, social media post reactions and comments). Having over 21,000 views is impressive for a two-week consultation on an infrastructure issue that is largely out of sight.

Most of the residents who completed the survey or provided comments on social media understood the need to provide effective stormwater management and were supportive of efforts to address stormwater management needs. Some residents expressed concerns about the City's use of 'tax dollars'.

The Facebook post, the use of a paid Facebook 'boost' and the video were all important elements for reaching and educating the public. It is recommended that the City amend the video to eliminate the portion about the ISMP survey so that the video remains current and can continue to be used to educate the public.

AECOM will amend the ISMP to clearly demonstrate that it aims to reduce the risk of flooding to *all* residential properties, and not just new development. The consultation process revealed that some residents in previously developed areas experience issues with flooding and they were concerned that the ISMP would only help reduce the risk of flooding with new development.

The City is currently consulting on the 2022 Budget. In the past, stormwater and other 'out of sight' infrastructure has rated as a low priority on the City's Budget surveys. It will be interesting to see if the recent stormwater consultation has raised the profile of stormwater management and whether it rates higher on the 2022 Budget Survey than in past years. If stormwater does rate higher, then the City may be ready to begin addressing its second priority as per the ISMP Roadmap: 'Obtaining Sustainable Stormwater Funding'. This could be done in conjunction with Phase 2 of the Public Engagement Strategy and the ISMP and associated roadmap should be updated accordingly.

Appendix A. Survey Responses

Question #1

How well do you know what stormwater is?

Respondents were given the option of selecting one of the following responses:

- Very knowledgeable: 11%
- Knowledgeable: 29%
- Somewhat Knowledgeable: 49%
- Not knowledgeable at all: 12%

All comments submitted as part of the responses to Question 1 are provided in the table below:

Response	Comment
Very knowledgeable	■ "I am a Professional Engineer with considerable experience in the design of stormwater systems in the City of Prince George."
Knowledgeable	■ "Stormwater is natural, the city has installed above and below ground systems to collect this water." ■ "All water flowing above ground, typically from melt, rain and storms." ■ "Rain, snow, people watering the streets when watering their lawns becomes stormwater, this is a problem." ■ "Runoff reserves of water after heavy rainfall." ■ "I have an educational background that, in part, rests in urban development and urban geography. The issue of stormwater is central to much of my studies." ■ "I have worked as a consultant on multiple stormwater management issues for the City." ■ "As a homeowner, Registered Professional Planner; aware of using natural assets such as wetlands and ponds as part of infrastructure." ■ "As a long-time resident of Prince George and a planner by training I am quite familiar with the challenges associated with stormwater and the system the City of PG has in place." ■ "I have worked in an engineering capacity is other communities with regard to municipal services." ■ "Work in construction industry." ■ "Stormwater is runoff from a weather event, water release or snow melt." ■ "Overland water and creeks are collected in pools with inlets, catch basins etc. routed in pipes under the city to outfalls where sediment can settle prior to entering the rivers. These systems are used every day but are more important during heavy rain events to protect property from overland water damage."

Response	Comment
Somewhat knowledgeable	■ "Stormwater is groundwater that makes its way into the city drainage system. Groundwater can be contaminated by all different pollutants." ■ "I do know what stormwater is and how it is either piped to a natural holding area such as a wet land or directly into a river or stream with a 95% confidence level that it is clean water or simply runoff. Some of this water and in some cases called flood water is diverted using ditches such as those in some of the subdivisions" ■ "I went to a talk about 2 years ago discussing natural water drainage in PG and how it has been managed (or mismanaged back in the day) over time (e.g., the Hudson's Bay slough (aka wetland). Also. news stories online about the old wooden drainage systems.". ■ "Having a basic understanding of how stormwater is managed in the city is key to providing feedback to the city for improvement." ■ "We need to take care of what we own. Know more now than 2 years ago."
Not knowledgeable at all	■ "Know what stormwater is but not treatment". ■ "But very interested".

Question #2

How important to you is the service of stormwater management in our community?

Respondents were given the option of selecting one of the following responses:

- Very important: 31%
- Important: 38%
- Moderately important: 20%
- Slightly important: 7%
- Not important: 4%

All comments, suggestions, complaints, and concerns collected in the survey in response to Question 2 are provided in the following tables.

Suggestions / Complaints / Concerns
■ I suggest more use of French drains, increased use of natural catchment areas, and green buffers in large parking lots like CN Centre, Pine Centre, Walmart etc.
■ Better work crews.
■ I was misled by the former owner of my property and by city staff as to the severity of underground and basement flooding issues in my yard.
■ This is yet another city project that is inefficiently managed and worked on by overpaid un-ionized staff.
■ My place flooded this year around April. There's construction behind Yew street and I suspect they removed the natural barriers for stormwater. Now it pools in the back alley behind 1772 Yew street and will gradually runoff into the driveways and down my stairs into the basement.
■ The bowl is in a floodplain. Allowing buildings, especially huge ones (swimming pools, underground parking lots, hotels, and student housing) and fire halls to be built on it will obviously cause problems. Have you got a plan for what could become a huge problem - probably not, based on your history of not planning?
■ More important than spending money on new pool, firehalls and parkades.

- The infrastructure as stated is aging and after years of neglect by previous administrations the sewer systems are close to or are in the process of failing, forcing the city to be reactive rather than proactive.
- I'm concerned about the possibility of an increase in sink holes around the city (if they are avoidable) and I think we need to do more in PG to protect our environment and the habitat that is negatively impacted by changes to environment.

Additional Comments

- We have lots of water in our area so it's essential for safe roads and to prevent flooding.
- While I do not live on river front and do not have ponds or waterways near me, I do have ditches and I need them to work so I don't have water in my basement.
- Needed to avoid flooding.
- The Winnipeg sinkhole brought this into the public eye, but even at the surface the aging infrastructure is apparent. In my neighbourhood every other catch basin lid seems to be sinking/ cracked cement around, erosion starting from water intrusion around pipes etc. PS I LOVE the parks with ponds etc.. keep it up. Thanks for cleaning the ponds of garbage.
- If stormwater or flood water is not managed the water tables will rise. In some cases, hydraulicing will undercut the underlying soil horizons causing or creating a minor cavern which eventually caves in. This also happens during dry seasons where caverns that are existent within the soil horizons which contain water will dry up leaving a weakened cavern which eventually caves in. In the city of Prince George and surrounding areas where water levels rise there are numerous underground streams that develop. This adds to the erosion of underlying horizons and thus more shallow caverns and upper layer collapse. Thus, the importance of runoff management and diversion systems.
- We have a ditch in front of our house. I only want to pay for that ditch because that's all I get as a storm service.
- Health of our watershed and what we are feeding into it is vital to plant / animal life. Our storm drains feed into the oceans affecting the flora and fauna there.
- When you live on the side of a mountain and above a river it is very important to make sure stormwater doesn't have a chance to flood our city, destroy the homes and streets it will flow through.
- Stormwater itself has little impact on me, except the cost.
- For protecting property and clean water supply.
- Flooding/collapse of system if not closely monitored and updated.
- Flooding is very costly in many ways and dealing with stormwater is critical to allow the city to function effectively. With storms becoming more violent managing stormwater is important.
- As noted, sprawling development, aging infrastructure, climate change, etc. affect people in the city and our ecosystems. Like any product of the city and going through the city, best management is necessary to mediate present and I agree that future monetary and ecosystem costs as best as possible.
- Runoffs of any kind can be a problem and have environmental impact.
- Because of its' age we need upgrades.
- The proper management of stormwater can do many things - prevent overground flooding, flooding through groundwater percolation, decrease road and street rehabilitation costs, increase green spaces, decrease chemicals released into the environment, etc. If we are to live in a sustainable and healthy community, it is vital that the water that moves and collects on our streets and in our stormwater infrastructure is managed properly.
- It's important to ensure proper drainage to avoid flooding of properties and homes.
- It helps protect water quality and aquatic life in natural water bodies by reducing non-point source/ runoff pollution; helps to avoid erosion and protecting built environment from flooding.
- Integrity of underground lines is crucial; this is a high-risk area since it is not always visible. I say high risk because you can have car accidents, fatalities, buildings collapse etc. also when this does horn, it is very costly because you are paying too rates since it isn't planned, or budgetted for, and replacement materials may be a long ways away from being acquired. To expedite this, means paying a lot of extra money which was never planned.

Additional Comments
■ Very important and will be an increasing challenge due to the affects of climate change. Need to be proactive and develop and maintain stormwater systems which will lessen the impacts and costs associated with damage caused by stormwater runoff. ■ Water is a disappearing resource, and we need to maintain how we use and control it. ■ I am very concerned about caring for and preserving our natural environment. Having clean water and green spaces becomes more critical every day - for the physical and the mental health of all of us. ■ A proactive plan from the City to help reduce, reuse and be climate/environment aware.

Question #3

Have you ever been directly affected by stormwater in Prince George?

The following table below shows the percentage of respondents who had experienced the stormwater impacts outlined below.

Stormwater Impacts	% of Respondents who had Experienced the Impact
Driven through large puddles on the road during rain	90%
Enjoyed natural watercourses or wetlands within the City limits (i.e., walking, picnicking, bird watching etc.)	72%
Observed sinkholes	70%
Observed drains backing-up	61%
Observed muddy water entering a catch basin	45%
Observed cloudy creek water	39%
Observed mudslides	26%
Fished within the City limits or on the Fraser/Nechako Rivers	24%
Experienced flooding in your yard or driveway during rain or snowmelt	22%
Experienced flooding in your home or business during rain or snowmelt	16%

Comments provided by respondents to Question 3 are outlined below.

- *"*Observed poorly placed drains."
- "Noted garbage, shopping carts, etc. in creeks and ponds."
- "I don't have many city services. I don't want to pay for rich people big houses."
- "Called in to report manhole covers blown out after heavy rain."
- "Ridgeview/Carlisle Way was developed in the 70's without storm drainage, using swales (sandy soil). It's become a big problem."
- "Mud sliding down University Hill when the road construction was occurring was most alarming."
- "1772 my place floods since construction started. Not happy that it's started happening since construction started. I expect older properties like mine to be protected during the construction of newer homes, just doesn't seem fair to damage mine in order to put-up brand-new homes. Not happy over the two floods I've had in under a year."

Question #4

If you've had a chance to read the Integrated Stormwater Management Plan, what do you think about it? Is anything missing?

Responses to Question 4 are outlined in the following table.

Comments (Please explain)
■ *I understand through viewing the financial statements, council meetings and hearing/seeing impacts of climate change, that we need to do more to manage our stormwater infrastructure.*
■ *I have read your information and understood what you are saying. I live off Davis and Ospika. We have a small green space behind our house that has a seasonal underground creek, I believe that during the spring runoff it helps absorb and direct the snowmelt behind our homes. It is important to keep this area a green space to protect the homes in our neighbourhood from the housing development above us. Their potential rain and snowmelt, the excesses caused by spring conditions or storms, this water needs to flow naturally as well as through the city infrastructure.*
■ *Learned a lot reading the article but would really like to see a map of pond locations.*
■ *I read the materials presented on this survey. Plus, I've lived in Prince George most of my life.*
■ *I have carefully read the information you have provided.*
■ *Teach storm drain educational awareness in classrooms, do storm drain marking with students.*
■ *Peak melt and flow management. It is currently managed to mitigate problems in public parks, business zones, and new residential developments. It neglects the risk and impacts on pre-existing residential area.*

Question #5

What concerns, comments or questions do you have about stormwater management in Prince George?

Open-Ended responses to Question 5 are listed below.

- "When the developer develops new housing or buildings, they should be responsible for related utilities such as drains, roads, and lighting. I have seen this with other communities. It is will make the costs more sustainable until a tax base is built up. I believe that these ongoing maintenance should be covered by property taxes."
- "There should be dedicated funding as a minimum and it's surprising that public assets haven't been getting the funding they need to remain maintained. Poor maintenance costs taxpayers more because of emergency response costs and replacement costs. Not having dedicated funding actually violates the public employee responsibility to manage public assets and resources in the most efficient way. Great video!"
- "The longer we wait to repair it, the harder it will be to do it and the cost will go up

Question #6

Are you a resident of Prince George?

The following table provides a breakdown of the percentage of respondents that are residents of Prince George

Response	Percentage	Count
Yes	97%	113
No	3%	3
		116

Question #7

How long have you lived in Prince George?

The following table provides a breakdown of the percentage of respondents that have lived in Prince George within the following year ranges.

Response	Percentage
More than 15 years	78%
10 to 15 years	9%
5 to 10 years	6%
2 to 5 years	6%
N/A	1%

Question #8

If you are a resident, which part of Prince George do you live in?

The areas of Prince George that respondents indicated they live in can be found in the table below, along with the associated percentage that lives there:

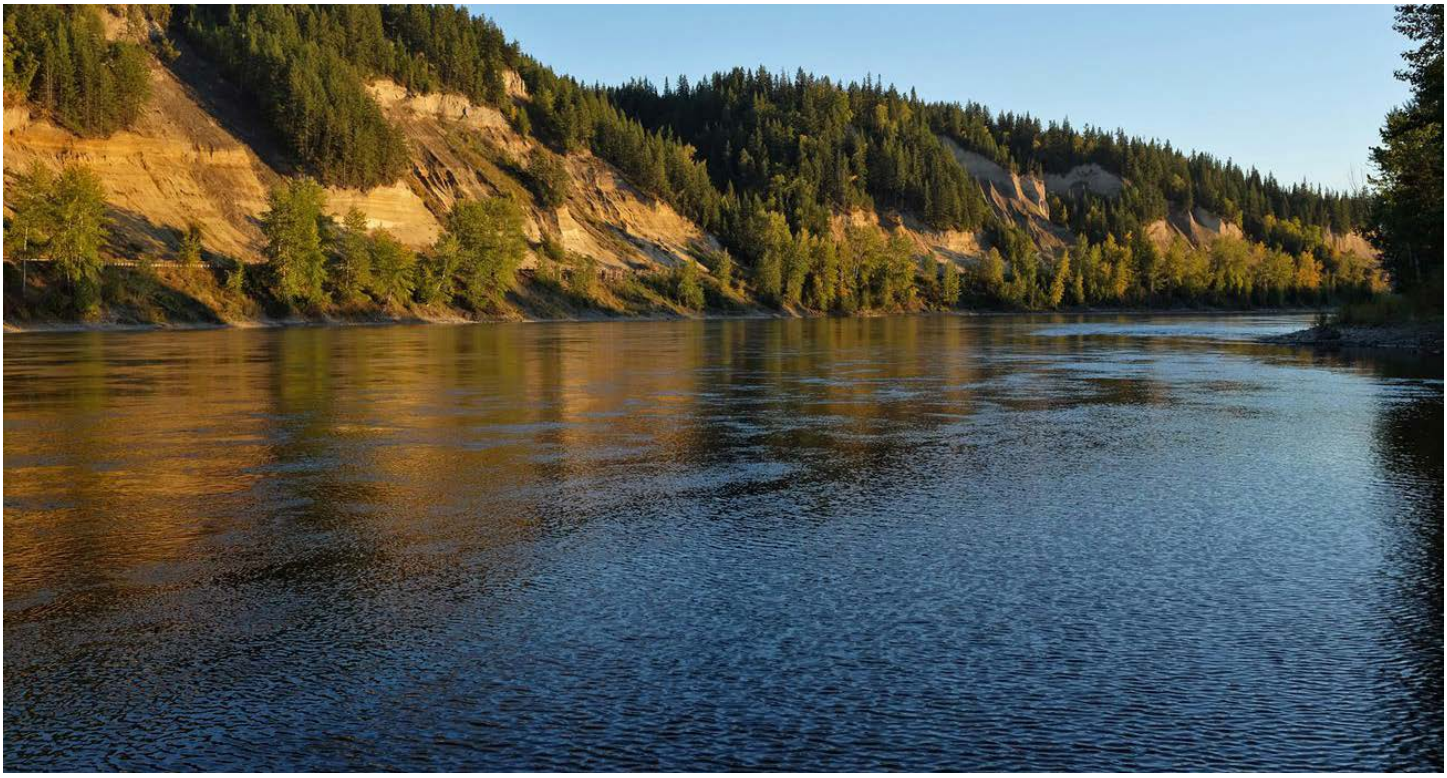
Response	Percentage
Austin East	4%
Heritage	7%
Blackburn	1%
North Nechako	7%
Cranbrook Hill	4%
West Bowl	15%
College Heights	20%
Chief Lake	4%
Central Hart	4%
Hart Highlands	9%
East Central Fort George	3%
Austin East	4%
Millar Addition	4%
Austin West	3%
Carrie Jane Gray Park	1%
Crescents	3%
South Fort George	2%
N/A	2%
Fraserview	1%
Danson Industrial Park	1%
VLA	1%
Downtown	1%
Assman	1%

Appendix B. StoryMap

A PDF version of the StoryMap is provided on the subsequent pages. The StoryMap will be housed on the City's Stormwater webpage as of mid-November 2021.

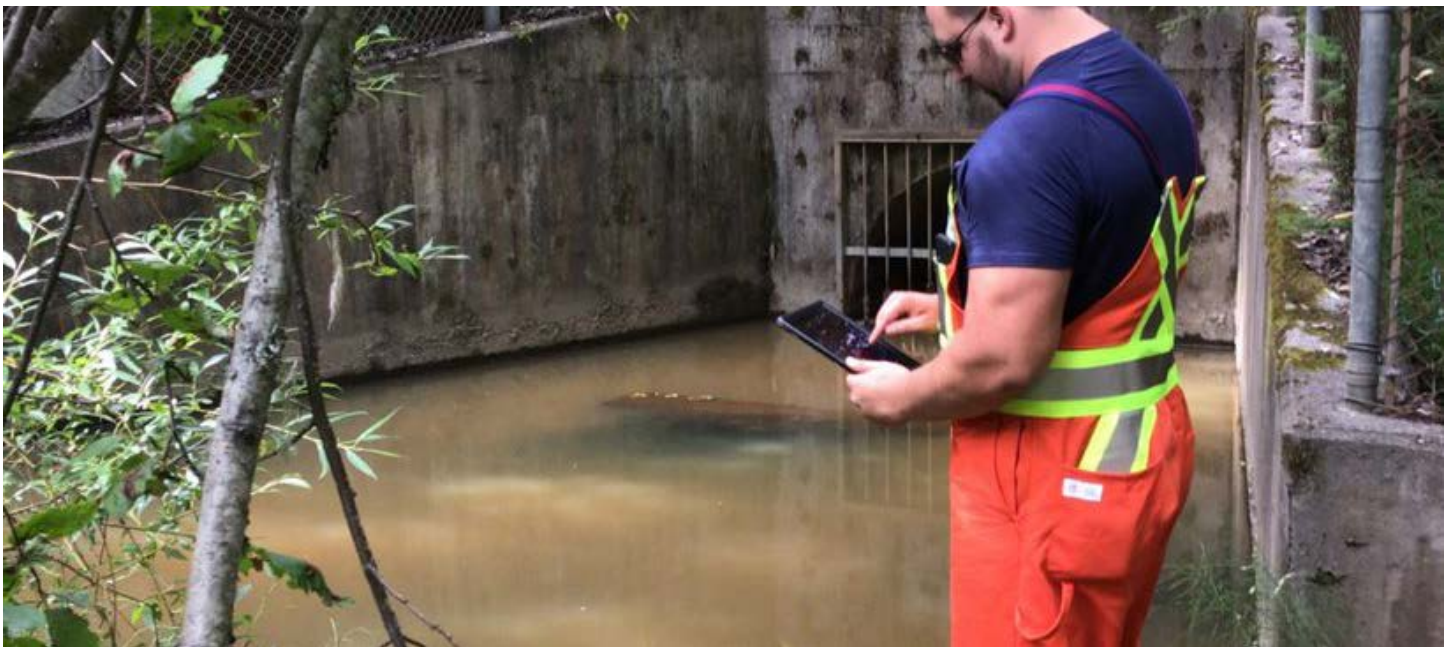
Stormwater & Stormwater Management

City of Prince George
September 8, 2021



Stormwater and stormwater management affects everybody in Prince George.

Stormwater comes from rain and snowmelt, which falls on and runs off lawns, pavement, and other surfaces.



The City has a complex stormwater system that prevents pooling and flooding during rain and snowmelt and safeguards our downstream natural environment. Managing

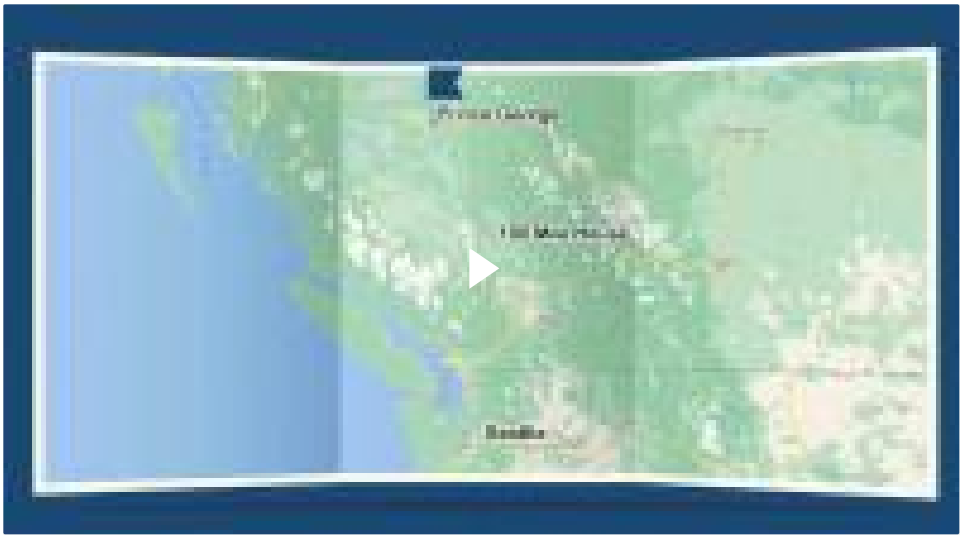
this system involves inspecting, cleaning, repairing, and replacing it as and when needed.

> Managing stormwater protects our residents, homes and buildings, parks, roads, creeks, and rivers. By controlling flow runoff, we can minimize and prevent hazards like flooding, erosion, sinkholes and destruction of fisheries habitat.

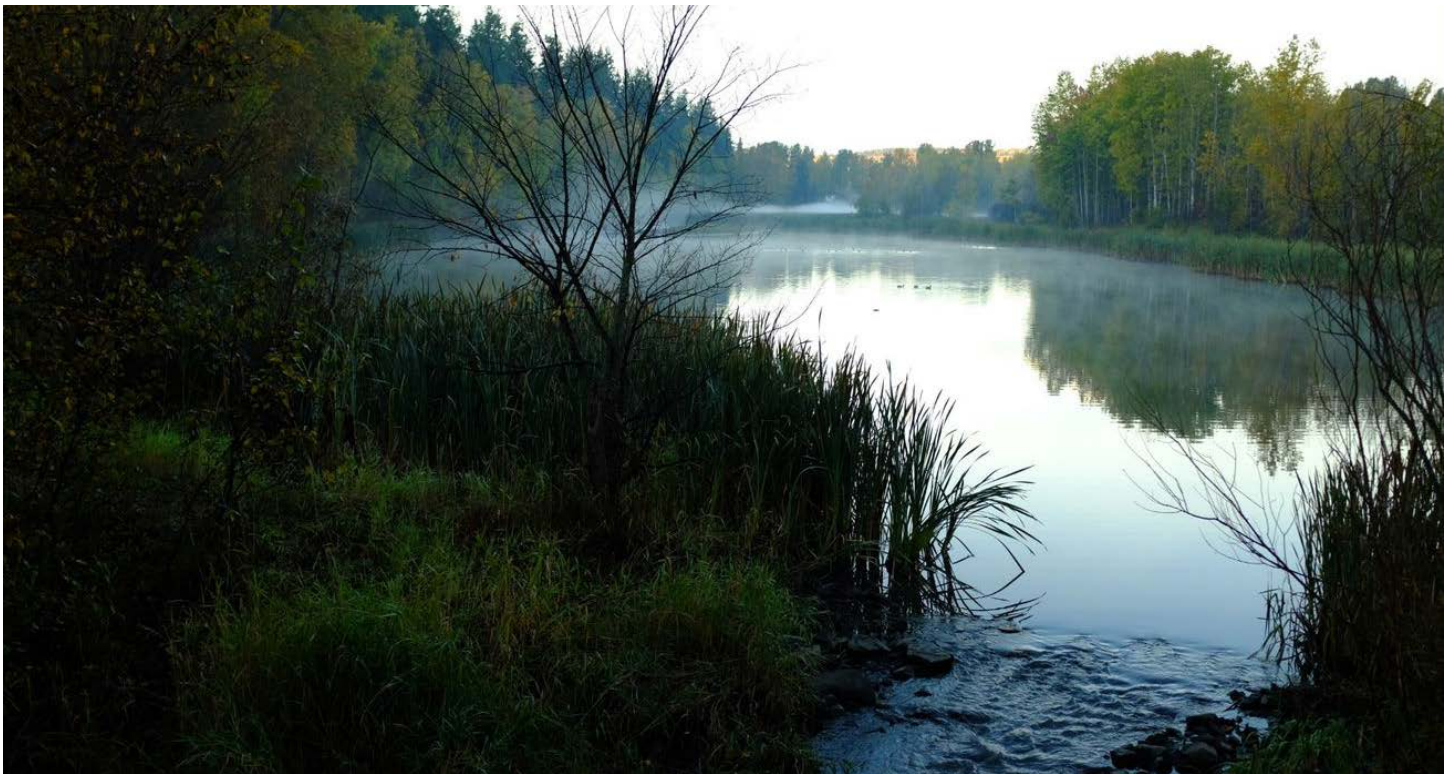
> **Over the years, we've constructed a $300-million stormwater system made up of many assets.**

To give you an idea of its extent, our 385 kilometres of storm sewers easily span the distance between Prince George and 100 Mile House. If we include the city's 690 kilometers of ditches, the combined length of pipes and ditches would reach Seattle.

- 385 km of storm sewers
- 690 km of ditches
- 962 culverts
- 5,789 catch basins
- 6 stormwater pump stations
- 4,087 manholes
- 25 storage basins (e.g. ponds)
- 21,227 lateral lines (connections to properties, catch basins etc.)
- 73 subsurface infiltration facilities
- 293 outlets to local waterways



These storm sewers and ditches, along with the City's other stormwater assets such as storage basins and pump stations, work together to prevent flooding by controlling runoff and stop unwanted materials or excessive flows from entering our local waterways.

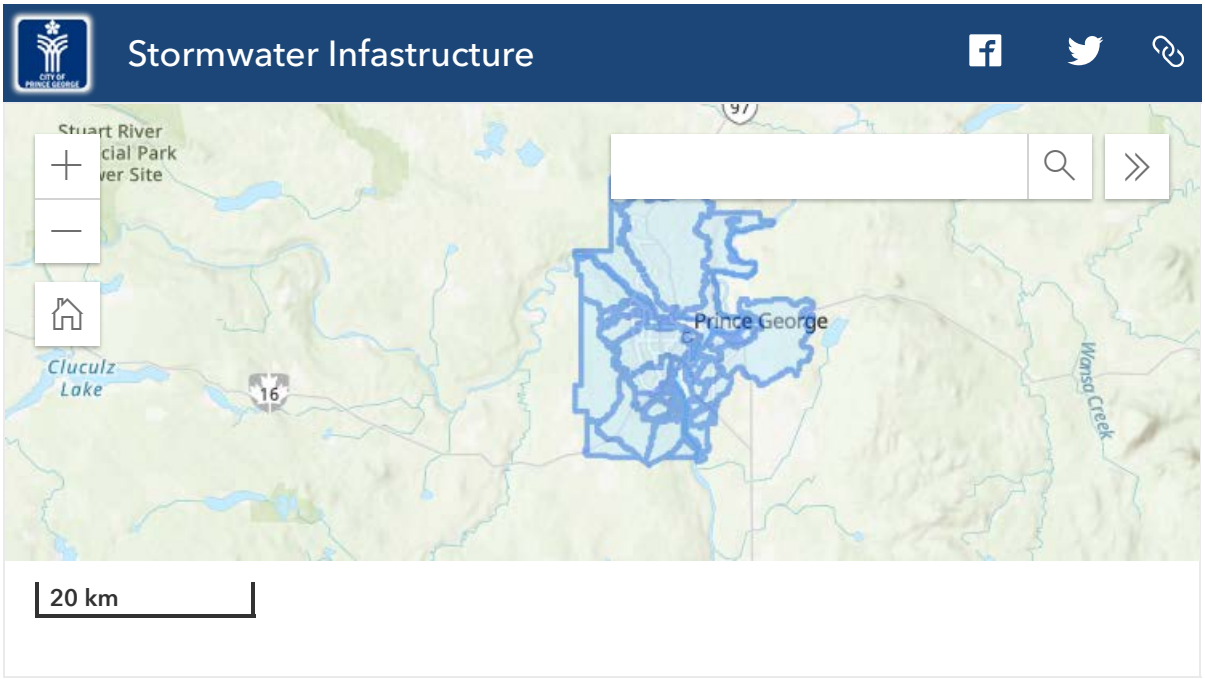


We also rely on help from nature. Wetlands, trees and landscaped areas play vital roles by absorbing stormwater and reducing the need to construct stormwater storage facilities. Creeks help convey stormwater runoff reducing the length of storm sewers required. By performing important services, nature can reduce the need for millions of dollars of stormwater infrastructure.

Shane Lake

The City works to manage our stormwater responsibly. This means we need to regularly inspect and improve our systems.

However, we face many challenges. Our city's vast size and relatively small population mean we have many more storm sewers and ditches to maintain (almost twice as many as Kelowna) without having enough resources to do so (approximately half the population of Kelowna). Sprawling development also threatens our natural stormwater assets such as forests.



Stormwater Assets Map


CAT

Prince George, like many municipalities, has aging infrastructure.

Half of the City's storm sewers are more than 40 years old, some of which have already started to fail.

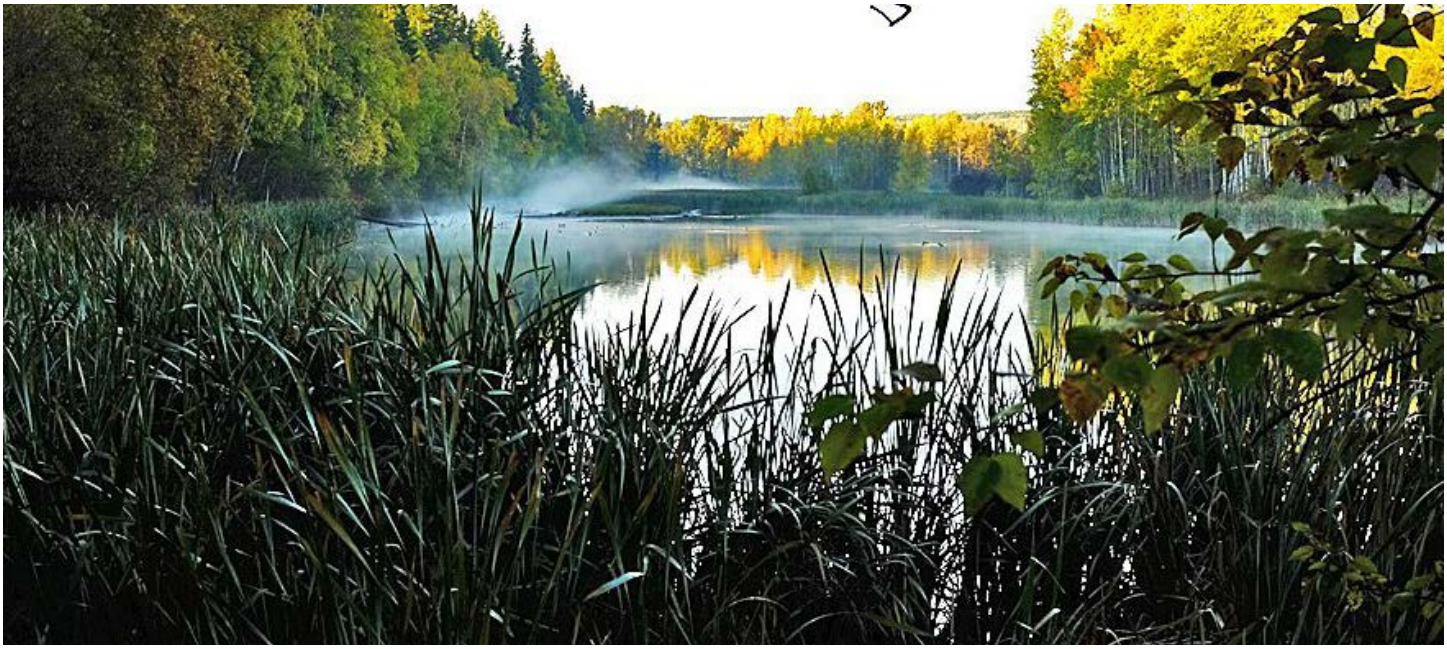
Winnipeg St. Sinkhole

> **Furthermore, erosion and sediment caused by**

> **construction and winter road sanding, as well climate change place added stress on our aging systems.**

Sustaining our stormwater assets is costly and we currently have no dedicated means to fund its management. Chronic underfunding makes it difficult to effectively maintain what we have, which may potentially result in greater long-term costs.

> In response to these issues, the City created an Integrated Stormwater Management Plan. This Plan is based on a vision to deliver sustainable and cost-effective means to tackle many of our stormwater challenges now and in the foreseeable future.



Short term priorities within our Plan focus on four key areas:

▪ Educating on the importance of stormwater management

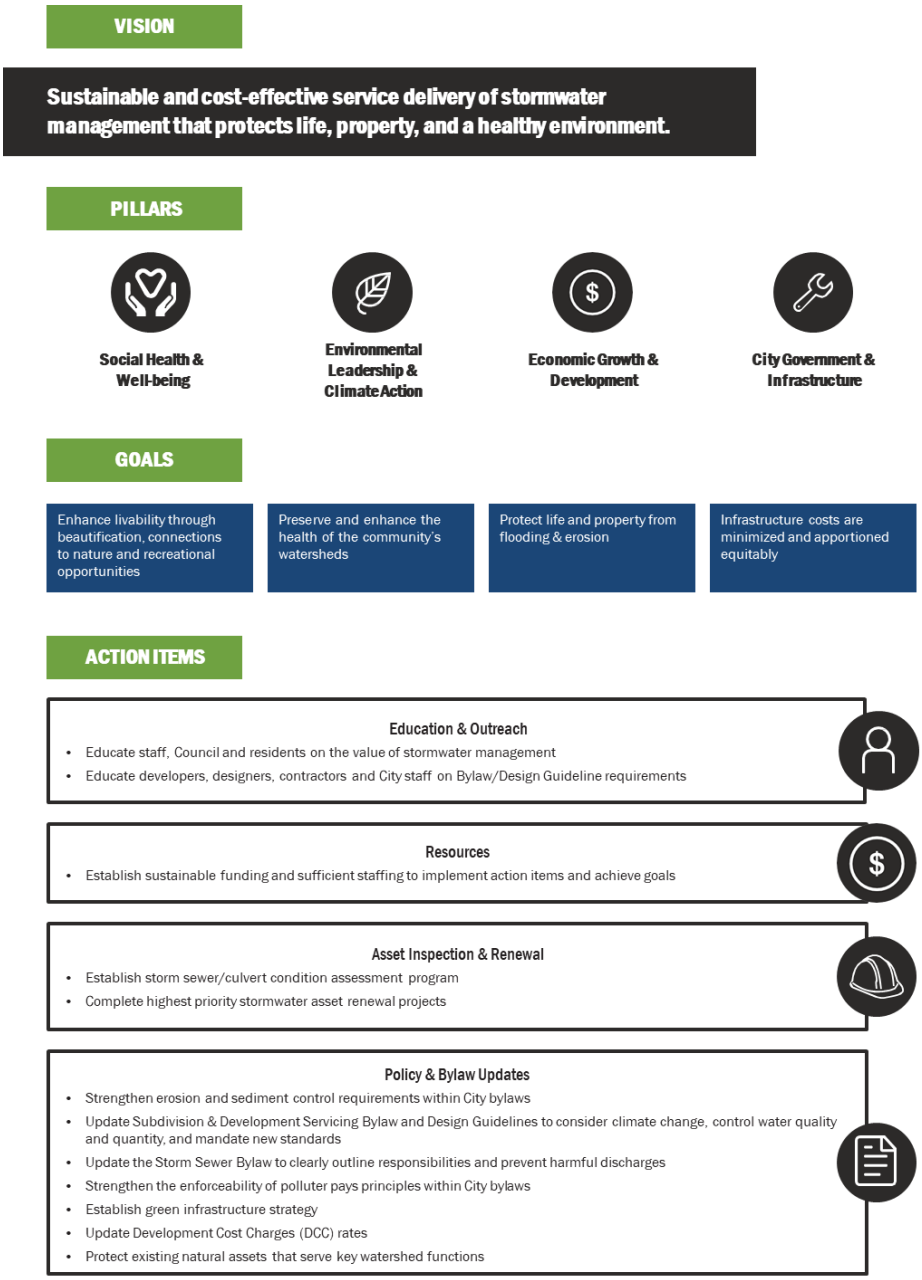
▪ Establishing sustainable funding to achieve our stormwater goals

▪ Formalizing a storm sewer inspection program to identify critical assets that are at risk of failing and are in need of repair

▪ Updating our policies and bylaws to:

- Prevent pollution of the stormwater system and ensure polluters pay to clean up their messes
- Ensure new infrastructure is built to current standards and is resilient to climate change
- Ensure new development does not negatively affect natural or engineered assets
- Ensure developers pay their fair share for new infrastructure costs

City of Prince George
Integrated Stormwater Management Plan Roadmap



> **Keeping our stormwater systems efficient, effective, and – more importantly - functional benefits everybody in our community, even if the advantages are not readily apparent.**

CITY OF PRINCE GEORGE

Our Integrated Stormwater Management Plan will not only guard against hazards like flooding and sinkholes in Prince George, it will also help keep our waterways clean for future generations.

Appendix C. Social Media Comments

Facebook Comments

1.0.0 Planning for the future needs of the City is something that is severely lacking. Budgets should have future replacements built in. It is especially ridiculous when vehicles and infrastructure like this (not to mention the fire hall and pool) have to be financed over and over again. Ignoring the fact that upkeep has to be done is forcing us to pay interest that will only increase as the upcoming recession comes.

2.0.0 Great educational tool.. in reference to the statement "city's large urban area means maintaining an infrastructure that is larger than what we need for our population size".. perhaps pull out the 2 documents (Smart Growth on the Ground and MyPG) and look at the work done on "urban sprawl". Focus on downtown and area to repair, improve and maintain and put ALL new development on the District Energy System to bring in $$ to feed the infrastructures needed. How many of the new developments in the last 5-10yrs are on this system? Why not?

2.1.0 I agree with what you've said except the district energy system. The ROI is somewhere in the area of 25 years. That's an insane investment. No commercial building owner is going to throw out hundreds of thousands to connect to it. Most commercial property owners don't hold onto property that long and it's not a selling feature that ads huge value to the sale of their property. They'd be passing that cost onto the next purchaser.

As far as I know there's zero private buildings on the system. And…. Did we not learn from the parkade debacle how expensive it can be to connect to it? Wasn't that in the range of $700,000? The city had to upgrade a ton of piping to connect to the system.

As far as I can tell the District Energy System has been a huge failure. It's cost taxpayers millions and every time you connect cost hundreds of thousands. If it takes 25+ years to recover that price tag the piping will need replacing by the time you pay off the initial costs. That's a terrible ROI.

2.1.1 Great points. the hotels / apartments should (of) be on it though

2.1.2 As I said, this City has not made any plans fir future needs. Throwing our money away on things like the parking lot, which I am almost sure will be filled with City managers and paid for with more of our money.

3.0.0 There needs to be a serious density study done. Then a follow-up. No low-density construction inside the bowl. Only multi use high density construction. Meaning, more high-rise apartments we it's commercial space in the bottom. Any areas close to arterial roads should be reserved. The moment a space because available the only option is to build tall buildings that focus on density. No buildings under 4-6 storeys and all buildings must include residential space.

The only single-family homes should be on the fringe of town. The hart, College Heights, Pineview etc. No more building permits outside a certain range. Or a much higher fee to promote building within the bowl.

This way all of the major infrastructure in the bowl will get the higher tax base and there will be less low-density addition to the infrastructure on the fringe. We can't keep extending the city boundaries and the focus must be on the bowl. Upgrades and dollars spent in the centre of town to update buildings will benefit the whole.

3.1.0 Pineview is not part of the city, but in the regional district.

4.0.0 I recommend not building underground parking lots anymore

5.0.0 Good thing we aren't wasting millions on a pool. Can't see any more useful allocation for those resources.

6.0.0 So, let me get this right , we pay tax on this infrastructure that has been there unchecked for 50 years then when it fails all at once they come up with excuses to make you pay more taxes because the taxes you paid for 50 years hasn't done enough to replace or upgrade. Where the money go?

- 6.1.0 Into the ground as a heated in door private pool (parkade).
  - 6.1.1 Wood waste heat
  - 6.1.2 Wonder what's going to happen when the Mill shuts down and isn't producing steam for the "energy system" any longer.. Food for thought.
  - 6.1.3 Studies
  - 6.1.4 More taxes… natural gas will be more than expected
  - 6.1.5 Clearly not the Princess Auto Catalogue in the bathroom type studies.
  - 6.1.6 It'll smell the same

7.0.0 Great to see the City go direct again to taxpayers for input! Thanks!

- 7.1.0 Hope they listen to the suggestions!
- 7.2.0 That area of Carney St. is on the edge of an old landfill, maybe the garbage has decomposed enough to leave gaps between it and the surface.

8.0.0 A+ presentation Kristy. Educating and involving the CITIZENS of Prince George are important steps in reducing our carbon footprints.

9.0.0 We are visiting Edmonton AB and I noticed that all the new (and ridiculously huge single houses) have a lagoon in the middle of the houses. It was explained to me that the houses have a 2-system water setup. One for sewage and one for Rainwater and street runoff. They are beautiful areas and prevent flooding into basement, roads, etc. There are solutions to the water problem caused by people and climate.

10.0.0 This is another propaganda by the city to tax you more .there is money already in utilities bill we pay. Save taxpayers money by eliminating management positions, there are so many free loaders there.

11.0.0 I recommend all properties catch rainwater and control runoff.

- 11.1.0 Try to but most of the water coming into my yard is runoff from a construction site. I do need to get a water catching rig to water my garden though. Great idea Alan sir.

LinkedIn Comments

- How have rain gardens been considered and incorporated into your strategy? Many communities in BC have greatly reduced their environmental footprint and costs by capturing runoff early in its migration with the added benefit of beautification and habitat.

YouTube Comments

- 40 years ago, the city thought they'd be 250,000 population by now but obviously that didn't happen. Only the urban sprawl happened. The worst mistake was zoning changes so business could leave the downtown. Downtown PG basically migrated to hwy 16 west and College Heights. Amalgamation in the 70's was a bad idea too because it increased the city service area of PG. Lots of mistakes made by the city over the years.

Appendix D. Webpages and Social Media Posts

Webpage Viewing Statistics

	Page	Pageviews	Unique Pageviews	Avg. Time on Page	Entrances	Bounce Rate	% Exit	Page Value
		376 % of Total: 0.75% (50,305)	335 % of Total: 0.80% (41,660)	00:02:24 Avg for View: 00:01:26 (67.24%)	67 % of Total: 0.25% (26,534)	71.64% Avg for View: 69.36% (3.28%)	64.10% Avg for View: 52.75% (21.52%)	$0.00 % of Total: 0.00% ($0.00)
☐	1. /things to do/pages/public consultations and info sessions/stormwater-management-plan.aspx	**219** (58.24%)	197 (58.81%)	00:03:44	9 (13.43%)	66.67%	78.08%	$0.00 (0.00%)
☐	2. /en/news/get-involved-with-stormwater-management-in-prince-george.aspx	**87** (23.14%)	83 (24.78%)	00:01:04	31 (46.27%)	80.65%	41.38%	$0.00 (0.00%)
☐	3. /city services/pages/utilities/stormwater.aspx	**69** (18.35%)	54 (16.12%)	00:02:35	27 (40.30%)	62.96%	49.28%	$0.00 (0.00%)

City's Stormwater Webpage

CITY OF PRINCE GEORGE

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Stormwater

Home / City Services / Utilities / Stormwater /

A A A | Share

- Utilities
  - Downtown Renewable Energy System
  - Flush Forward
  - Sanitary Sewer
  - **Stormwater**
  - Water Utility
- Accessibility
- Animal Control Services
- Bylaw Enforcement
- Cemeteries
- cityofpg Mobile App
- Emergency Response and Safety
- Environment
- Equipment for Hire
- Garbage Collection
- Grants and Financial Assistance
- Hours of Operation
- Infrastructure
- Maps

Natural features like the Hudson Bay Wetland play important roles in managing Prince George's stormwater without needing to build assets like treatment facilities.

Why Managing Our Stormwater Matters

Prince George's stormwater drainage system collects runoff water from rainstorms, snow melt, and residential and commercial water usage. The water - **collectively called "stormwater"** - travels through a network of pipes, culverts, and ditches, eventually making its way to a natural water course or retention pond.

Managing this stormwater is essential to prevent:

- Flooding
- Erosion
- Sedimentation/degradation of water quality
- Negative impact on aquatic life

Prince George's water and watersheds and how we adapt to climate change challenges affect the way we handle stormwater in our community.

- **Learn more about our water and watersheds**
- **Learn more about Climate Change Adaptation**

Urban development also impacts peak flows by increasing the amount of areas that can't naturally absorb stormwater (unlike creeks and rivers, for example). Stormwater from building roof drains and asphalt parking lots flow into catch basins and from there enters the storm sewer system or a recharge chamber.

Stormwater System

How the System Works

System By the Numbers

- 385 kilometres of below ground piping.
- 690 kilometres of open ditch or drainage channels.
- 962+ culverts
- 5,789 catch basins
- 6 stormwater pumping stations
- 4,087 manholes
- 25 storage basins (detention and retention ponds).
- 224 inlet structures.
- 73 subsurface infiltration facilities.
- 293 outlets to receiving waters.

Preparing for the Spring Melt

Spring Melt Tips

- Make sure no debris (like leaves), plastic, or paper covers catch basin grates.
- Clean gutters and downspouts.
- Ensure proper drainage and grading away from properties.
- **DO NOT** use lawn sprinklers to melt snow. Offenders will be subject to a City fine.
- If possible, work with neighbours to divert water to the closest storm drains.
- Shovel or blow snow away from property foundations, but not onto the street. Snow and ice can block storm drains.
- Residents in low-lying areas should be aware of flooding risks to their properties and plan accordingly.

Flood Mitigation

Flooding can happen for many reasons like surface water having no place to go due to frozen ground or storm system overloads due to large snow melts and rain.

Some ways to mitigate and prevent flooding include:

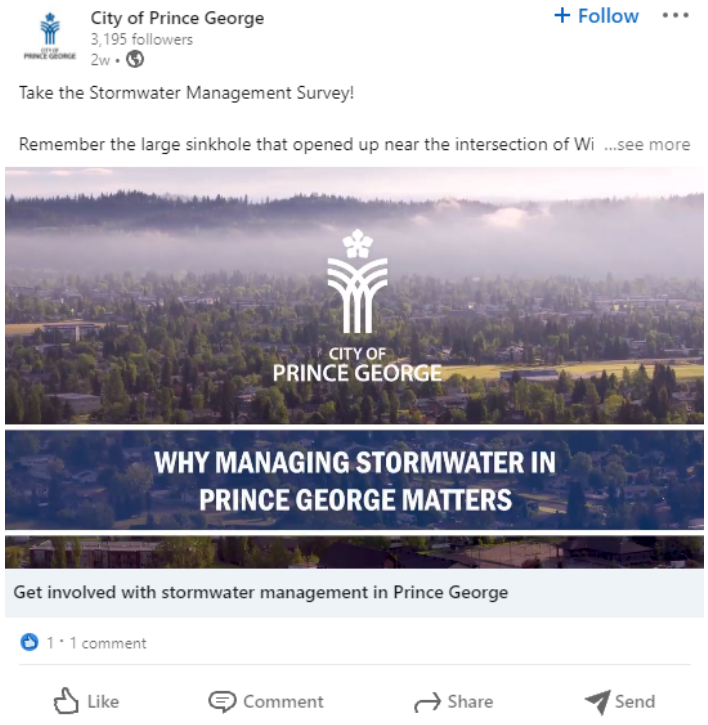
- Using sandbags, plastic sheeting, ditching, and clearing clogged drains and culverts.
- Purchasing sump pumps for homes that are at risk from basement flooding.

For more information:

- **Visit the Government of Canada Flood Ready website**
- **Visit the BC Government Flood Preparedness website**

City's Get Involved with Stormwater Twitter Post

City's Get Involved with Stormwater LinkedIn Post



Appendix E. Key Messaging

The following key messages were used to support the stormwater management education and engagement efforts for the ISMP (Phase 1) and could be used during future stormwater management studies and initiatives (Phase 2). Key messaging may be updated to fit different themes and communication or engagement activities during each Phase.

What is Stormwater Management?
Stormwater originates from rain and snowmelt which falls on and runs off of lawns, pavement, and other man-made and natural surfaces. To prevent water from flooding and pooling during rainfall and snowmelt events, the City of Prince George manages a stormwater system that includes ditches, curbs & gutters, catch basins, detention ponds, storm sewers, service connections, pump stations, culverts, underground storage facilities, manholes, outlets, infiltration facilities and monitoring stations. The City also depends on many natural assets that also help manage stormwater run-off such as creeks, wetlands, and trees. Any stormwater that is not absorbed into the ground is ultimately conveyed into local waterways.

What stormwater management assets does Prince George own and maintain?
The City owns and maintains the following stormwater assets:

- 385 km of storm sewers;
- 690 km of ditches;
- 962 culverts;
- 5,789 catch basins;
- 6 stormwater pump stations;
- 4,087 manholes;
- 25 storage basins (e.g. ponds);
- 21, 227 lateral lines (connections to properties, catch basins etc.);
- 73 subsurface infiltration facilities; and
- 293 outlets to receiving waters.

This means that the City is responsible for inspecting, cleaning, repairing, and replacing these assets, as required.

How does stormwater affect the environment?
Hard man-made surfaces such as roads, driveways and buildings have replaced natural landscapes in cities. This means that less water soaks into the ground and more water flows over these man-made surfaces and directly into ditches, local creeks, rivers, and wetlands. This is called stormwater runoff. The increased urban runoff can cause flooding and erosion, although this effect is lessened when vegetation is retained. Additionally, when the water travels across hard surfaces like our roads, it can collect pollutants including sediment, oil, metals, bacteria, nutrients, and road salts. It carries these pollutants to the sensitive aquatic ecosystems which can be harmful for the natural environment, fisheries and in some cases, our drinking water.

How does stormwater management protect the environment?
Stormwater management protects local water quality and natural environments by preventing pollutants from entering the stormwater system and by removing pollutants that do enter the stormwater system. Stormwater management also controls the flow of stormwater to reduce erosion within waterways and increases the amount of runoff that infiltrates and replenishes underground aquifers. Common stormwater management

tactics for protecting the environment include maintaining vegetated cover to the greatest extent possible, implementing stormwater quality treatment facilities where needed, and encouraging the infiltration of rainwater into the soil where it falls, where appropriate.

How does stormwater management protect my property?
Stormwater management serves to protect residents' safety, homes and buildings, parks, roads, and other important infrastructure from hazards like flooding, erosion, and sinkholes. This is achieved by controlling the flow of stormwater runoff, preventing materials such as sediment that can cause blockages from entering the system, cleaning out any materials that do manage to enter the stormwater system, inspecting the stormwater system to ensure that it is in good working order and replacing deteriorated infrastructure. Stormwater management also reduces pooling and standing water which can deteriorate asphalt and create hazardous icy conditions. Stormwater management is an integral component of the City's services.

How is stormwater management funded?
The City currently funds its stormwater program through property taxes and grant funding when available. Therefore, stormwater must compete with other City services for limited tax dollars. It can be difficult to gain support to fund stormwater management (a service that is largely out of sight) when residents are more likely to prioritize more tangible services such as newly paved roads or improved recreation facilities.

What are our most critical stormwater issues?
- Historical sprawling development has resulted in the construction of a lot of infrastructure to support a relatively small population.
- Our existing infrastructure is aging and some of it has significantly deteriorated resulting in infrastructure failures (e.g., culvert collapses)
- High rates of rainwater run-off from previously developed areas and improper construction practices from currently developing areas cause erosion. This results in high levels of sediment which negatively impact infrastructure (e.g., fill pipes with sediment) and the natural environment (e.g. fill wetlands with sediment).
- With anticipated changes in temperature (e.g. winter rain falling on snow) and extreme rainfall events, current system issues will be exacerbated by climate change and increase the risk of flooding.
- As previously described, there is no dedicated funding source for stormwater. This has resulted in chronic underfunding for stormwater management.
- Natural assets such as wetlands, creeks, riparian areas, and forests provide important stormwater management functions such as the absorption and moderation of stormwater flows. These natural assets are commonly threatened by development.

What is an Integrated Stormwater Management Plan? How does it affect my community?
The City has developed a plan that will help us make decisions for the future of stormwater management in our city. To develop this plan – the Integrated Stormwater Management Plan (ISMP) – we have reviewed our existing stormwater management system in detail, examined current stormwater issues, identified areas for improvements and made recommendations for how the system and the management of that system can be maintained and improved over time.

The ISMP outlines the City's future stormwater management goals and the actions (including policies, bylaws, maintenance programs, infrastructure construction projects, and investments) needed to meet these goals. It includes the technical studies conducted on the City's stormwater management system. The ISMP's Guiding Document outlines current issues and presents a vision for stormwater management in Prince George. The Guiding Document's Roadmap shows how all the components of the ISMP fit together to advance the City's stormwater management practices and will act as guide for the implementation of the ISMP.

Recommendations from the Integrated Stormwater Management Plan include:

- Secure sustainable levels of funding;
- Strengthen City bylaws to better prevent sediment and other harmful substances from entering the stormwater system, to be better prepared for climate change, to control the quantity of stormwater that runs off from new development, to update design standards to current best practices, and to enforce polluter pay principles;
- Implement a storm sewer and culvert inspection program;
- Renew deteriorated assets in order of priority based on risk;
- Educate the public, Council, staff, and developers on the importance of stormwater management and bylaw requirements; and
- Establish a green infrastructure strategy.

Setting the stage: The infrastructure story and history of Prince George

- The historical pattern of growth in Prince George is typical of many places in Canada. It initially grew around a small downtown core and key industries, with a grid of walkable streets providing access to shopping streets and amenities. The rapid growth that followed emphasized suburban housing separated from amenities, employment, and services. Servicing our sprawling City required massive investments in stormwater management infrastructure.
- Over the last 10-20 years, cities across North America have been coming to terms with the hidden costs of this rapid, low-density growth. Road, water, sewage, and drainage infrastructure is now wearing out, resulting in very costly infrastructure rehabilitation and replacement.
- Starting in the 1950s, our City experienced a population boom and was considered one of the fastest growing cities in Canada. Much of our stormwater management system dates from that period of rapid growth.
- In Prince George, the cost of maintaining our stormwater management system over its lifecycle is significantly more than what we have recently been spending on stormwater. There is a need to minimize infrastructure expansion now and instead to focus development in already serviced areas in order to focus City spending on the maintenance, renewal and rehabilitation of existing infrastructure, to attract investment and ensure a high quality of life supported by affordable fees and taxes.
- While aging infrastructure and the lack of investment in the renewal and maintenance of stormwater assets is an issue common to many municipalities, our population history, the City's geographic expansion, the infrastructure that came with physical growth created conditions that are unique to Prince George.

The City of Prince George's role

The City of Prince George is responsible for providing governance and local services to the community. Services and the supporting infrastructure we provide include things that you see on a daily basis, like drinking water, bike lanes, sidewalks, playgrounds, and recreational facilities. We also deliver services with infrastructure that you don't always see but are critical services to maintain health and sanitation, like underground storm sewers, culverts, and pump stations.

Municipal infrastructure and services are the foundation of our community's economic prosperity, health, and quality of life. The City is the steward of our infrastructure and we need to make sure our services rely on well-planned, well-built, and well-maintained infrastructure, like functioning and well-maintained storm sewers, culverts and catch basins.

Property taxes are the City's main revenue source with which to provide valuable services to residents. Property taxes include the general levy as well as dedicated levies used to fund snow control, road rehabilitation and general infrastructure renewal projects. The City funds water, wastewater, and solid waste collection services, through utility fees. The City does not have a dedicated funding source for the maintenance and renewal of its stormwater system.

Web and Social Messaging Used

	Platform/Use	Text	Image suggestion
1.	Get Involved webpage https://www.princegeorge.ca/Things%20to%20Do/Pages/getinvolved.aspx	We're dedicated to informing residents of Prince George about stormwater management services and collecting your feedback to help shape the future of stormwater management in our city. Take our 10-minute (approx.) survey to have your say about stormwater management in Prince George and the Integrated Stormwater Management Plan. Your answers will help us improve how stormwater management is delivered in our city.	Scene 7 > "Camera Inspection of Storm Manhole.jpg"
2.	Stormwater Webpage https://www.princegeorge.ca/City%20Services/Pages/Utilities/Stormwater.aspx	**Take the survey! (September 20 to October 4)** We are dedicated to informing residents of Prince George about stormwater management services. Take our 10-minute (approx.) survey to have your say about stormwater management and the Integrated Stormwater Management Plan, and to submit your questions and comments. Your answers will help us improve how stormwater management is delivered in our city.	Scene 6 > " Nechako River at mouth of McMillan Creek below the stormwater outfall.jpg"
3.	Social Media	Did you know that stormwater affects all of us here in Prince George? Stormwater is rain and snow melt, which falls on and runs off lawns, driveways, pavement, and other hard surfaces. Learn more about how we're managing stormwater here: https://princegeorge.ca/City%20Services/Pages/Utilities/Stormwater.aspx #stormwater #princegeorgebc	Scene 10 > " Sediment Build Up - Domano Pond.jpg"
4.	Social Media	Did you know managing stormwater prevents flooding, erosion, poor water quality, and negative impacts on aquatic life? That's why we've invested over $300 million in our stormwater system to protect our city. Learn more about our stormwater management system: https://princegeorge.ca/City%20Services/Pages/Utilities/Stormwater.aspx #stormwater #ISMP	Scene 10 > " Fraser River Benchlands Development – Erosion.jpg"
5.	Social Media	When it comes to managing stormwater, mother nature has been giving us a helping hand by absorbing, filtering, and conveying stormwater runoff. Preserving vegetation reduces the risk of flooding within the city, and helps protect creeks and rivers and the aquatic life within them. Nature can help us reduce the need for millions of dollars of stormwater infrastructure. Learn more about how we're preparing for the future of stormwater management in our Integrated Stormwater Management Plan: https://princegeorge.ca/City%20Services/Pages/Utilities/Stormwater.aspx	Scene 1 > "Scenic Shot 6.jpg"

		#stormwater #princegeorgebc #nature #letitgrow	
6.	Social Media	We're planning for the future of stormwater management in our city – the Integrated Stormwater Management Plan (or ISMP) includes our short and long-term goals for our stormwater management program. The ISMP, along with input from you will help us make future decisions about stormwater management in our city. Have thoughts on the plan? Let us know with by filling out this quick survey: https://prince-george-storm-water-survey.ethelo.net/	Scene 6 > "Hudson's Bay Wetlands 4.jpg"
7.	Social Media	Climate change has a dramatic impact on stormwater management, and extreme weather events are likely to become more intense and frequent. Our Integrated Stormwater Management Plan is built to adapt for a future of changing climate conditions. Learn more about the Integrated Stormwater Management Plan: https://princegeorge.ca/City%20Services/Pages/Utilities/Stormwater.aspx #stormwater #princegeorgebc #ISMP	Scene 3> " Local Flooding from a blocked culvert.jpg"
8.	Social Media	Did you know managing stormwater prevents flooding, erosion, poor water quality, and negative impacts on aquatic life? You can help with the management of stormwater by using rain barrels, disconnecting roof leaders, increasing the amount of vegetated area on your property, and unblocking catch basin grates and gutters. Learn more about our stormwater management system: https://princegeorge.ca/City%20Services/Pages/Utilities/Stormwater.aspx #stormwater #getinvolved	Scene 4> "catchbasin 2.jpg"
9.	Social Media	Did you know that if we lined up all of our storm sewers and ditches they could reach all the way from Prince George to Seattle? We've invested over $300 million in our stormwater system assets to help protect our city. Learn more about how we're preparing for the future of stormwater management in our Integrated Stormwater Management Plan: https://princegeorge.ca/City%20Services/Pages/Utilities/Stormwater.aspx	Animated GIF/video from storymap
10.	Social Media	The average installation date for the storm sewers we use today is 1981 (40 years old!) Our stormwater system is beginning to deteriorate. Learn more about how we're preparing for the future of stormwater management in our Integrated Stormwater Management Plan: https://princegeorge.ca/City%20Services/Pages/Utilities/Stormwater.aspx #stormwater #princegeorgebc #ISMP #infrastructure	Scene 9 > " "Failed Storm Culvert - Victoria St.jpg"
11.	Social Media	Did you know when stormwater pipes collapse, they can cause erosion that can cause sinkholes large enough to swallow cars whole?	Scene 9 > Winnipeg ST sinkhole

		Learn more about stormwater and the importance of our stormwater management system: https://princegeorge.ca/City%20Services/Pages/Utilities/Stormwater.aspx #stormwater #princegeorgebc #sinkhole #sinkholeprevention	
12.	Social Media	We're updating our stormwater management policies! One of the new stormwater policies will aim to prevent pollution of the stormwater system and ensure polluters pay to clean up their messes. Learn more about how we're preparing for the future of stormwater management in our Integrated Stormwater Management Plan: https://princegeorge.ca/City%20Services/Pages/Utilities/Stormwater.aspx #stormwater #princegeorgebc #ISMP #policy #bylaw	Scene 10 > Sediment Build Up

Appendix F. PG Daily News Article

Get involved with stormwater management in Prince George

by admin | Published September 23, 2021

City crews conduct an operation to remediate a stormwater pond near the bottom of Shane Creek in Ginter's Meadow – an example of work the city does to maintain its stormwater infrastructure. *City of Prince George photo*

Many residents remember the large sinkhole that opened up near the intersection of Winnipeg and Carney Street a few years ago. An increase in sinkholes is one of the many negative consequences of aging and deteriorating stormwater infrastructure. These consequences and the increasing costs associated with preventing them are among the reasons the City of Prince George wishes to increase public knowledge about the challenges the city and most other municipalities face with aging stormwater systems.

The city is encouraging all residents to visit www.princegeorge.ca/getinvolved to learn more about Prince George's municipal stormwater infrastructure and fill out a survey to provide feedback. The survey will be open until October 4, 2021, and the results will be used to inform the City's Integrated Stormwater Management Plan (ISMP), which will ultimately include ways to finance the maintenance of this critical infrastructure. The ISMP is a strategic plan that outlines the City's short to long-term goals for its stormwater management program and acts as a guide on how to achieve these goals.

"Our city's vast size and relatively small population mean we have many more storm sewers and ditches to maintain than many of our sister municipalities (almost twice as many as Kelowna), but with fewer resources to do so (approximately half of the tax-paying population of Kelowna)," said Kristy Bobbie, the City's Manager of Asset Management. "Expansive development also threatens our natural stormwater assets, which include our forests and green spaces."

The ISMP integrates land use, infrastructure, public safety, and the environment to guide community growth while maintaining or improving the health of our community's watersheds. A detailed analysis was completed over the last year in the form of four Technical Working Papers that provided the input for this overarching Guiding Document, Roadmap, and action list.

The analysis found that over the last five years the City has spent, on average, $4.4 million per year on stormwater management. Although this is a significant amount of money, it does not provide enough to meet the maintenance and replacement requirements needed. An additional $4.7M annually on average would be required to keep the stormwater system in good working order now and for future generations.

"Like most municipalities, the City of Prince George faces challenges related to stormwater management, but the ISMP is a step in the right direction by formalizing the vision, goals, and actions to move these challenges into opportunities," said Bobbie. "The plan will not only guard against hazards like flooding and sinkholes in Prince George, it will also help keep our waterways clean into the future."

The City of Prince George will be conducting further public engagement activities relating to the Integrated Stormwater Management System in the coming year and providing regular progress updates to Council and the public.

Please visit www.princegeorge.ca/getinvolved to review important information about the City's stormwater infrastructure and to fill out the survey. Visit www.princegeorge.ca/infrastructure to learn more about Prince George's aging infrastructure in general.