

Cohort 2 National Project Summary Report

Town of Riverview, New Brunswick

February 2020



Full technical report available at MNAI.ca

Municipal Natural Assets Initiative



INVEST IN NATURE

The Municipal Natural Assets Initiative (MNAI) is changing the way municipalities deliver everyday services, increasing the quality and resilience of infrastructure at lower costs and reduced risk. The MNAI team provides scientific, economic and municipal expertise to support and guide local governments in identifying, valuing and accounting for natural assets in their financial planning and asset management programs and developing leading-edge, sustainable and climate resilient infrastructure.

Acknowledgements

This report is a summary of MNAI Technical Reports prepared by the MNAI Technical Team and Project communities.

Summarized by: Cheekwan Ho.

Reviewers: Roy Brooke and Michelle Molnar.

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Convening Organizations



Convening organizations: Smart Prosperity Institute, David Suzuki Foundation, Town of Gibsons, BC, and Roy Brooke and Associates were the original convening partners for the Municipal Natural Assets Initiative and the Cohort 2 project leading to this report was initiated by them.

Cover Photo provided by: <https://www.alltrails.com/es/canada/new-brunswick/>

Summary

Communities like the Town of Riverview recognize it is as important to understand, measure, manage and account for natural assets as it is for engineered ones. The Southeast Regional Service Commission (SERSC) in partnership with Riverview initiated this project with the Municipal Natural Assets Initiative (MNAI) to increase their understanding of how proper management of the natural assets within the community contributes to improved stormwater management.

The focus of the project was a large development area proposed within the Mill Creek Watershed, adjacent to a nature park. The Town's plan is to incorporate nature into the development to provide a seamless transition from one to the other.

The project modelled scenarios for 4 wetlands to assess how they respond in current and future climate conditions, and current and future development conditions. Results indicate that the wetlands are providing a stormwater service that's valued between \$1.07 m (current value for 1-in-5-year storm event) to \$2.73 m (future value for a 1-in-100-year storm event + proposed development).

The project demonstrates the need to actively manage the wetlands and avoid the need to build engineered alternatives, information that the community plans to act on through bylaw changes.

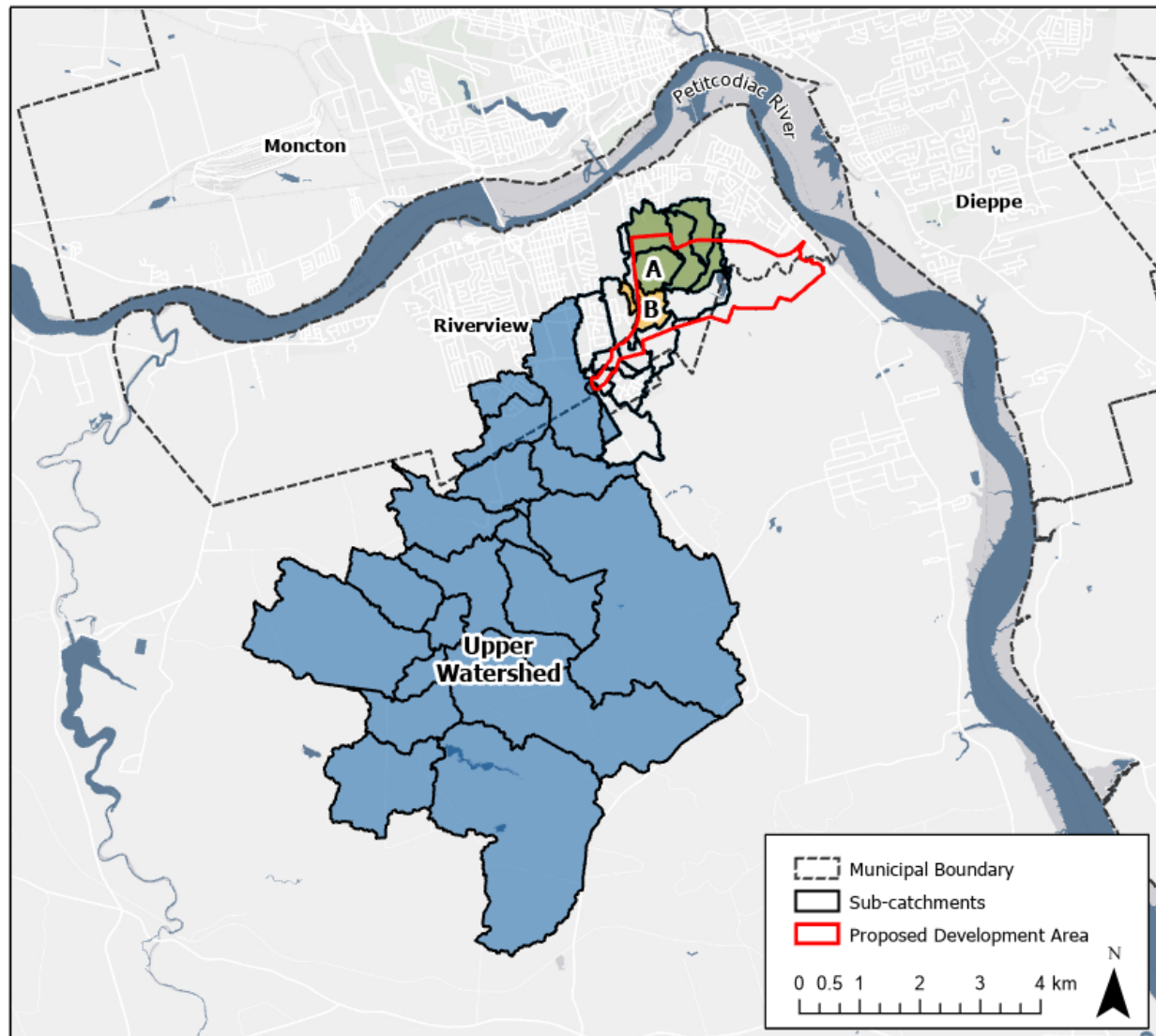
The wetlands are currently providing a stormwater service that's valued between \$1.07 - \$2.41 million.

Introduction

The term municipal natural assets refers to the stock of natural resources or ecosystems that is relied upon, managed, or could be managed by a municipality, regional district, or other form of local government for the sustainable provision of one or more local government services.

The Town of Riverview is located in south-eastern New Brunswick, adjacent to the communities of Moncton and Dieppe. The Town lies on the southern side of the Petitcodiac River and around 20,000 people live there. The focus of this project was the Mill Creek Watershed, which is approximately 47 km² and is where a large development project is being proposed.

The community wants to explore development that protects and enhances natural assets while incorporating planned recreational, institutional, commercial, and residential development.



Mill Creek Watershed and areas of interest for this modelling project. Source: SERSC

Project

Knowing that development is planned for the portion of the Mill Creek Watershed and that it would increase stormwater flows, the project focused on what stormwater management services the existing wetlands are providing and the value of that service, which would help avoid the need to build new, engineered infrastructure.



Wetland WS-2-009-WL-001. Source: Ducks Unlimited, 2018

To estimate the value of Mill Creek's natural assets, the project evaluated how much it would cost to replace the existing wetlands with stormwater management ponds or built wetlands that would provide the same level of service.

The project considered three scenarios:

1. The first scenario assumed development is done in a way that avoids damaging the existing wetlands, and factors in building some engineered stormwater infrastructure to supplement the wetlands since development will increase stormwater flows.
2. The second scenario assumed the existing wetlands could be enhanced to offset the increased peak flow from the development.
3. The final scenario assumed the development damages the wetlands to the point where the Town has to build a fully engineered replacement to control stormwater flows.

Results showed that, for a 1-in-5-year storm, the wetlands provide roughly \$1.07 million in stormwater services in the current climate. Factoring in future development increases the estimated cost to \$2.30 million. Factoring in climate change increases the costs to \$2.41 million.

For the 1-in-100-year precipitation event, the wetlands provide a stormwater service value of roughly \$1.40 million under the current climate. Factoring in future development increases the estimated cost to \$2.30 million. Factoring in climate change increases the costs to \$2.73 million.

**SUMMARY OF MAX FLOW, MAX DESIGN OUTFLOW, REQUIRED STORAGE,
AND REPLACEMENT COST BY SCENARIO**

Climate Scenario	Return Period	Land Cover Scenario	Wetlands	Max Flow (m ³ /s)	Max Design Outflow (m ³ /s)	Storage Volume Required (m ³)	Replacement Cost (\$ millions)
Current	5	Current practices	Yes	4.61	-	-	-
Current	5	Current practices	No	5.13	4.61	6,132	1.07
Current	5	Future development	Yes	5.57	4.61	9,846	1.72
Current	5	Future development	No	5.90	4.61	13,129	2.30
Current	100	Current practices	Yes	11.65	-	-	-
Current	100	Current practices	No	12.20	11.65	7,990	1.40
Current	100	Future development	Yes	12.79	11.65	12,759	2.23
Current	100	Future development	No	13.15	11.65	15,623	2.73
Climate change	5	Current practices	Yes	6.36	-	-	-
Climate change	5	Current practices	No	6.87	6.36	6,718	1.18
Climate change	5	Future development	Yes	7.34	6.36	10,662	1.87
Climate change	5	Future development	No	7.67	6.36	13,778	2.41
Climate change	100	Current practices	Yes	15.06	-	-	-
Climate change	100	Current practices	No	15.60	15.06	8,803	1.54
Climate change	100	Future development	Yes	16.18	15.06	13,614	2.38
Climate change	100	Future development	No	16.53	15.06	16,499	2.89

The project also revealed that the forest is working almost as hard as the wetlands in managing stormwater, but together, the power and effectiveness of individual natural assets are enhanced when they are part of an intact ecological system.

This project only measured the stormwater management benefits the wetlands provide in the project area and not for other benefits such as improvements to water quality, health and recreational benefits, transportation benefits, social and physical wellbeing, wildlife and aquatic habitat, educational benefits, promotion of environmental sustainability, and economic benefits. Such co-benefits are critical, however, and the full technical report details what the benefits are, the values, and specific recommendations on how to include co-benefits in an asset management plan.

Next steps and recommendations

The modelling work from this project demonstrates that actively managing the wetlands to ensure they continue to provide services indefinitely would save the Town of Riverview the capital cost of building, as well as ongoing maintenance and operating costs, of engineered alternatives.

The Town has reviewed this project and has agreed to work with SERSC and municipal council to modify existing by-laws to implement project findings.

About Municipal Natural Assets Initiative

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