



Seine Riverbank Stabilization at the Branch 1 Aqueduct



**Public Information Session
Notre Dame Community Centre
November 8, 2017**

winnipeg.ca/SeineRiverStabilization

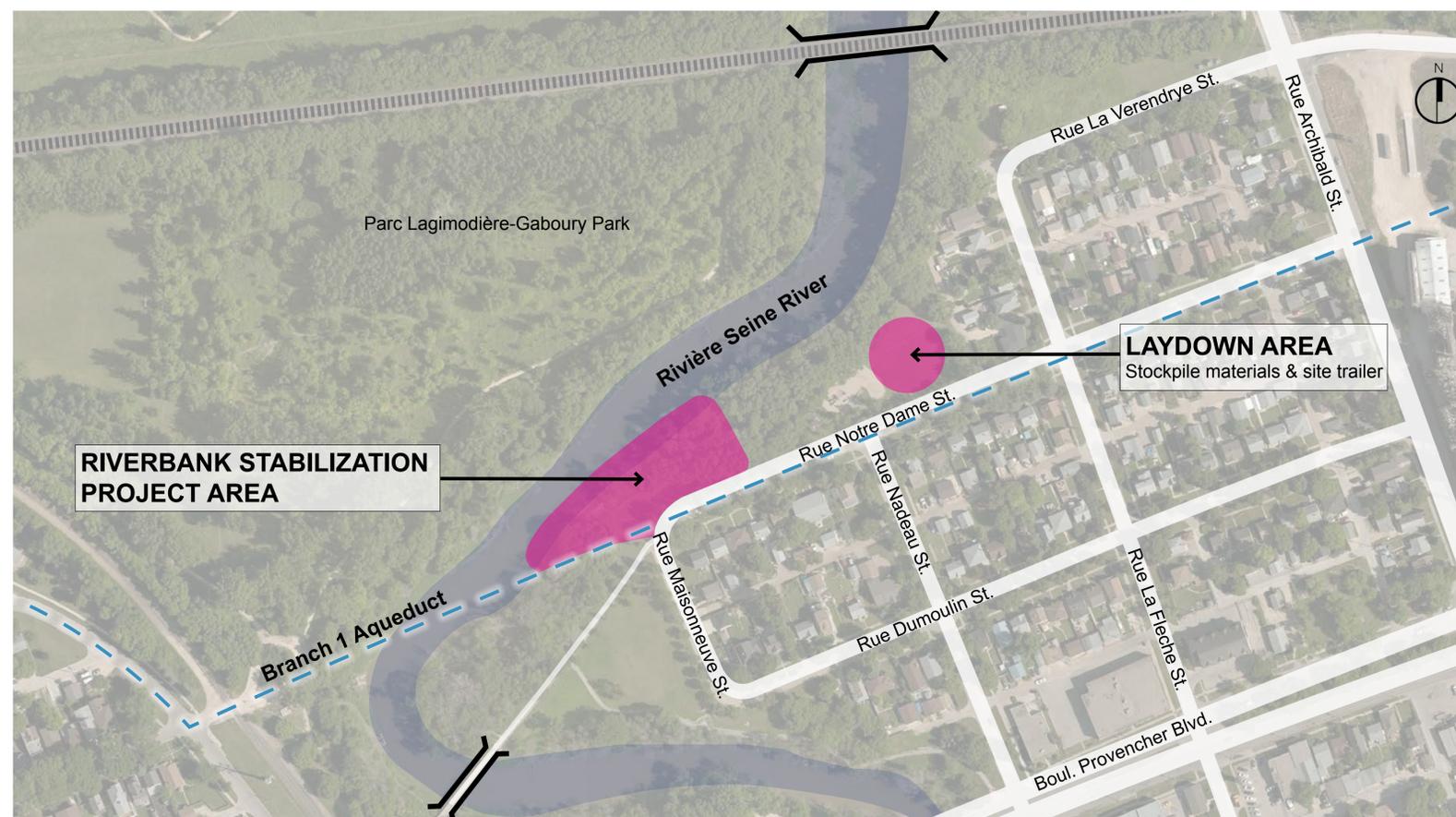
Welcome

The Branch 1 Aqueduct is a vital component of the City of Winnipeg's water system. It crosses under the Seine River near the corner of Notre Dame Street and Maisonneuve Street, in north St. Boniface. This project will stabilize the east bank of the river.

Stabilizing the bank is necessary to keep the Branch 1 Aqueduct safe and ensure a continued supply of water to Winnipeg residents.

Construction is expected to begin in early 2018, subject to regulatory approval.

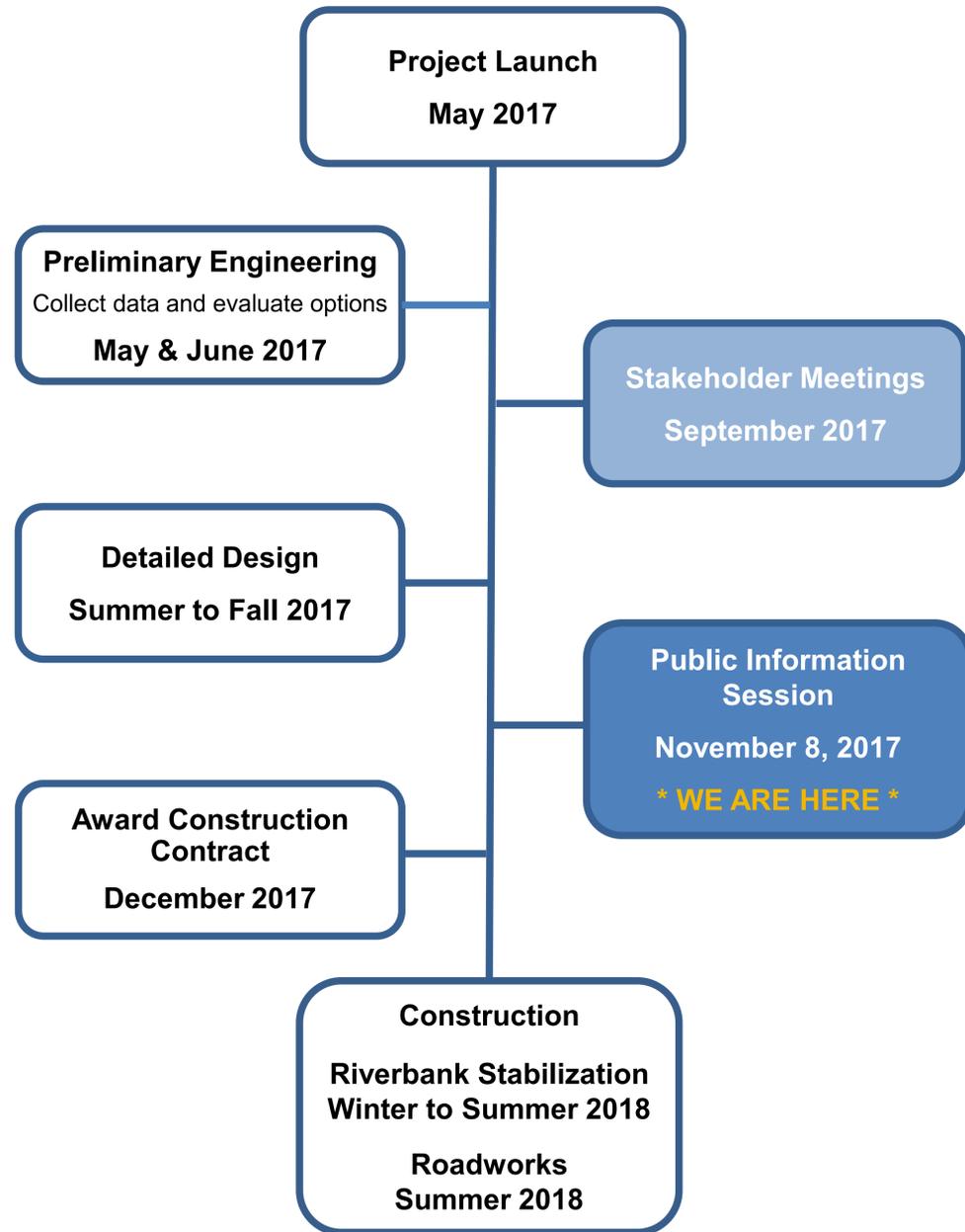
A \$2.2 million class 3 cost estimate has been developed for the project (expected level of accuracy of +30% to - 20%).



Please participate today by:

1. Viewing the storyboards about the project
2. Asking questions and talking with the City of Winnipeg staff and engineering consultants
3. Providing feedback on an exit survey

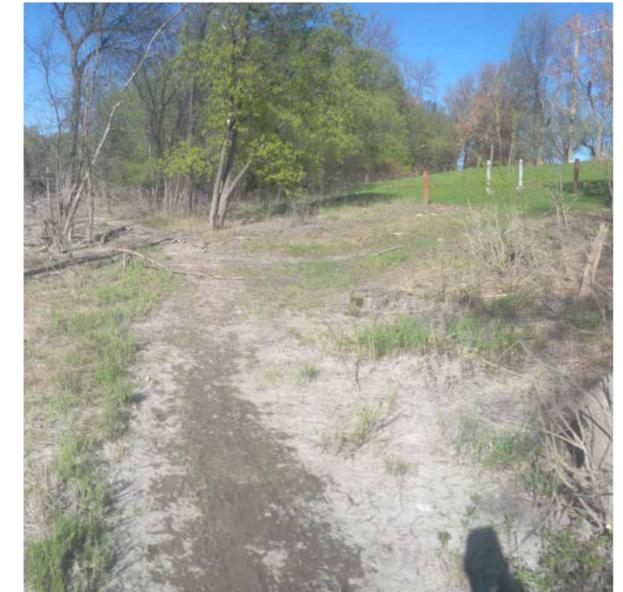
Timeline



Site Images



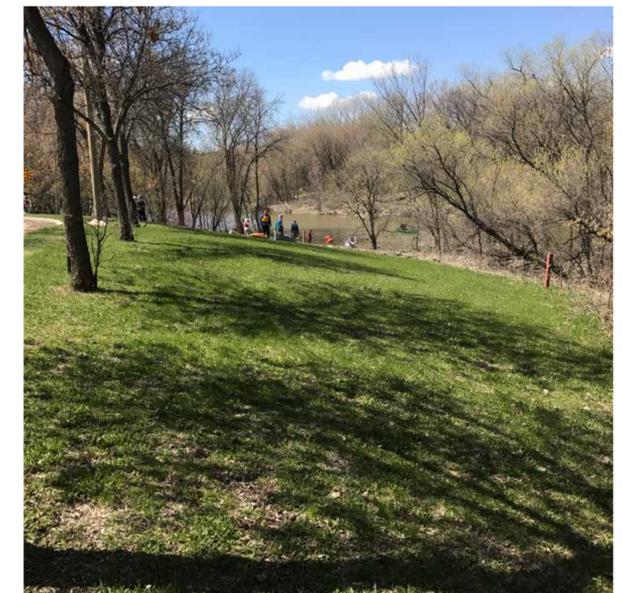
VIEW OF SITE FROM NOTRE DAME STREET



VIEW FROM SITE LOOKING EAST BACK TO NOTRE DAME STREET

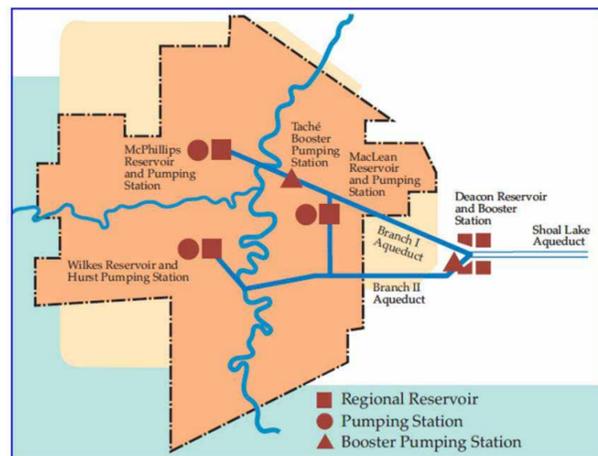


VIEW OF SITE FROM WEST BANK



VIEW FROM SITE LOOKING WEST

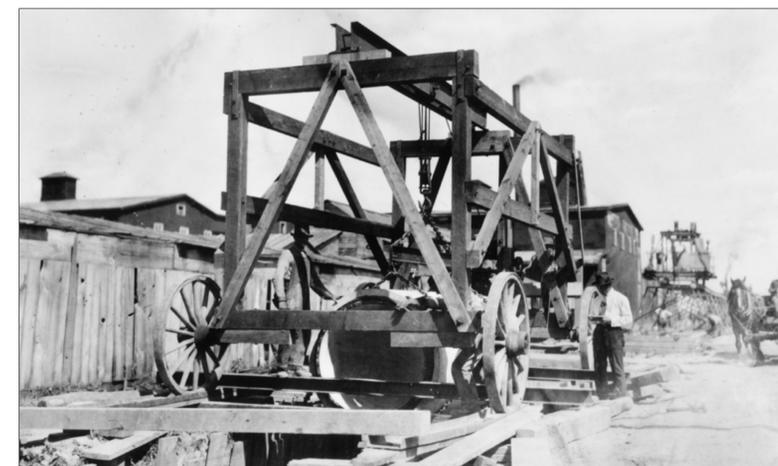
- The Branch 1 Aqueduct is a vital component of the City of Winnipeg's water system.
- This Aqueduct is a 100-year-old pipe that carries approximately 40% of the City's drinking water.
- The Aqueduct connects the Winnipeg Drinking Water Treatment Plant to both the MacLean and McPhillips Pumping Stations.
- Stabilizing the bank is important for keeping the Branch 1 Aqueduct safe.



Winnipeg's water system is made up of a complex, but integrated group of parts that delivers water from Shoal Lake to Winnipeg homes and businesses on demand.



The Branch 1 & Shoal Lake aqueducts were built in 1919.

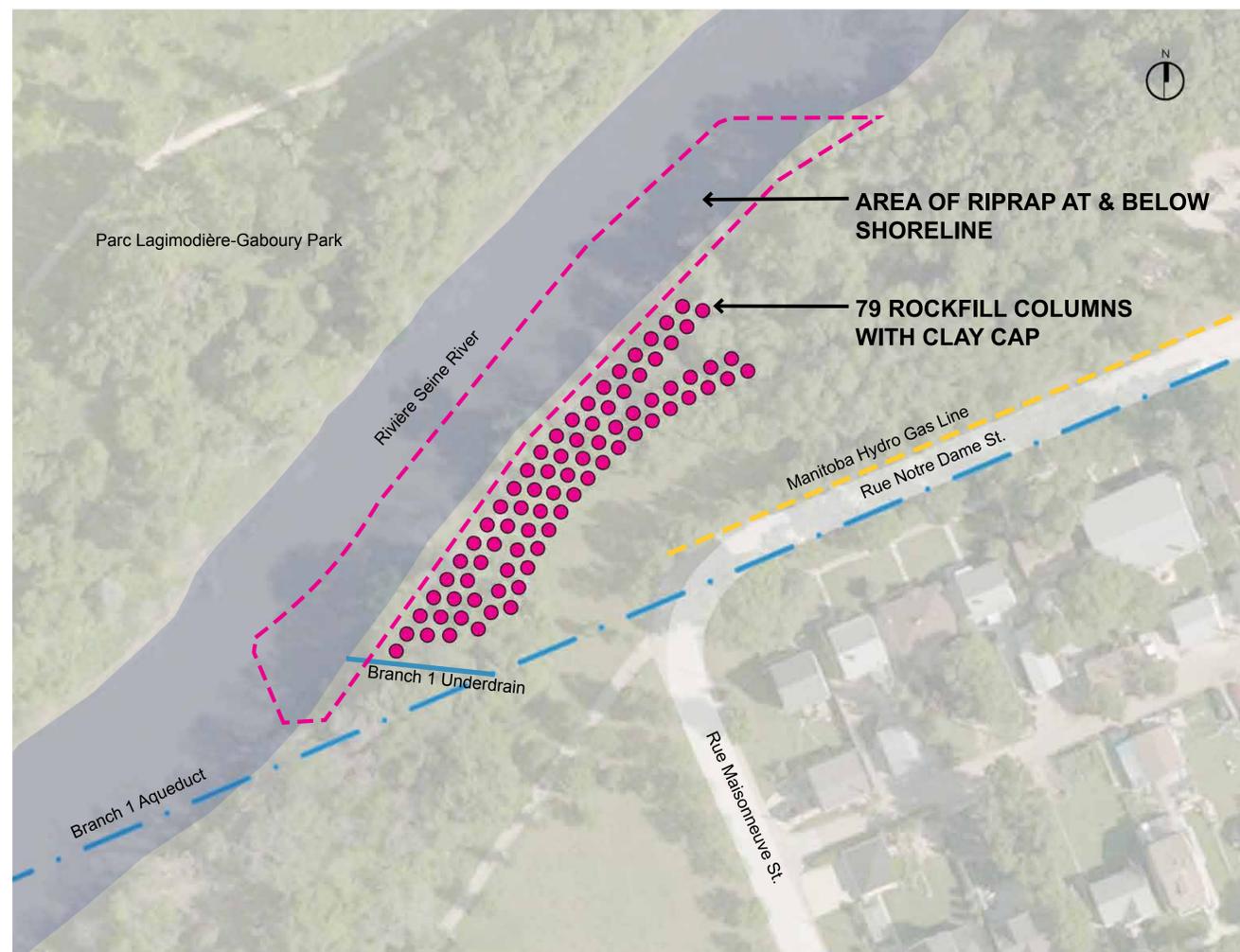


The Branch 1 Aqueduct is 18.8 km long.

Why Stabilize the Riverbank?

- The banks of the Seine River at the Branch 1 Aqueduct crossing are vulnerable to movement.
- The clay soils local to riverbanks in the Winnipeg area sometimes require stabilization.
- A consultant report recommended the City stabilize the west bank in 1999, and the work was completed in 2001. The report also recommended monitoring the east bank for movement.
- The City has monitored the area for a number of years to ensure that the stability of the east bank is within a comfortable safety level.
- Recent monitoring has revealed that the stability of the east bank has moved beyond the desired safety level and that stabilization of the bank is now required.

Rockfill Column Shear Key with Riprap Blanket along the shoreline



A matrix was developed to compare stabilization methods for eight different design solutions.

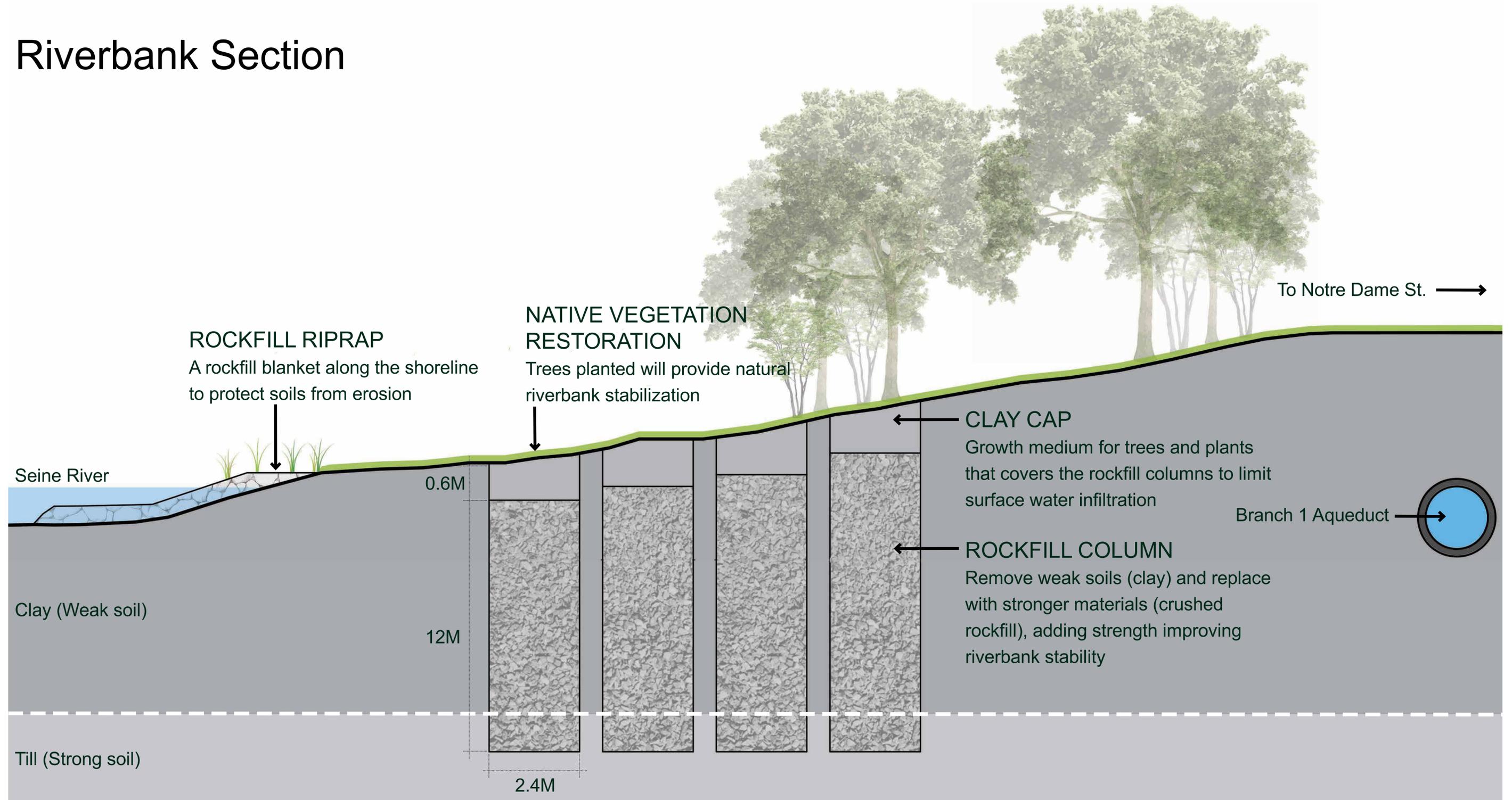
The following criteria was used to evaluate the methods and select the design solution:

- Construction cost
- Risk of potential movement during construction
- Vibration impacts to the aqueduct during construction
- Construction techniques
- Construction staging
- Timing of work
- Material and resource availability

Benefits of Rockfill Columns with Riprap Blanket:

- Relative low cost
- Meets City of Winnipeg slope stability factor of safety design criteria
- Simplest construction techniques with fewest staging requirements
- Construction over a single construction season
- Does not require relocation of Manitoba Hydro gas line
- Stabilization methods are a safe distance from Branch 1 Aqueduct location
- Can be built with readily available construction materials

Riverbank Section



What will construction and machinery look like?



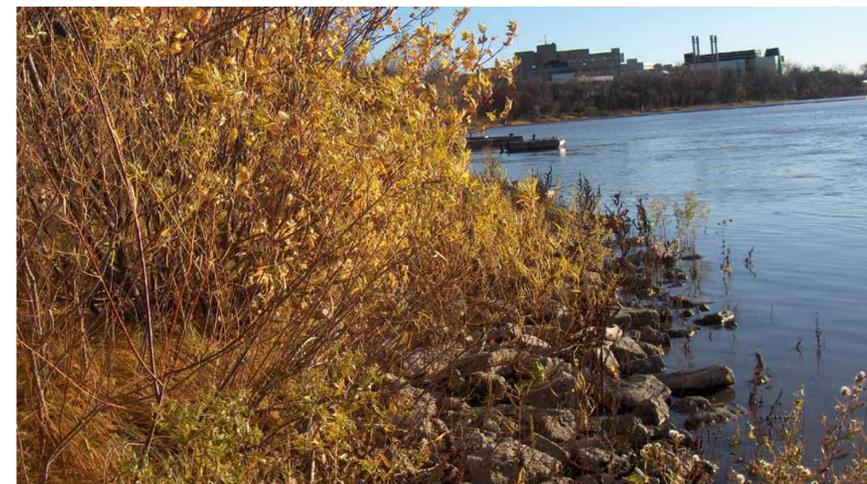
1 **DRILLING ROCKFILL COLUMNS**
Large diameter holes are drilled into the bank through the weak clay and into deeper, stronger soil known as “till”.



2 **FILLING ROCKFILL COLUMNS**
The holes are backfilled with stronger materials (crushed rockfill).

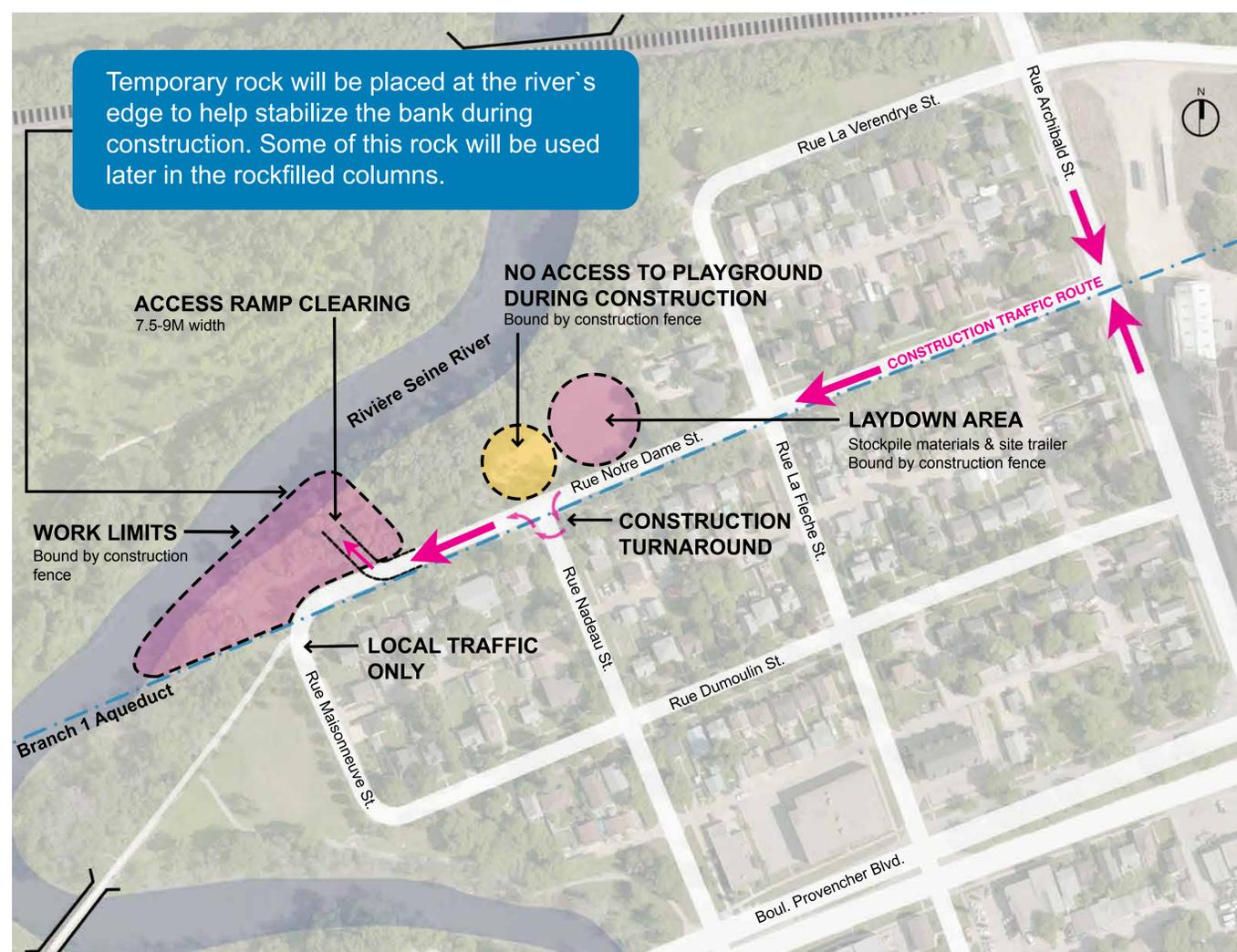


3 **PLACING RIPRAP**
The rockfill columns are covered with clay and soil. A rockfill riprap blanket is placed along the shoreline to protect soils from erosion.



4 **COMPLETED SHORELINE**
The riverbank is revegetated with native species of trees.

January - June 2018



■ Noise Considerations

There may be some noise associated with the stabilization portion of the work, however the project team will be taking noise into consideration when planning the construction activities and schedule.

■ Local Traffic

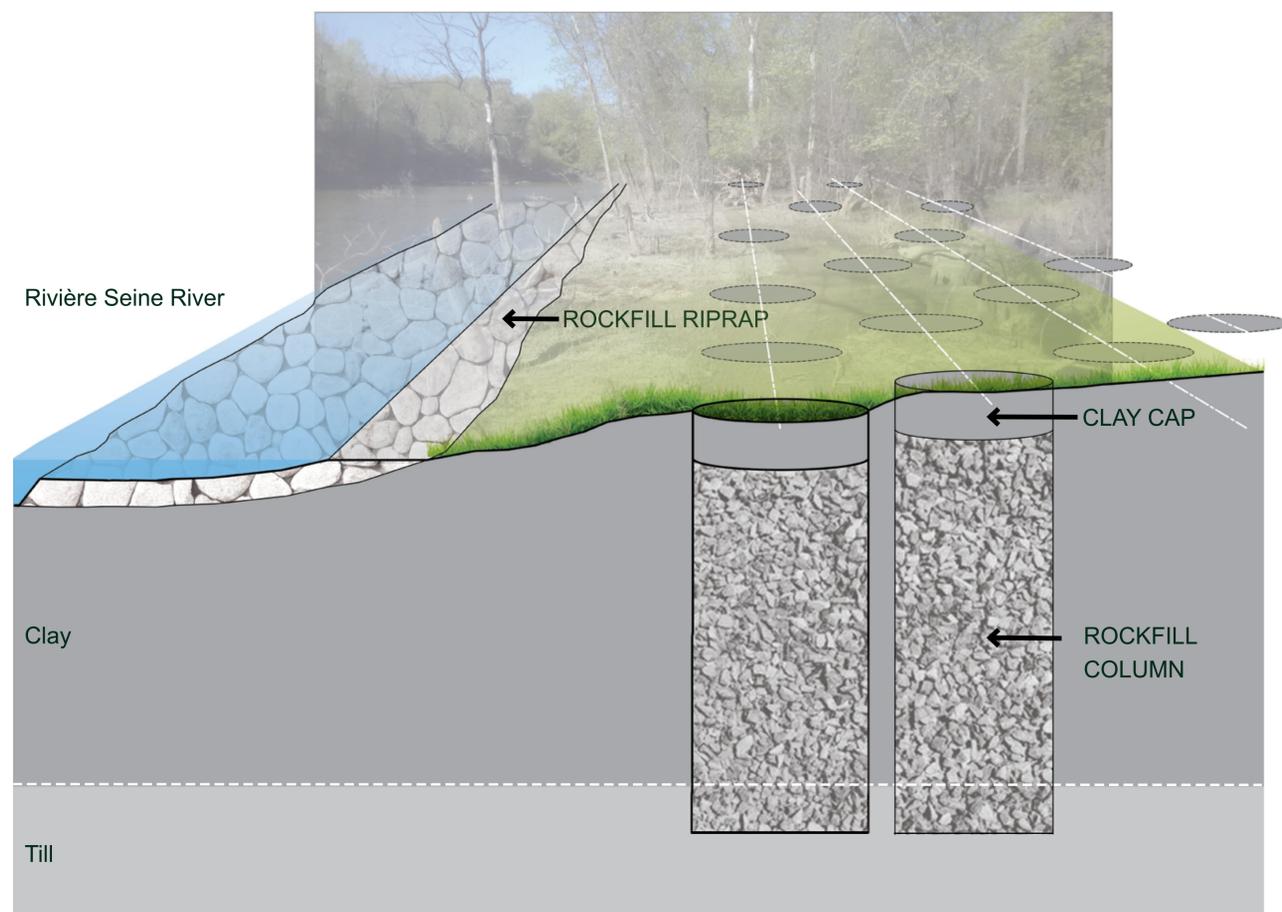
A traffic management plan will be developed to minimize traffic impacts in the area.

Notre Dame Street will remain open during the majority of the stabilization work.

■ Cycling and Pedestrian Circulation

The riverbank and a section of the footpath along the river will be closed during construction. A small section of the paved pedestrian walkway may be impacted during construction. Temporary access will be provided during construction to ensure safety for pedestrians and cyclists.

Riverbank Illustration



Aquatic Habitat

A plan will be developed to protect the fish and fish habitat during construction. No construction work will occur in the fish spawning window (April 1st to June 30th). This plan will require federal approval from the Department of Fisheries and Oceans.

Trees and Landscape

The majority of the construction will occur within the grassed area and riverbank northwest of the Notre Dame Street and Maisonneuve Street intersection.

Some trees near the lower slope area will be removed. Tree removal will be minimized as much as possible. Any trees removed will be replaced with new trees. The site will be restored to provide a riverbottom forest. The trees planted will provide natural bank stabilization.

What will revegetation look like?

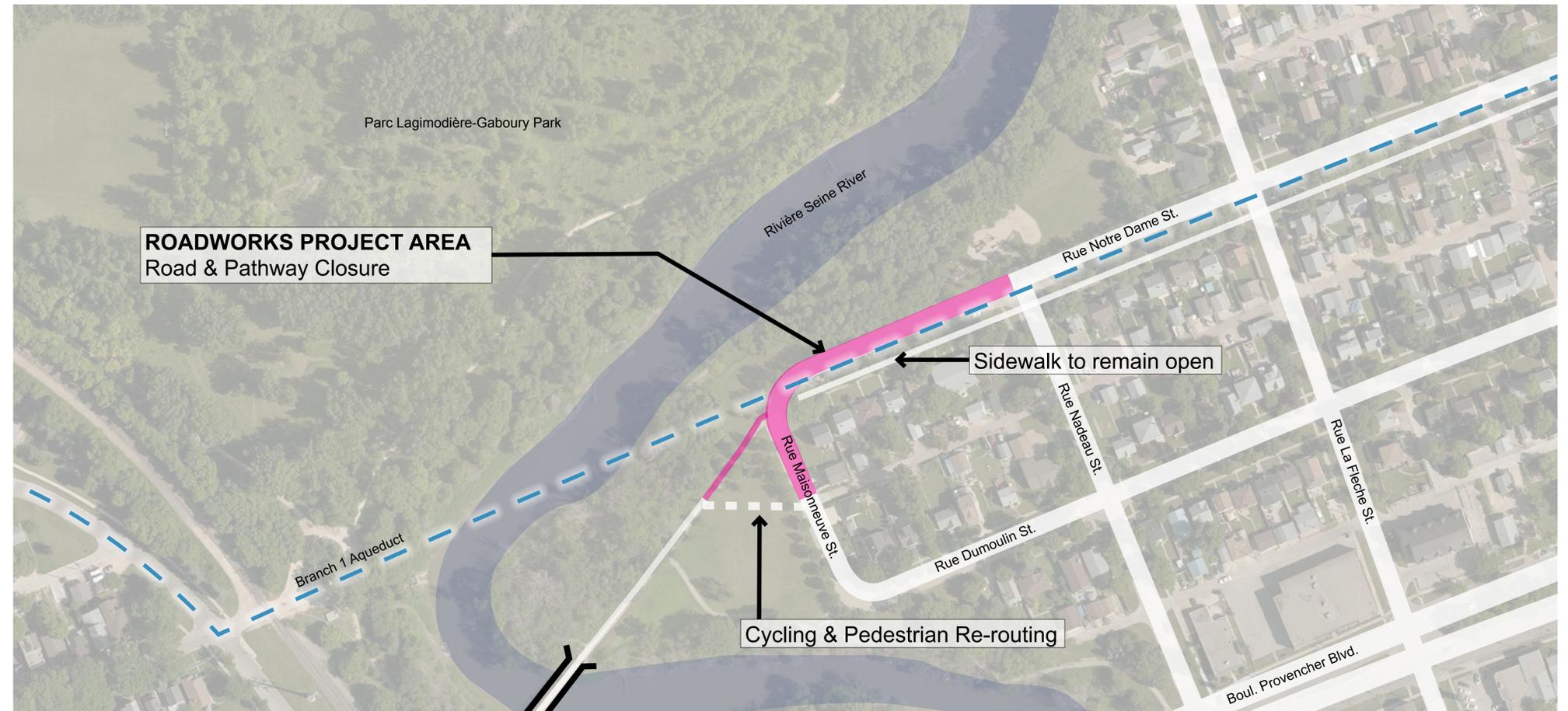


Summer 2018

As part of this work the road will be regraded to allow for proper drainage.

This construction work will include road closures on Notre Dame Street and Maisonneuve Street during the summer of 2018. Notices will be delivered to residents in advance of the closures.

A small section of the paved pedestrian pathway will be impacted during construction. Temporary access will be provided during construction to ensure safety for pedestrians and cyclists.



The project team met with stakeholders to identify preferences, issues and review the design solution and construction staging.

Key stakeholder input:

CONSTRUCTION

- Ensure local roads are repaired if any damage is caused by machinery and trucks during construction
- Ensure the playground and park area is restored to pre-construction conditions
- Ensure residents are notified of road closures and construction timelines
- Ensure access to and from the neighbourhood during rush hours

THE SEINE RIVER

- Concern that the look of the riprap will affect the natural feel of the river, especially when the water is low
- Preference for minimizing the control of riverbank edges overall within the City of Winnipeg

ACCESS TO THE SEINE RIVER

- More access to the Seine River is desired
- Enhance canoe and kayak access to the Seine River
- A canoe launch in an area that is not muddy is desired

RESTORATION

- Ensure replacement trees are planted to compensate tree removals
- Desire for riverbottom forest and naturalized areas with improved biodiversity and habitat quality

CIRCULATION

- The pedestrian bridge over the Seine River is a well-used cycling route, ensure a pathway connection to Maisonneuve Street is provided during construction
- Ensure pedestrian and cycling routes are maintained and accommodated during construction

STAKEHOLDERS ENGAGED:

- City of Winnipeg: Forestry • City Naturalist • Parks, Planners & Urban Designers • Active Transportation • Streets Engineers • Riverbank Engineers and Waterways
 Save Our Seine • Old St. Boniface Residents Association • Provencher Biz • Manitoba Historical Society

- The Construction Contract will be awarded in December 2017.
- The Riverbank Stabilization work is expected to begin in January 2018 with completion in June 2018.
- The Roadworks construction will take place in summer of 2018.

Thank you for coming today!

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