

### Section III – Items for the Information of the Board

**TO:** Chair and Members of the Board of Directors  
Friday, May 28, 2021 Meeting

**FROM:** Anil Wijesooriya, Director, Restoration and Infrastructure

**RE:** **2021 EROSION RISK MANAGEMENT PROGRAM UPDATE**

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#### KEY ISSUE

An information report regarding the Erosion Risk Management Program and related services and strategic updates from the Erosion Risk Management business unit.

#### RECOMMENDATION

**IT IS RECOMMENDED THAT this staff report on TRCA's Erosion Risk Management Program be received.**

#### BACKGROUND

Managing the risk associated with the natural hazards of flooding and erosion is one of the primary roles of conservation authorities under the *Conservation Authorities Act*. Toronto and Region Conservation Authority (TRCA) fulfills this role through the delivery of multiple natural resource management programs and services, including the Erosion Risk Management Program (ERMP). The ERMP focuses on the identification and remediation of shoreline and valley land erosion hazards throughout TRCA's jurisdiction and encourages proactive prevention, protection, and management of erosion issues on private and public property.

The main TRCA business unit that manages erosion hazards is Erosion Risk Management (ERM) under the Restoration and Infrastructure Division (R&I). Under the ERMP, erosion hazards across TRCA's watersheds are identified and ranked on a priority basis. ERM staff regularly conduct site visits throughout the year to assess and reprioritize erosion hazards in response to major weather events. As such, the list of priority sites is not static, and the ranking of sites may change within any given year as site conditions evolve or as new erosion hazard sites are identified. Stabilization works are conducted annually to address erosion hazards based on the available funding. In general, the ERMP is capitably funded through TRCA's partners at the City of Toronto, Region of Peel, and Region of York and in some specific cases local municipalities. Enhanced funding and fee-for-service work with municipal partners has also contributed greatly to the growth and expansion of the ERMP.

Federal grant funding which TRCA expects to start receiving this year through the Disaster Mitigation & Adaptation Fund (DMAF) continues to have a positive impact on the projects being actively planned and delivered by the ERM group under several project portfolios. Of the approximately 90 projects being actively planned this year by ERM, 48% of them are being partially funded through DMAF.

#### RATIONALE

The following will provide a brief overview of the various portfolios and major programs operated under the ERMP.

#### **Toronto Ravine Major Maintenance**

The Toronto Ravine Major Maintenance portfolio focuses on the maintenance and repair of

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TRCA's permanent erosion control assets within the City of Toronto. These structures are found along valley corridors, ravines and along natural slopes. Several factors are considered when prioritizing work including: current condition of the asset; remaining service life; proximity to permanent buildings or essential infrastructure; consequence of asset failure; and asset age.

In 2021, TRCA is planning 16 projects under the Toronto Ravine Major Maintenance portfolio. TRCA's main implementation priority for this year is the Home Smith Park Bank Stabilization Project.

### **Toronto Waterfront Major Maintenance**

The Toronto Waterfront Major Maintenance portfolio handles the repair and maintenance of TRCA's network of permanent shoreline erosion control assets along the City of Toronto waterfront. These structures are found along the north shore of Lake Ontario and are designed to protect the shoreline, adjacent tableland, public amenities, and infrastructure from erosion. Many of these assets are nearing the end of their lifespan and over the past four years catalogued damages to the structures have increased significantly due to multiple severe weather events.

In 2021, TRCA is planning 7 projects under the Toronto Waterfront Major Maintenance portfolio. The major projects being implemented this year include the Long Branch Park Major Maintenance Project and Prince of Wales Park Major Maintenance Project.

### **Valley Erosion Hazards**

The Valley Erosion Hazards portfolio addresses erosion hazards and slope instability issues impacting private and public property throughout the ravine systems in the City of Toronto. The July 8, 2013 severe weather event was the catalyst for a funding increase to this portfolio that prompted TRCA to extend assistance to private properties where homes have been deemed at risk by erosion or slope instability. The goal of each project is to provide a cost-effective solution to protect essential infrastructure, such as residential dwellings and municipal assets. Projects are implemented on a priority basis to the limit of available funding each year. Each year, a portion of the annual portfolio budget is allocated towards the completion of slope stability and erosion risk assessments for newly identified sites. The results of these assessments determine whether there exists any risk in the long term to essential structures on a property. This information is then used to quantitatively rank sites for work through the ERMP based on risk.

While most working relationships with private landowners participating in the ERMP are constructive and positive, a few relationships have been strained and have led to tense interactions during negotiations. In these situations, private landowner concerns are typically focused around:

- TRCA's recommended solution to address the erosion hazards and impact on their property and existing vegetation/trees and/or encroachments that may be impacted by the proposal;
- How properties are prioritized and associated timelines to complete the project given municipal funding considerations and TRCA's procedural and procurement obligations;
- Requirements under TRCA's *Private Landowner Contribution for Erosion Control Works* Policy for the property owner(s) to either financially contribute to the cost of the project or convey hazard lands where the stabilization work will take place;

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Due to confidentiality concerns on ongoing property discussions, a briefing memorandum detailing specific examples of the above can be provided as a confidential report in closed session if requested. Staff are planning to clarify and better communicate expectations to private landowners by updating the *Private Landowner Contribution for Erosion Control Works Policy* and improving overall messaging by refining the content of the ERM webpage on TRCA's website and through links to partner websites. Specific outreach initiatives will also occur on a site or area-specific basis.

In 2021, TRCA is planning 26 projects under the Valley Erosion Hazard portfolio. There is currently a backlog of 95 high-risk sites known to TRCA that will not be addressed in the next 10 years due to funding constraints, and the number of sites is projected to increase with more frequent and more intense severe weather events. Implementation priorities this year include the Peacham Crescent Slope Stabilization Project and a few minor works sites that will be confirmed later this year.

### **York Region Streambank Infrastructure Erosion Control Management Program**

The York Region Streambank Infrastructure Erosion Control Management Program (SIECMP) provides long-term erosion hazard management for Environmental Services infrastructure assets along ravines and watercourses. The portfolio includes the monitoring, study, design, maintenance and implementation of erosion control works for infrastructure protection in TRCA's jurisdiction of York Region. Studies and remedial works are prioritized based on a risk framework that considers number of factors such as: depth of cover; infrastructure type; remaining service life; consequence of failure; and current condition of the asset.

In 2021, TRCA is planning to complete detailed design development and obtain the necessary permits and approvals for 3 projects under this portfolio. The main implementation priority for 2021 includes minor maintenance works at 15 infrastructure erosion hazard sites. The implementation of minor works will mitigate the need for future major maintenance works at York Region SIECMP sites.

### **TRCA Maintenance & Other Hazards (York Region)**

The TRCA Maintenance & Other Hazards (York Region) portfolio is established for maintaining TRCA's existing permanent erosion control assets and developing new erosion control protection measures on TRCA lands within York Region. These assets are often found along ravine and valley corridors or along natural slopes. Repairs are prioritized based on a number of factors such as: asset age; remaining service life; proximity of permanent buildings or essential infrastructure; consequence of failure; and current condition of the asset.

In 2021, TRCA is planning to complete detailed design development and obtain the necessary permits and approvals for 3 projects under this portfolio. A minor maintenance works schedule for various other sites within this portfolio will also be developed throughout 2021. The implementation of minor works in subsequent years will mitigate the need for future major maintenance works on TRCA owned assets.

### **Region of Peel Erosion Control & Infrastructure Protection**

The Region of Peel Erosion Control & Infrastructure Protection portfolio monitors the risk to TRCA owned erosion control structures, Region of Peel infrastructure hazard monitoring sites, and other erosion hazards impacting public and private land. This portfolio includes the monitoring, study, design, maintenance and implementation of erosion control works to remedy these hazards. Mitigation measures and repairs are prioritized based on several factors such as: depth of cover or closest distance; remaining service life; infrastructure type; consequence

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of failure; and current condition or exposure of the asset. Prioritization is based on the highest risk locations, which in recent years tends to be infrastructure sites.

Beginning in 2017, TRCA delineated 1,382 infrastructure hazard sites within the Region of Peel in TRCA's jurisdiction to establish long-term monitoring sites with first inspections at most sites being completed between 2017-2019. In addition to these infrastructure sites, TRCA currently monitors a total of 143 erosion control structures and 57 erosion hazard sites.

In 2021, TRCA is planning 4 projects under the Region of Peel Erosion Control and Infrastructure Protection portfolio. The main implementation priorities for 2021 include the Brandon Gate Park Bank Stabilization Project and the Wegenast Valley Erosion Control Project.

### **Toronto Water Monitoring**

In 2010, the City of Toronto and TRCA developed a long-term monitoring partnership to assess the risks to Toronto Water infrastructure in ravine and valley systems. This program aims to inspect Toronto Water infrastructure within the City of Toronto's stream valleys and along the shoreline of Lake Ontario for the purpose of identifying Toronto Water infrastructure that is at risk or has been damaged due to erosion before a complete failure occurs. The program reduces environmental and public health and safety risks and allows Toronto Water staff to plan, prioritize and budget for asset maintenance, improvement, replacement and protection effectively and efficiently.

In 2020, TRCA staff assessed a total of 3,153 assets, and it is anticipated that approximately 2,500 assets will be inspected in 2021.

### **Fee-for-Service Projects**

ERM also undertakes projects for TRCA's regional and municipal partners on a fee-for-service basis to help address their priorities. These projects vary in scale and complexity. Typical fee-for-service projects focus on providing erosion protection for critical public infrastructure and are often located in natural or environmentally-sensitive areas.

In the City of Toronto, TRCA partners with the Parks, Forestry & Recreation (PF&R) and Transportation Services divisions through a Master Service Agreement. TRCA expects to establish similar service level agreements with the Toronto Water division, as well as other municipalities and regions to help deliver additional fee-for-service projects while strengthening TRCA's partnerships and financial resilience.

In 2021, ERM expects to undertake planning/implementation activities on 33 fee-for-service projects with various municipal/regional partners. Some of the major fee-for-service projects that are being implemented this year include the Ashbridges Bay Landform Project and the Mud Creek Restoration – Reach 3 Project.

### **ERMP – Other strategic updates**

In addition to the capital and recoverable projects & programs described above, ERM staff have been working on some key updates to the ERMP to improve operational efficiency. A brief overview below has been provided on these initiatives and on some of the high-profile and emergency works projects ERM staff are working on.

- In 2019, ERM and Property & Risk Management staff embarked on significant updates to existing agreement templates and operating procedures to ensure contributions under TRCA's *Private Landowner Contribution for Erosion Control Works Policy* were received

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prior to commencing work. This will reduce liability to TRCA by ensuring that financial contributions to projects are received so that land transfers take place in a timely manner.

- Staff will be proposing updates to TRCA's *Private Landowner Contribution for Erosion Control Works* Policy (last updated January 27, 2017) through 2021. The planned changes will clarify landowner eligibility requirements and will include other refinements based on extensive staff experience, knowledge, and lessons-learned. The updated policy will outline the planning process for these types of projects in a simple and concise manner. A plan for communicating the updated policy will be prepared as part of this review.
- Building on the response to the January 11<sup>th</sup>, 2020 jurisdiction-wide storm event, ERM staff continued to monitor storm events and high-wave warnings to coordinate post-storm inspections of TRCA owned erosion control assets. During the Spring months of 2020, ERM staff performed 4 site inspections along the waterfront, whose inquiries were most likely a direct result of the 2019 high lake levels. During the 2020 summer storm season 5 storm events occurred which were less severe than recent years. The largest of these events occurred 7 years to the date of the July 8<sup>th</sup>, 2013 storm event. Throughout 2020, ERM staff utilized their **Flood Risk Analysis Network (FRANK)** tool to schedule 14 site inspections of TRCA owned and maintained erosion control assets, as well as 17 inspections of municipal partner infrastructure hazard sites. Over the fall and winter months of 2020, ERM staff also noted 4 high wind and wave events providing senior staff with notifications as wave heights and wind directions may have directly impacted shoreline construction sites.
- Over the course of 2020, ERM staff's post-storm monitoring supported the Flood Risk Management (FRM) group's Incident Management System structure, communicating with FRM staff before and during storm events, as well as providing and receiving summary metrics to assist in the evaluation of flood levels and potential damages, as well as erosion hazards. ERM's collaborative efforts have assisted in further development and refinements of TRCA's Remotely Piloted Aircraft System (RPAS) team, including an organization-wide RPAS working group.

### **Relationship to Building the Living City, the TRCA 2013-2022 Strategic Plan**

This report supports the following strategy set forth in the TRCA 2013-2022 Strategic Plan:  
**Strategy 2 – Manage our regional water resources for current and future generations**

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**Attachments: 4**

Attachment 1: Table of projects being planned under the ERMP in 2021

Attachment 2: Map of projects being planned under the ERMP in 2021

Attachment 3: ERM Portfolio/Program Factsheets

Attachment 4: Private Landowner Contribution for Erosion Control Works Policy