Fishleigh Drive Erosion Control Project Addendum Report

Toronto and Region Conservation Authority

October 7, 2015

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I. EXECUTIVE SUMMARY

Toronto and Region Conservation Authority (TRCA) continues to work towards ensuring healthy rivers and shorelines, greenspace and biodiversity, and sustainable communities through a variety of programs, projects and initiatives. One key step in this process is the design and implementation of shoreline stabilization projects along the Scarborough Bluffs. These projects serve to remediate erosion hazards that put public safety and essential structures at risk, and to rehabilitate and enhance key natural areas and community focal points. Several decades of important shoreline work has been carried out by TRCA in partnership with its waterfront communities to protect and enhance the waterfront for present and future generations.

Erosion concerns along the Scarborough Bluffs have been well documented by TRCA for more than 30 years. In 1980-1981, Geocon Inc. carried out an extensive erosion control study of the Scarborough Bluffs as a whole. This study identified Fishleigh Drive as one of the sectors along the Scarborough Bluffs in need of erosion control. In response, TRCA retained Keith Philpott Consulting in 1987 to provide design options for remedial shoreline protection works. In 1988, Terraprobe Limited was retained to conduct subsurface investigations and establish the Long Term Stable Slope Crest (LTSSC). Later that year, based on recommendations and analysis from Keith Philpott Consulting and Terraprobe Limited, TRCA produced an Environmental Study Report (ESR) under the *Class Environmental Assessment for Water Management Structures* (now *Remedial Flood and Erosion Control Projects*). This report, entitled Fishleigh Drive Erosion Control Project, recommended offshore fill and armourstone revetment approximately 560 metres long from 33 – 85 Fishleigh Drive and 1 Midland Avenue, to eliminate toe erosion and realize self-stabilization of the bluffs. The Class EA was approved and construction commenced in 1988.

This addendum to the 1988 Fishleigh Drive Erosion Control Project ESR has been prepared to address continued and unanticipated erosion concerns at the eastern extent of Fishleigh Drive. The approved 1988 ESR allowed for a revetment structure to provide toe protection along the length of Fishleigh Drive and over to 1 Midland Avenue. In 1994, however, a decision was made by TRCA to protect the natural formation of the bluffs below 1 Midland Avenue. The length of the revetment was reduced and terminated approximately 150 metres short of the distance allowed for in the approved ESR. The shortened revetment ultimately left 81 and 83 Fishleigh Drive vulnerable to powerful southeasterly waves which have resulted in ongoing erosion putting these properties, and infrastructure at the intersection of Fishleigh Drive and Midland Avenue, in jeopardy.

The objective of this project is to extend the shoreline protection below 81 and 83 Fishleigh Drive and to install a buttress on the bluff face to provide long-term protection for these properties and municipal infrastructure along Fishleigh Drive and Midland Avenue.

This addendum outlines the circumstances necessitating the change, the potential environmental effects of the proposed change, and the measures planned to mitigate any negative environmental effects. It also describes the project area, the extensive project history including decades of studies and assessments, and documents the decision making process for the preferred erosion protection solution.

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1.0 INTRODUCTION

Toronto and Region Conservation Authority (TRCA) is proposing to carry out remedial erosion control works along a portion of the Lake Ontario shoreline located at the base of the Scarborough Bluffs below 81 and 83 Fishleigh Drive in the City of Toronto. The bluffs along the project limits reach approximately 53 metres in height and stretch approximately 65 metres along the shoreline. The proposed remedial works include the implementation of a slope buttress below these two properties and an extension of the existing shoreline protection currently in place from 33 – 83 Fishleigh Drive. The extension of erosion control works is being sought as an addendum to the originally approved 1988 Environmental Study Report (ESR) under Section 3.8 of the *Class Environmental Assessment for Remedial Flood and Erosion Control Projects (Amended 2013)* or Class EA.

The following addendum has been prepared as documentation of the decision-making approach exercised in determining the preferred measure for the proposed remedial work, and to establish that there are no negative impacts or outstanding concerns held by TRCA or reviewers associated with the proposed work.

2.0 CLASS ENVIRONMENTAL ASSESSMENT

2.1 Class Environmental Assessment Purpose

The purpose of the Class EA is to facilitate a streamlined method in which to comply with the *Environmental Assessment Act* (*Amended 2010)* for familiar projects with predictable outcomes and environmental effects. This approach relies on a self-assessment and decision making process coupled with input from interested individuals, agencies and Aboriginal Communities. The Class EA establishes procedures and planning processes to facilitate the initiation, design, evaluation, implementation and monitoring of projects.

The Class EA for Remedial Flood and Erosion Control Projects was developed by Conservation Ontario for use by all Conservation Authorities. This Class EA outlines the process for implementing remedial projects to address flood and erosion issues. Projects within this Class EA are defined as:

> *"Remedial Flood and Erosion Control Projects refer to those projects undertaken by Conservation Authorities, which are required to protect human life and property, in previously developed areas, from an impending flood or erosion problem. Such projects do not include works which facilitate or anticipate development. Major flood and erosion control undertakings which do not suit this definition, such as multipurpose projects, lie outside the limits of this Class and require an Individual Environmental Assessment." (Conservation Ontario, 2002, amended 2013).*

2.2 Class Environmental Assessment Process

Twenty three years of experience has demonstrated that using the Class EA approach for dealing with flood and erosion control projects is an effective way of complying with the Act

requirements. Approval of the Class EA allows Conservation Authorities to carry out these types of projects without applying for formal approval under the Act, on the condition that all other necessary federal and provincial approvals are obtained. A chart illustrating the key steps of the Class EA planning and design process is shown in **Figure 1**.

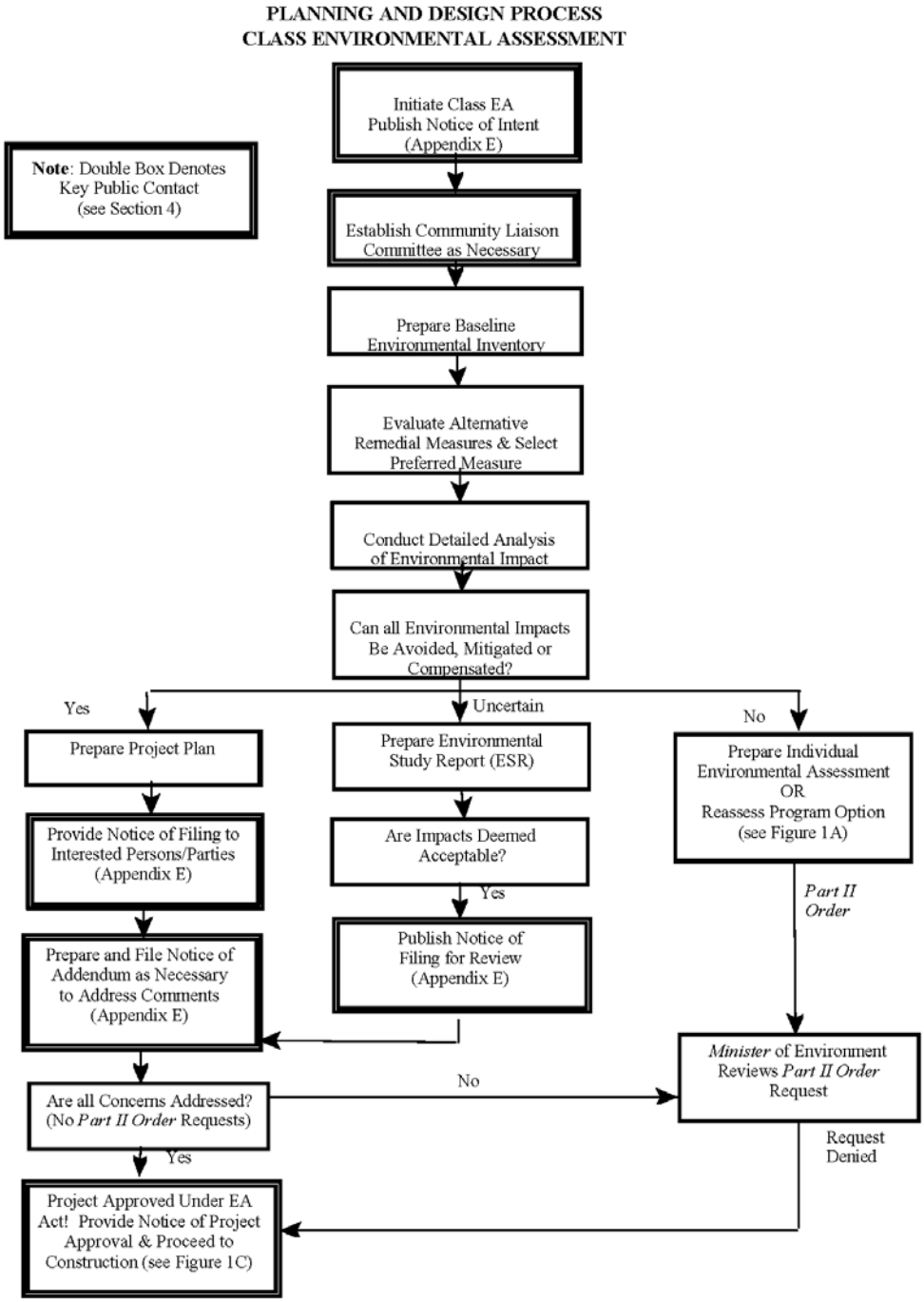


Figure 1. Class Environmental Assessment Planning and Design Process. Source: *Conservation Ontario, 2013.*

2.3 Addendum Requirements

There are various circumstances in which an addendum to a previously filed and approved ESR may be warranted. These include: comments posed during the public, agency and Aboriginal Community review process; the passage of time; a change in environmental setting; or other unforeseen situations. When it is determined, in consultation with the Community Liaison Committee and affected parties, that an alteration to the undertaking is significant, an addendum to the original ESR is prepared by the Conservation Authority. The stipulations of the addendum read:

> *"The addendum shall describe the circumstances necessitating the change, the environmental implications of the change and what mitigation methods will be employed to mitigate negative environmental effects of the change." (Conservation Ontario, 2002, amended 2013)*

The addendum, in conjunction with a Notice of Filing of Addendum and the original ESR, is submitted for public and agency review for a period of 15 days. If all concerns are resolved through the preparation and review of the addendum, or all Phase II requests are denied by the Minister of the Environment, the addendum is considered approved under the EAA.

2.4 Community Engagement

The community has been continuously engaged during the decision and design development phases. **Appendix A** documents the community involvement and includes the Record of Aboriginal Engagement, the Notice of Intent issued to formally initiate the project and engage the public, the presentation and associated information from the public meeting held on August 25, 2015, and the Notice of Filing providing the opportunity for public and agency review of this report.

3.0 PROJECT AREA

Fishleigh Drive is located west of Bluffer's Park, atop the table lands of the Scarborough Bluffs along the north shore of Lake Ontario in the City of Toronto. The area of concern is the eastern extent of Fishleigh Drive, directly below 81 and 83 Fishleigh Drive. The bluffs in this area are approximately 53 metres high with an inclination of about 1.5 horizontal (H) :1 vertical (V) along the lower slope to nearly vertical approaching the apex. This section of the bluffs has a unique stratigraphy comprised of clayey silt Sunnybrook Till at lake level, overlain by clayey silt Thorncliffe Till and capped by a thin layer of Iroquois Sands. The lower portion of the slope is moderately vegetated while the upper portion is relatively bare of vegetation. A project area map, a project limits map and a site photograph of the area are presented in **Figure 2, Figure 3** and **Figure 4**, respectively.

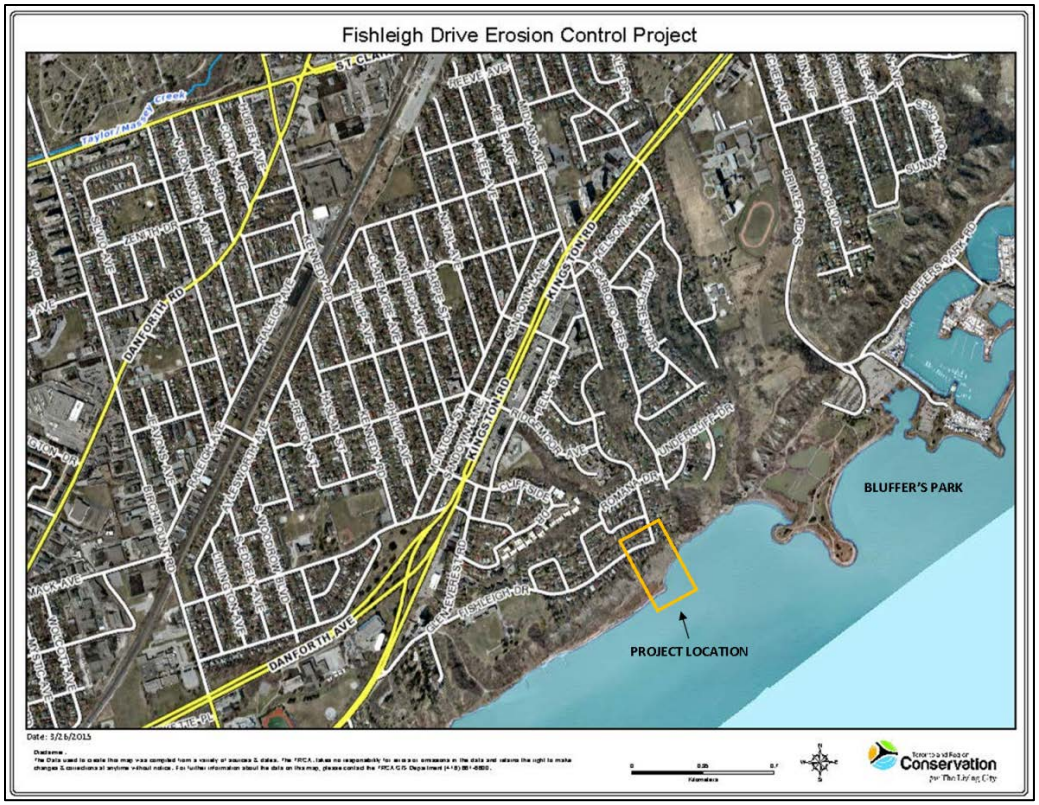


Figure 2. Project Area. *Source: TRCA, 2015.*

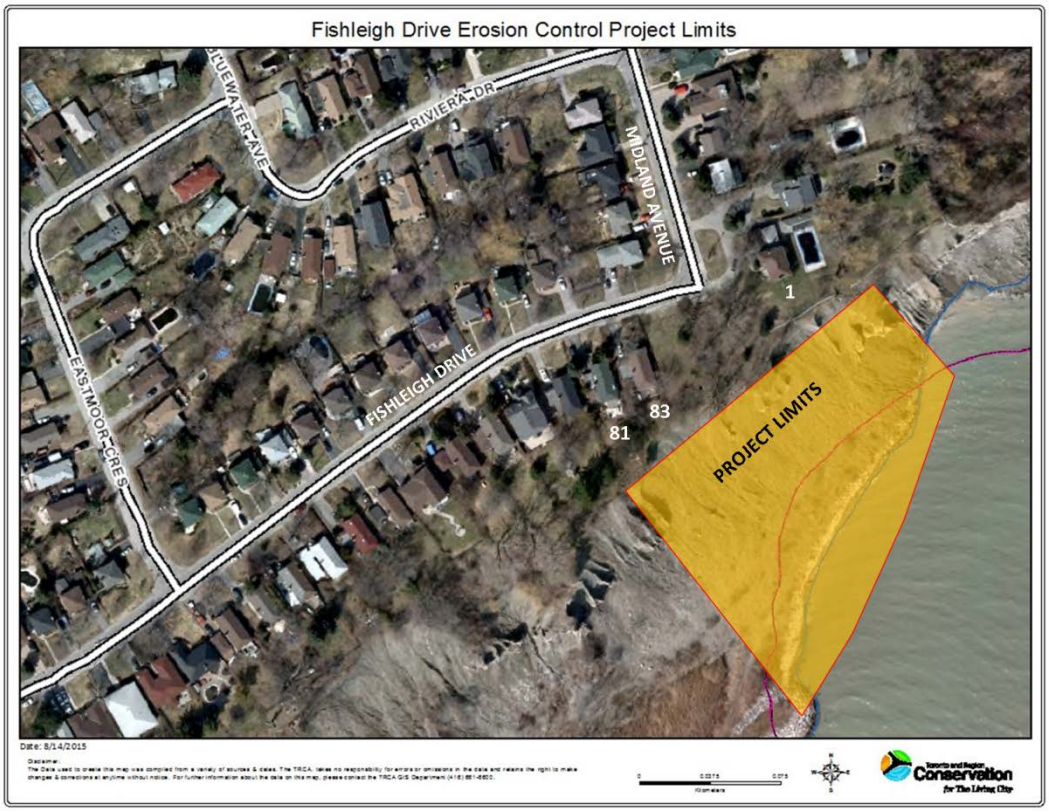


Figure 3. Proposed project limits delineated by polygon. *Source: TRCA, 2015.*

Figure 4. Site photograph. *Source: TRCA, 2014.*

3.1 Current Erosion Protection

A revetment structure, constructed by TRCA from 1988 to 1995, extends from 33 Fishleigh Drive to below 83 Fishleigh Drive. Although the shoreline protection extends to below 83 Fishleigh Drive, the subject area remains susceptible to prominent and powerful southeasterly waves. A rubble beach, directly northeast of the revetment terminus, currently provides limited toe protection to the project area.

3.2 Affected Properties and Infrastructure

The dwellings at 81 and 83 Fishleigh Drive are privately owned, single family, detached houses. 85 Fishleigh Drive was acquired and subsequently demolished by TRCA in 1993. This TRCA owned land now serves as a small parkette. 1 Midland Avenue, directly east of the project area, was acquired by TRCA in 2014. The former owner continues to rent the property from TRCA for a five year period in compliance with the terms of the acquisition agreement. The house is planned for demolition at a future date and will become part of the adjacent parkette. The road allowance at Fishleigh Drive and Midland Avenue contains a storm water line, a combined storm water and sanitary line, a fire hydrant, and water mains feeding the houses along both streets and the fire hydrants in the area. This infrastructure can be seen in **Figure 5**.

Figure 5. Infrastructure at Fishleigh Drive and Midland Avenue. *Source: City of Toronto, 2015.*

4.0 PROJECT HISTORY

The Scarborough Bluffs are located on the northern shore of Lake Ontario in the City of Toronto. They extend approximately 15 kilometers from Victoria Park Avenue in the west to Highland Creek in the east. A remnant of the shoreline of Lake Iroquois, the Scarborough Bluffs have formed over 100,000 years from sedimentary deposition. Although the stratigraphy varies along the 15 kilometer stretch, the bluffs are primarily composed of silty clay at lake level, overlain with silty sand and sand, and capped with till. Since their formation, the bluffs have been actively eroding. The practice of stonehooking (removing large rocks from the bed of the lake) in the early 1900's is credited with accelerating the erosion process (City of Toronto, 2012). The dual effect of wave action at the base of the bluffs, coupled with the sediment transfer of the eroded material, has created over-steepened slopes. In addition to wave action and the subsequent sediment transfer, the processes of frost-jacking, wind, surface runoff and groundwater seepage also contribute to erosion (TRCA, 2011).

4.1 Previous Erosion Control Work

In 1980-1981, Geocon Inc. carried out an extensive erosion control study of the Scarborough Bluffs as a whole. This study identified Fishleigh Drive as one of the sectors along the Scarborough Bluffs in need of erosion control. In response to this, TRCA retained Keith Philpott Consulting in 1987 to provide design options for remedial shoreline protection works. In 1988, Terraprobe Limited was retained to conduct subsurface investigations and establish the Long Term Stable Slope Crest (LTSSC). Later that year, based on recommendations and analysis from Keith Philpott Consulting and Terraprobe Limited, TRCA produced an ESR under the *Class EA for Water Management Structures* (now *Remedial Flood and Erosion Control Projects*). This report, entitled Fishleigh Drive Erosion Control Project, recommended offshore fill and armourstone revetment approximately 560 metres long from 33 – 85 Fishleigh Drive and

1 Midland Avenue to eliminate toe erosion and realize self-stabilization of the bluffs. This Class EA was approved and construction commenced in 1988.

In 1994, TRCA suspended construction to reassess the potential impacts of the project on an important portion of the bluffs known as the "needles". W. F. Baird & Associates were retained to provide options for a termination point of the armourstone revetment structure. They provided six options and weighted the capabilities of each to provide adequate erosion protection while preserving the needles feature. A committee was established consisting of representatives from Metropolitan Toronto, City of Scarborough, Waterfront Regeneration Trust, local politicians and affected homeowners. Collectively, it was decided to end the revetment structure below 83 Fishleigh Drive; 150 meters short of the 1988 approved length. The motion was carried under the stipulation that "Authority staff investigate further options to ensure the long term safety and protection of Nos. 1 and 5 Midland Avenue and Nos. 81 and 83 Fishleigh Drive" (Water and Related Land Management Advisory Board, 1995).

5.0 CIRCUMSTANCES NECESSITATING THE CHANGE

The first requirement of the addendum report is to document the circumstances that necessitate an alteration to the original ESR.

Since the approval of the original ESR in 1988 (**Appendix B**) and the completion of the existing shoreline protection in 1995, the properties at 81 Fishleigh Drive, 83 Fishleigh Drive and municipal infrastructure at this location have been left vulnerable to toe erosion and continued crest recession. Although the existing revetment has allowed the western portion of Fishleigh Drive to realize the slope stabilization process, this has not been the case for the project area. TRCA monitoring, coupled with numerous Terraprobe geotechnical reports, place the LTSSC within one metre of the dwelling at 83 Fishleigh Drive and within 10 metres of 81 Fishleigh Drive. It has become evident that slope stabilization and shoreline protection is required to protect human life, property, and municipal infrastructure along this reach.

5.1 Summary of Applicable Studies since Original ESR

Numerous geotechnical studies have been undertaken within the project area since the implementation of the original shoreline protection. These studies document the ongoing crest recession within the project area and repeatedly recommend extension of erosion control measures.

5.1.1 Terraprobe Geotechnical Assessment (July 1993)

In July of 1993, Terraprobe conducted a geotechnical assessment to determine the current and long-term slope stability of the bluffs adjacent to 85 Fishleigh Drive. They found significant active toe and crest erosion behind 83 and 85 Fishleigh Drive resulting in a loss of tableland. The crest erosion was in the form of large block failures (rather than small particle loss) resulting in significant tableland loss in a single incident. It was predicted that the slope crest would be within 10 metres (the minimum safe distance) of 85 Fishleigh Drive within a 15 year period. Based on these findings, the dwelling was demolished and the property converted to a parkette.

5.1.2 W.F. Baird & Associates (October 1995)

In 1995, during the armourstone revetment construction phase, W.F. Baird & Associates were retained by TRCA to reassess the easterly terminus point of the structure. Six options were developed based on water levels, wave hindcast, lakebed bathymetry and sediment transfer. Parameters including the level of erosion protection afforded, the negative effect on the needles portion of the bluffs and the cost were compared for each alternative. Ultimately, a small headland structure terminating below 83 Fishleigh Drive was selected. This decision was based on a comparative analysis approach, current waterfront management principles, and to align with strategies outlined in the Integrated Shoreline Management Plan.

5.1.3 Terraprobe Geotechnical Assessment (June 2002 and August 2003)

In 2002, a geotechnical assessment was conducted along Midland Avenue and Fishleigh Drive in response to the loss of approximately 2 metres of tableland directly east of 1 Midland Avenue. A follow up inspection was conducted in August 2003. Historical monitoring in this location yielded a slope regression rate of 0.5 to 1.3 metres per year resulting in a loss of 6 to 16 metres over a 12 year period. Based on this regression rate and the large amounts of tableland lost in each erosion incident, Terraprobe recommended an extension of the existing armourstone revetment structure to a length that would provide toe protection across 81 and 83 Fishleigh Drive to below 1 Midland Avenue.

5.1.4 Terraprobe Review and Assessment (October 2005)

In 2005, a review and assessment of the bluffs between 79 Fishleigh Drive and 5 Midland Avenue was undertaken to evaluate the changes in slope crest position since the 2002 and 2003 reports. Assuming the given long-term stable inclination of 1.5H:1V (determined in the 1988 Terraprobe study), the analysis exhibited that, without toe protection in this area, the LTSSC would be within one 1 metre of 81 Fishleigh Drive and beyond 83 Fishleigh Drive and 1 Midland Avenue.

5.1.5 Terraprobe Slope Stability Review (June 2006)

In 2006, a slope stability review was conducted between 79 Fishleigh Drive and 1 Midland Avenue. In this review, Terraprobe determined, based on the unique stratigraphy of the bluffs in this section, that the stable slope inclination in this area can be as steep as 1.2 to 1.3H:1V. It was shown that, for long term planning in this section, a stable slope crest of 1.2H:1V satisfies the TRCA Factor of Safety for slope slides. Recommendations were again made to consider an extension of the revetment structure to encompass the unprotected area.

5.1.6 Terraprobe Slope Stability Review (May 2012)

In 2012, a slope stability review was conducted based on measurements taken in 2011. It was predicted that the LTSSC would pass through 1 Midland Avenue and be within 1 metre of 83 Fishleigh Drive. These estimates are based on an assumption of no further toe erosion. Given that this section of the bluffs is currently unprotected, it is assumed that the LTSSC will continue to recede.

5.2 Development of Preferred Alternative

In 2014, Terraprobe and Shoreplan were retained to provide preliminary alternatives for slope stabilization and shoreline protection measures to aide in the development of the preferred solution.

5.2.1 Terraprobe Slope Stabilization Alternatives

In 2014, Terraprobe revisited their previous studies in order to recommend alternatives for remedial action against the erosion from 81 Fishleigh Drive to 1 Midland Avenue. Given the existing shoreline protection, Terraprobe believes erosion will continue from 83 Fishleigh Drive to 1 Midland Avenue and will be "marginally stable" at 81 Fishleigh Drive. If no toe protection is put in place, Terraprobe predicted a LTSSC set back 30 metres from that determined in 2012. This would place the LTSSC within each of the three houses in 30 to 50 years. With toe protection in place, Terraprobe anticipates the LTSSC passing through 1 Midland Avenue, within one (1) metre of 83 Fishleigh Drive and within 10 metres of 81 Fishleigh Drive.

Based on this analysis, Terraprobe recommended four options:

5.2.1.1 Do Nothing

The "Do Nothing" option will allow continued toe erosion and will not allow for self-stabilization of the bluffs in this area. The LTSSC will never be realized and will continuously move in-land as the toe is scoured away. The advantages of this option are: no construction, low cost, low effort and no construction impacts on the slope. The disadvantages of this option are: the infrastructure at the intersection of Fishleigh Drive and Midland Avenue will be lost to erosion within 70-100 years and 81 Fishleigh Drive, 83 Fishleigh Drive and 1 Midland Avenue will be lost to erosion within 30-50 years.

5.2.1.2 Toe Protection Only

With the implementation of a permanent toe protection structure (such as an armourstone revetment), future toe erosion will be halted. With this shoreline protection in place, the previously mentioned LTSSC can be realized. The advantages of this option are: low cost of construction, low effort, no construction impacts on the slope and public roads will be protected. The disadvantages of this option are: 81 Fishleigh Drive will be within 10 metres of the slope, 83 Fishleigh Drive and 1 Midland Avenue will likely be lost to erosion.

5.2.1.3 Buttress Option 1: Short Buttress with Permanent Toe Protection

Buttress Option 1 (**Figure 6**) would incorporate the installation of a 65 ± metre long buttress extending from 81 Fishleigh Drive to the Midland Avenue road allowance in conjunction with a toe erosion protection structure. The buttress would allow the dwellings at 81 Fishleigh Drive and 83 Fishleigh Drive and infrastructure to remain more than 10 metres back from the LTSSC. The advantages of this option are: lower cost than a full-length buttress; public roads and infrastructure will be protected; 81 Fishleigh Drive and 83 Fishleigh Drive will be further than 10 metres from the slope crest; and there will be minimal disturbance to the natural formation of the bluffs in the area. The disadvantages of this option are: medium-high cost; medium-high effort; and 1 Midland Avenue will not be directly protected.

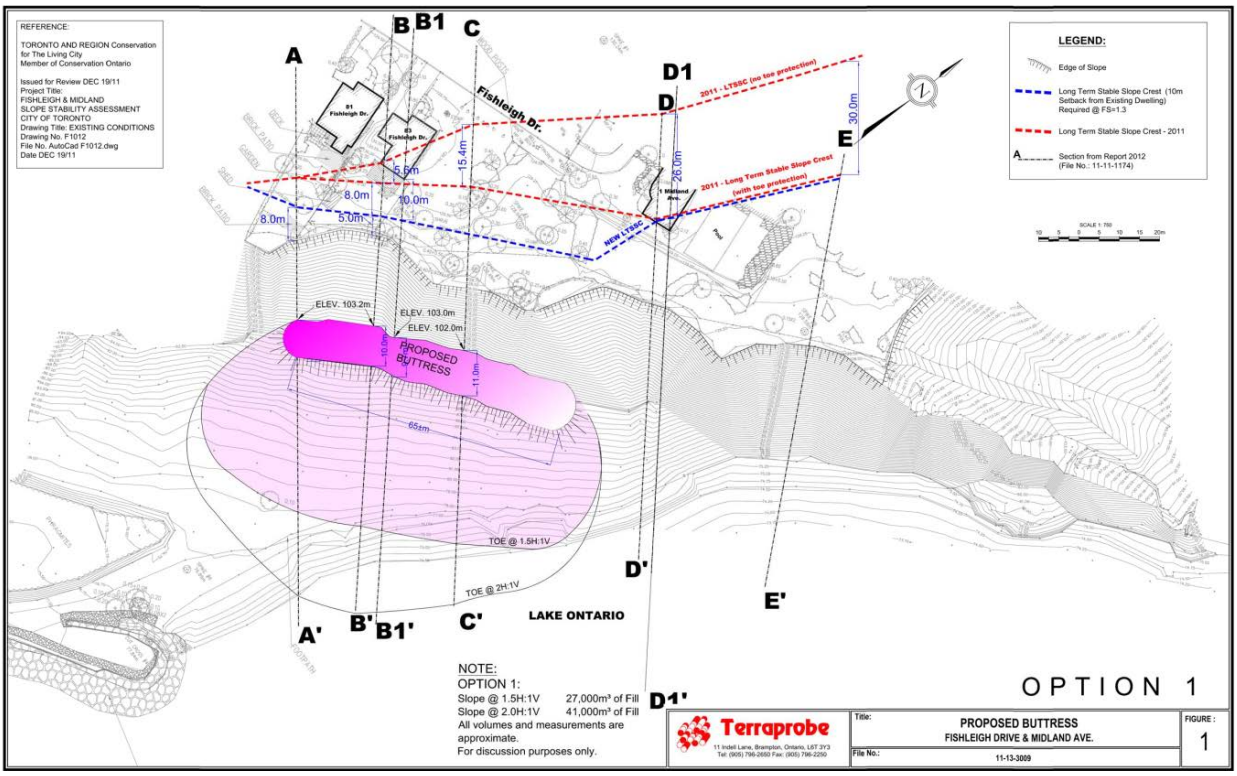


Figure 6. Terraprobe Buttress Option 1: Short Buttress. *Source: Terraprobe, 2014*

5.2.1.4 Buttress Option 2: Full-Length Buttress with Permanent Toe Protection

Buttress Option 2 (**Figure 7**) would incorporate the installation of a 125 ± metre long buttress extending from 81 Fishleigh Drive to 1 Midland Avenue in conjunction with a toe erosion protection structure. The buttress would allow the dwellings at 81 Fishleigh Drive, 83 Fishleigh Drive and 1 Midland Avenue to remain more than 10 metres back from the LTSSC. The advantages of this option are: public roads and infrastructure will be protected; and 81 Fishleigh Drive, 83 Fishleigh Drive and 1 Midland Avenue will be further than 10 metres from the slope crest. The disadvantages of this option are: highest construction cost; highest effort; and greatest disturbance to the natural formation of the bluffs.

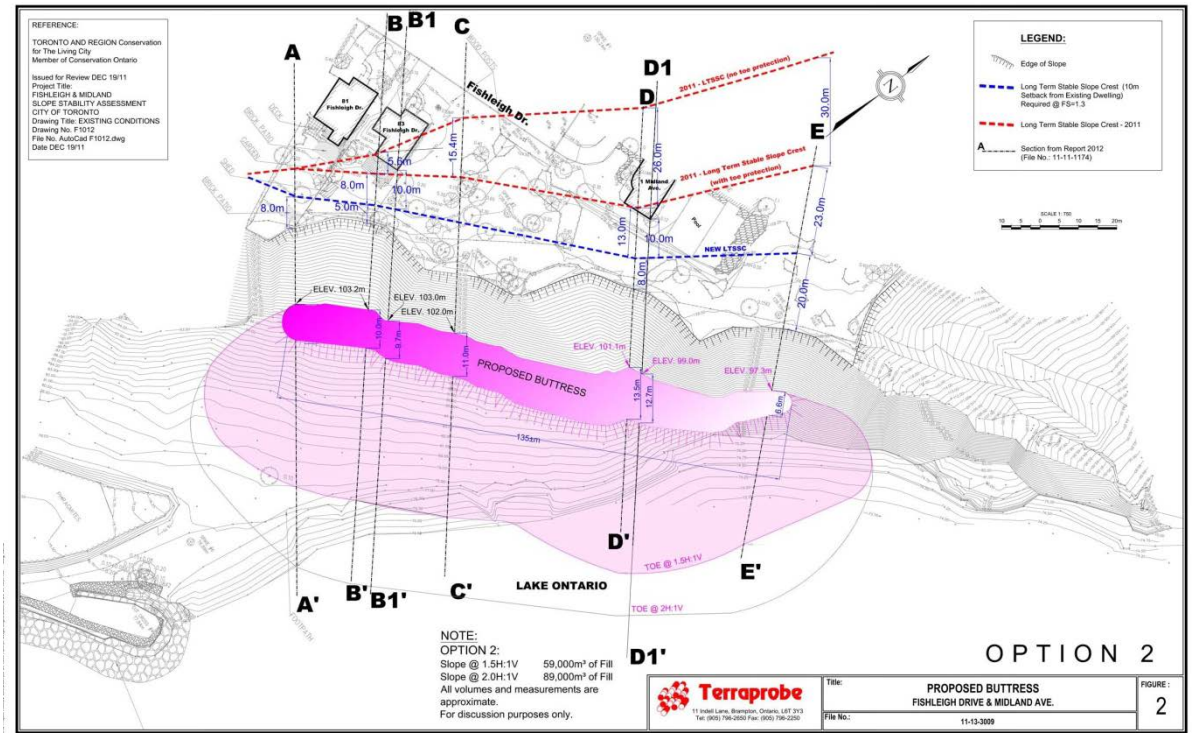


Figure 7. Terraprobe Buttress Option 2: Full-Length Buttress. *Source: Terraprobe, 2014*

5.2.2 Shoreplan Shoreline Protection Alternatives

In 2014, Shoreplan issued a design memorandum focusing on "soft" treatments for shore protection. Based on offshore and nearshore wave conditions, they offered six options involving the creation of a gravel beach between the existing eastern terminus (current "hardpoint") of the revetment structure and the western headland of Bluffer's Park. Four of these options were developed prior to Terraprobe's Buttress Option 1 and Buttress Option 2 discussed above (**Figure 8**), and two were developed to complement Terraprobe's Buttress Option 1 and Buttress Option 2 (**Figure 9** and **Figure 10**, respectively).

5.2.2.1 Beach Alignment under Existing Conditions – 1(a)

Depicted as Figure 1(a) within **Figure 8**, this option proposes the implementation of a gravel beach between the existing revetment terminus and the western headland at Bluffer's Park.

5.2.2.2 Beach Alignment with Perpendicular Revetment Extension – 1(b)

Depicted as Figure 1(b) within **Figure 8**, this option proposes the implementation of a gravel beach between a 60 metre revetment extension perpendicular to shore and the western headland of Bluffer's Park

5.2.2.3 Beach Alignment with Short Parallel Revetment Extension – 1(c)

Depicted as Figure 1(c) within **Figure 8**, this option proposes the implementation of a gravel beach between a 60 metre revetment extension parallel to shore and the western headland of Bluffer's Park

5.2.2.4 Beach Alignment with Long Parallel Revetment Extension – 1(d)

Depicted as Figure 1(d) within **Figure 8** this option proposes the implementation of a gravel beach between a 260 metre revetment extension parallel to shore and the western headland of Bluffer's Park

Figure 8. Shoreplan Options 1a, 1b, 1c, and 1d**.** *Source: Shoreplan, 2014*

5.2.2.5 Beach Alignment with Appropriate Revetment Extension for Terraprobe Option 1

Depicted in **Figure 9**, this option was developed to accompany Terraprobe's Option 1 (short buttress) alternative. This option proposes the implementation of a gravel beach between a 125 metre revetment extension parallel to shore and the western headland of Bluffer's Park.

5.2.2.6 Beach Alignment with Appropriate Revetment Extension for Terraprobe Option 2

Depicted in **Figure 10**, this option was developed to accompany Terraprobe's Option 2 (long buttress) alternative. This option proposes the implementation of a gravel beach between a 360 metre revetment extension parallel to shore and the western headland of Bluffer's Park.

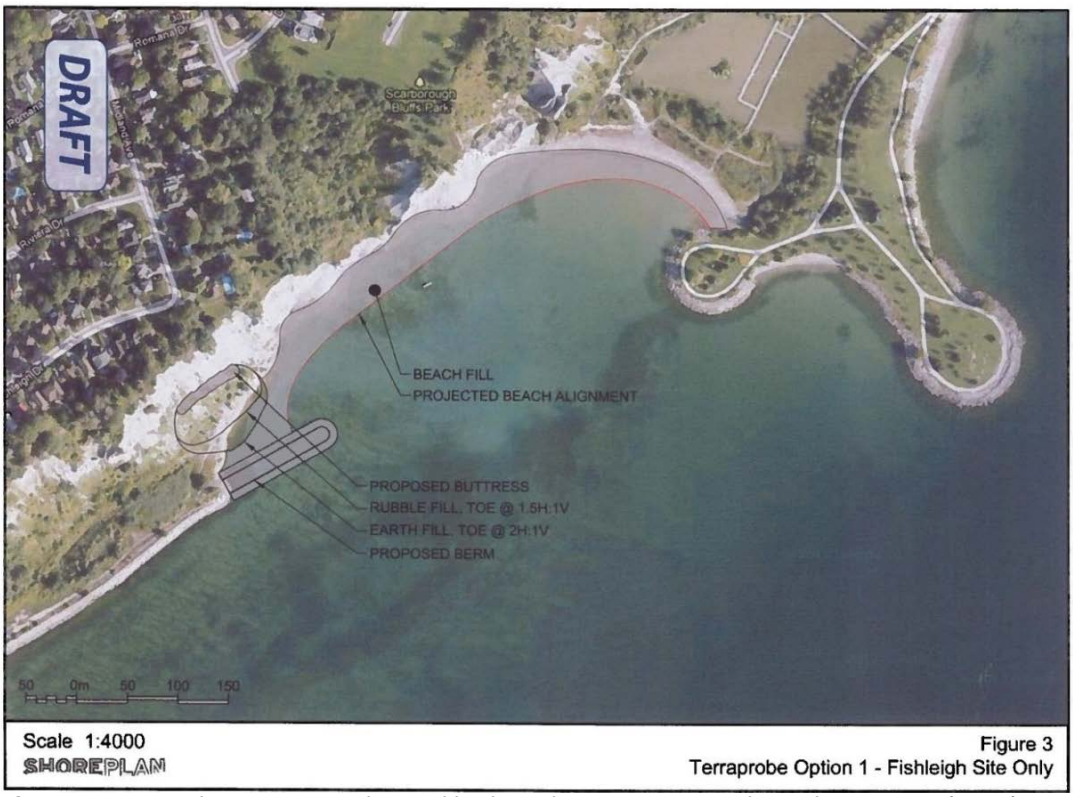


Figure 9. Terraprobe Buttress Option 1 with Shoreplan Revetment and Beach. *Source: Shoreplan, 2014*

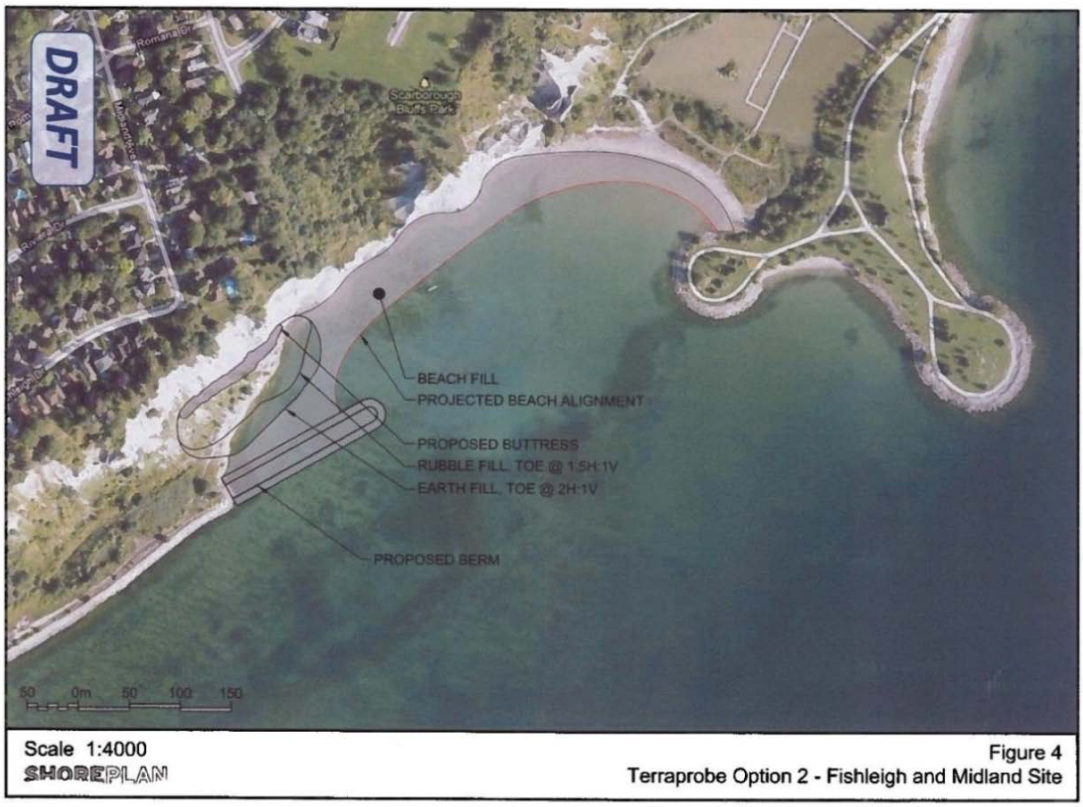


Figure 10. Terraprobe Buttress Option 2 with Shoreplan Revetment and Beach. *Source: Shoreplan, 2014*

5.3 Selection of Preferred Alternative

Acquisition of property, the cost of various forms of stabilization and the effects of these stabilization measures on the natural features of the bluffs were considered in determining the preferred solution. With 1 Midland Avenue already acquired by TRCA and slated for demolition, the option exists to allow this portion of the bluffs to remain untouched and erode naturally, preserving its unique formation. The cost associated with acquiring 81 and 83 Fishleigh Drive is estimated at $2,000,000 and the cost of relocating the at-risk infrastructure is estimated at greater than $2,000,000. The cost of providing protection to 81 and 83 Fishleigh Drive as well as the at-risk infrastructure is estimated at $3,000,000. Based on this analysis, the preferred course of action is to demolish 1 Midland Avenue and allow the bluffs to erode naturally in this area while providing slope stabilization and associated shoreline protection to 81 Fishleigh Drive, 83 Fishleigh Drive and the municipal infrastructure at the road allowance of Fishleigh Drive and Midland Avenue.

Following the determination of this solution, Terraprobe's Option 1 (short buttress) was selected as the preferred alternative for slope stabilization. Shoreplan's revetment structure, developed to protect Terraprobe's Option 1, was subsequently selected as the preferred shoreline protection alternative. Shoreplan's selected alternative has been adjusted to eliminate the gravel beach running from the end of the proposed extension to Bluffer's Park as it was determined that it would negatively impact the ability of the bluffs to erode naturally east of the project area.

5.4 The Preferred Alternative

The draft design developed by Terraprobe and Shoreplan involves a slope buttress to provide protection to the at-risk properties and infrastructure and an extension of the existing revetment structure to protect the buttress. The buttress has been designed at a 2H:1V inclination which allows for maximum flexibility in construction and the use of construction material. The draft designs of the buttress and revetment are provided as **Appendix C**.

6.0 ENVIRONMENTAL IMPLICATIONS OF THE CHANGES

The second requirement of the addendum report is to document the environmental implications of the changes to the original ESR.

Construction of the slope buttress and revetment structure involves bluff excavation, placement of fill on the bluff face, and lake filling. Each of these activities have environmental implications. To address these implications, TRCA has undertaken archaeological assessments to insure no culturally significant resources exist in the project area, flora and fauna surveys to evaluate the possible presence of sensitive or invasive species, and are working with the Department of Fisheries and Oceans Canada (DFO) to assess the level of lake-fill and in-water disturbance.

6.1 Archaeological Assessments

6.1.1 Stage 1 Archaeological Assessment – Terrestrial

A Stage 1 Archaeological Assessment consists of background research and property inspection to determine the potential for archaeological resources in an area. If it is determined that potential exists, the area is subject to more strenuous inspection. A terrestrial Stage 1 Archaeological Assessment was carried out by TRCA's Archaeology Resource Management Services which utilized information about the property's geography, history, previous archaeological fieldwork, and current land conditions to determine the potential of encountering cultural heritage resources. This information indicated that the bluff face below 81 and 83 Fishleigh Drive contains no potential for archaeological resources and is not subject to further assessment (**Figure 11**) (TRCA, 2015).

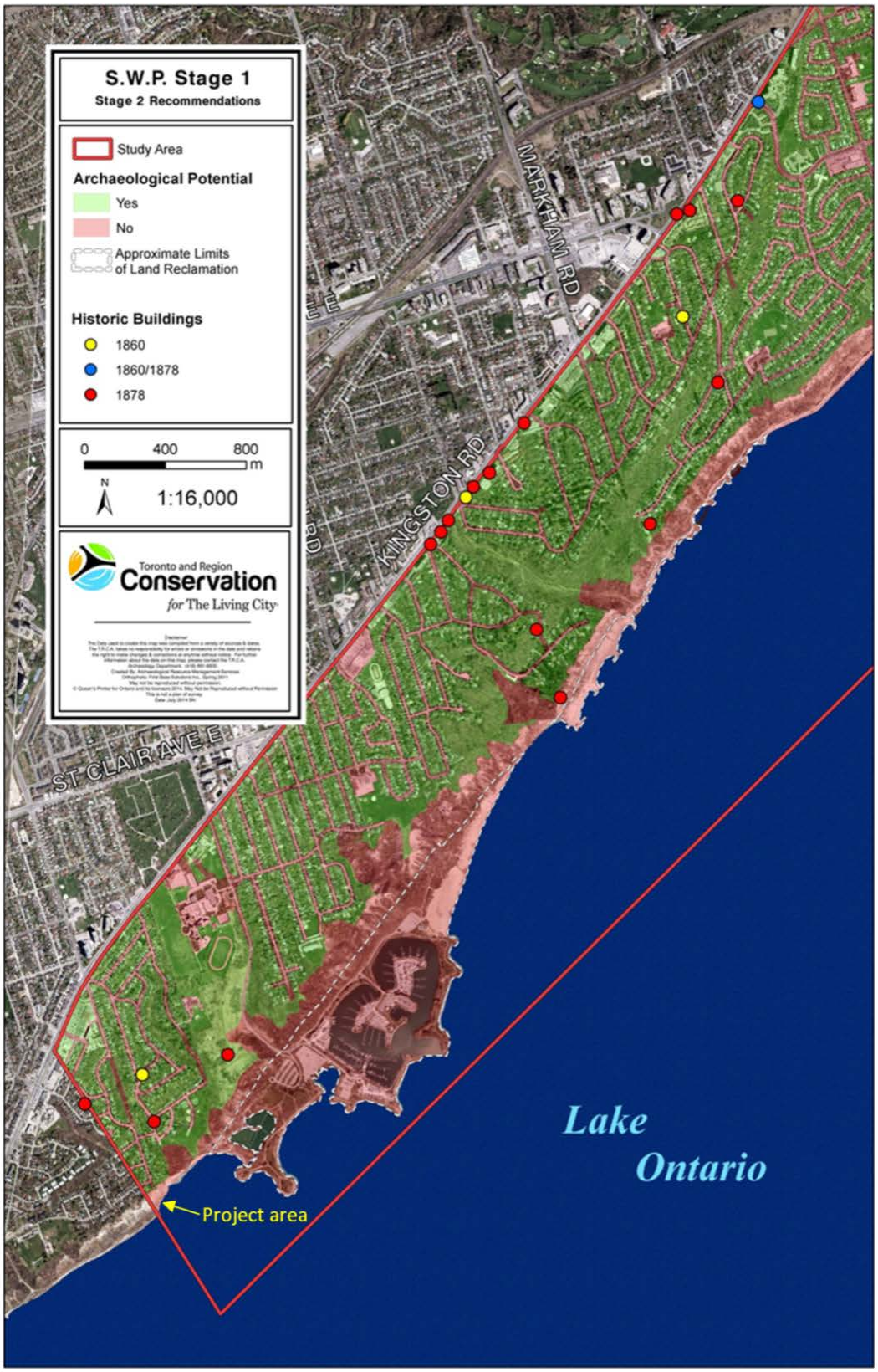


Figure 11. Stage 1 Archaeological Potential Map. Source: *TRCA, 2015.*

6.1.2 Marine Archaeological Assessment

A Marine Archaeological Assessment was carried out by Scarlett Janusas Archaeology Inc. to determine the potential for cultural heritage resources within the scope of the project area. A snorkel study (**Appendix D**) was undertaken and yielded no evidence of significant resources. It was determined that the project area is comprised of eroded material from the bluff face and that any resources would be deeply buried (Scarlett Janusas Archaeology Inc., 2015).

6.2 Biological Environment

6.2.1 Flora

The project area is predominantly bare of vegetation because of the steep inclination and harsh environment. However, there is sparse vegetation on the lower portion of the bluffs within the project area. A botanical inventory to assess the presence of sensitive or significant species was undertaken by TRCA Biologist Gavin Miller on August 10, 2015. His notes are attached as part of **Appendix E**. No species at risk were encountered within the project area. Of note was a patch of Phragmites (*Phragmites australis)* in the western extent of the site. Measures will be taken to insure that these are not spread during construction.

6.2.2 Fauna

The project area provides limited habitat for mammal, bird, and reptile species as the bluff face is too steep. Although the open coast bluff face environment is not conducive to most species, the threatened Bank Swallow (*Riparia riparia)* often utilizes the vertical upper portion of the bluffs as habitat. In **Appendix E** Paul Prior, TRCA Fauna Biologist, explains that Bank Swallows migrate south in late August and return in May of the following year. He elucidates that they are extremely tolerant to disturbance, often nesting in active sandpits and construction sites, and are less likely to be adversely affected by construction if it is currently underway when they return to nest in May. Although the project area does not contain any active Bank Swallow nests, there have been sightings directly east of the project area. The primary colony along the Scarborough Bluffs exists on the eastern portion of Bluffers Park, outside the range of potential disturbance by this project. The construction schedule for erosion control implementation will take into account Bank Swallow life history and habitat requirements.

The open coast environment of the project area does not provide suitable habitat for fish species. There are several limiting factors that affect fish production along Lake Ontario's open coast habitat. These include intense wave action, size of substrates, shoreline erosion, localized water and sediment quality, and water temperature fluctuations. Intense wave action during storm events and high winds impedes the development of aquatic plant communities therefore restricting feeding and cover areas for fish and other aquatic organisms (TRCA, 2004). Although the project area is considered poor aquatic habitat, it will still be impacted by construction.

7.0 MITIGATION OF NEGATIVE ENVIRONMENTAL EFFECTS

The third requirement of the addendum report is to document the methods that will be employed to mitigate the negative *environmental effects* of the changes to the original ESR.

7.1 Limitation of Scope of Project

In an attempt to limit the disturbance to the natural features of the bluffs, TRCA has purchased 1 Midland Avenue and limited the scope of the project to providing protection to only 81 Fishleigh Drive, 83 Fishleigh Drive and municipal infrastructure in the area. Furthermore, although the buttress has been initially designed at a 2H:1V inclination, this footprint constitutes the maximum extent of the structure. Although it is contingent on material availability at the time of construction, TRCA anticipates being able to build the buttress at up to a 1.5H:1V inclination. Through this optimization during construction, the footprint of the buttress and the subsequent impacts to the environment and the natural formation of the bluffs would be reduced.

7.2 Bank Swallow Considerations and Mitigation

Construction of the buttress and associated revetment structure is anticipated to be underway for the return of the Bank Swallows in May of 2016. With construction underway, any Bank Swallows choosing to nest in proximity to the construction will not be unduly disturbed. The apex of the constructed buttress should not reach the height of preferred nesting areas. Despite efforts to schedule construction in a way to limit any potential disturbance to Bank Swallows, the possibility of undue disruption remains. Any unforeseen significant disturbance can be mitigated by the creation of banks at other locations to increase habitat opportunities for this species.

7.3 Fisheries Compensation and Mitigation

TRCA is working in conjunction with Aquatic Habitat Toronto, Ministry of Natural Resources and Forestry, DFO and Waterfront Toronto to determine the extent of destruction and alteration to aquatic habitat and the necessary compensation to mitigate this loss and disturbance. Although TRCA anticipates being able to construct the buttress at up to a 1.5H:1V inclination, compensation measures are being designed to accommodate for the greater loss of a maximum 2H:1V slope buttress. The primary form of compensation will be a surcharged revetment. A surcharged revetment, seen in **Figure 12**, involves the placement of various sizes of substrates to create a raised arrangement that acts as structural habitat enhancing the open coast environment (AHT, 2015). These arrangements will be placed at intervals along the extent of the newly constructed revetment as well as the currently in place revetment.

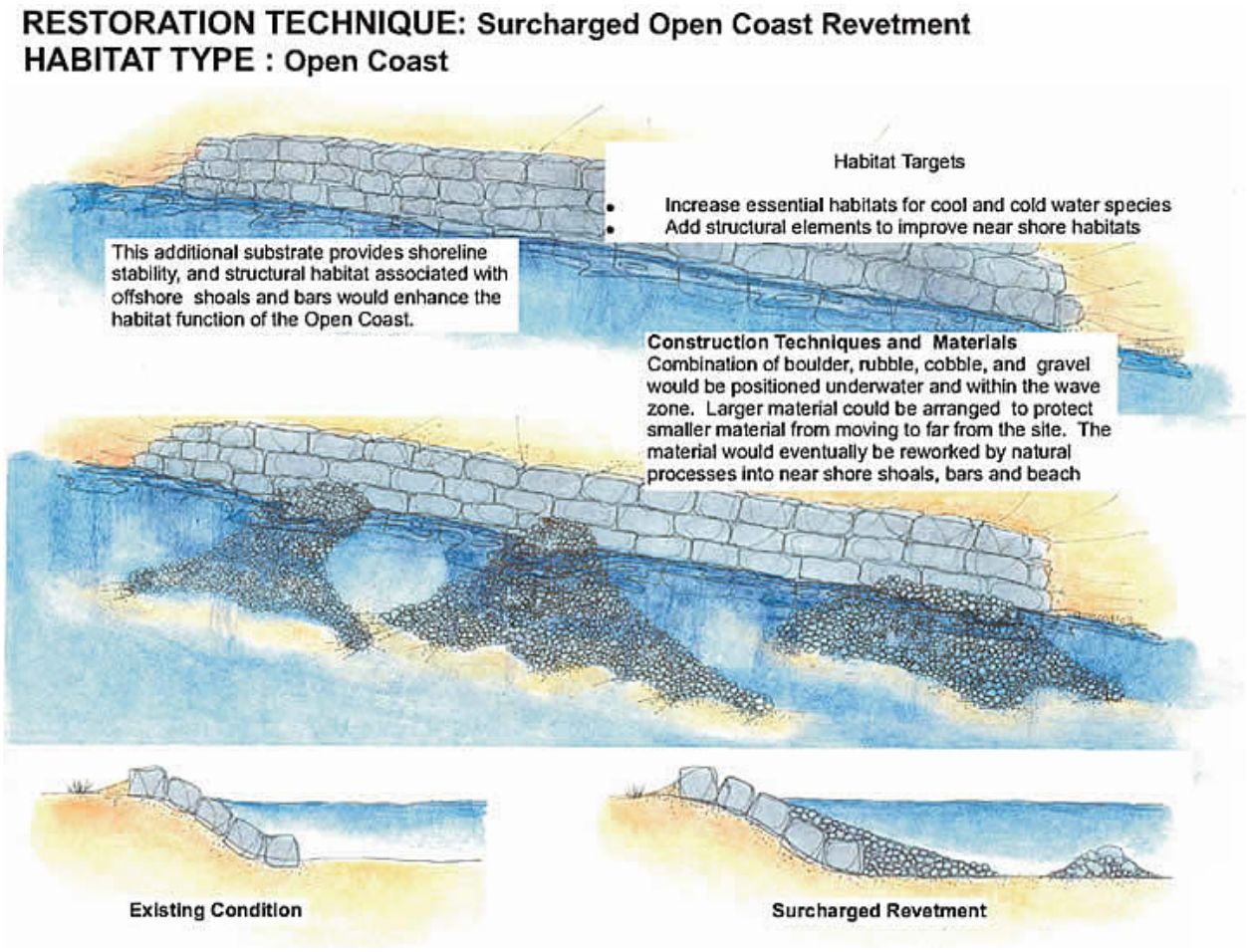


Figure 12. Surcharged Revetment design. *Source: Aquatic Habitat Toronto, 2015.*

8.0 POST CONSTRUCTION MONITORING

A program to monitor the performance of the slope stabilization and shoreline protection works will be undertaken by TRCA's Erosion Management Program staff and consist of frequent visual inspections and formal surveys, with comparisons being made to expected performance. Immediately following construction, site inspections will be conducted annually until a period of five years has passed, after which time inspections will be adjusted to an appropriate frequency depending on structure condition.

If a significant deviation from expected performance is noted during a visual inspection, additional surveys will be undertaken immediately. If a survey detects a significant deviation from expected performance, then maintenance will be planned and implemented such that the slope buttress and revetment structure meet design performance criteria at all times, subject to available funding.

9.0 REFERENCES

Aquatic Habitat Toronto (AHT), *Compendium of Restoration Techniques.* Date accessed: September 25, 2015. (http://www.aquatichabitat.ca/restoration_techniques.shtml)

City of Toronto, 2012. *Fishes of Toronto: A Guide to Their Remarkable World.*

Geocon Inc. 1982. *Erosion Control Study, Stage 2, Scarborough Bluffs*.

Keith Philpott Consulting Ltd. 1987. *Fishleigh Drive Erosion Control Project.*

Terraprobe Limited. 1988. *Geotechnical Investigation Slope Stabilization Study Scarborough Bluffs – Fishleigh Drive.*

Terraprobe Limited. 1993. *Slope Stability Assessment 85 Fishleigh Drive Scarborough, Ontario.*

Terraprobe Limited. 2002. *Slope Stability Risk Assessment Scarborough Bluffs at Fishleigh Drive Toronto, Ontario.*

Terraprobe Limited. 2003. *Geotechnical Engineering Review Slope Stability – 1 & 5 Midland Avenue Scarborough Bluffs, Toronto.*

Terraprobe Limited. 2005. *Geotechnical Review of Slope Stability and Erosion 1 and 5 Midland Avenue and Fishleigh Drive Scarborough Bluffs, Toronto.*

Terraprobe Limited. 2006. *Geotechnical Review of Slope Stability and Erosion Risk Midland Ave and Fishleigh Dr Scarborough Bluffs Toronto, Ontario.*

Terraprobe Inc. 2012. *Geotechnical Review Slope Stability and Erosion 83 Fishleigh Drive Toronto, Ontario.*

Terraprobe Inc. 2014. *Geotechnical Report Erosion Control Project Fishleigh Drive and Midland Avenue Toronto, Ontario.*

Toronto and Region Conservation Authority (TRCA). 1988. *Environmental Study Report. Fishleigh Drive Erosion Control Project.*

Toronto and Region Conservation Authority (TRCA). 2004. *Environmental Study Report. The Guild Inn Shoreline Regeneration Project City of Toronto*.

Toronto and Region Conservation Authority (TRCA). 2011. *The Scarborough Bluffs*.

Toronto and Region Conservation Authority (TRCA). 2015. *Archaeological Assessment (Stage 1) In the City of Toronto Scarborough Waterfront Project.*

W.F. Baird and Associates. 1995. *Coastal Processes Report Fishleigh Drive Erosion Control Project.*

Water and Related Land Management Advisory Board #5/95, October 6 1995.

APPENDIX A
Community Engagement

Fishleigh Drive Erosion Control Project, Addendum

Class Environmental Assessment for Remedial Flood and Erosion Control Projects

Appendix A

Record of Aboriginal Engagement

TRCA Engagement Overview

The TRCA began the process of engagement with Aboriginal communities on March 4, 2015 by sending out the Notice of Intent. Follow up phone calls and emails were made on April 28, 2015 to ensure receipt of the notification package and to answer any questions about the project. The Notice of Filing is scheduled to be circulated on October 7, 2015.

Community Name	Reason for Consultation	Notification #1	Follow Up	Notice of Filing
Beausoleil First Nation	Asserted or established interest	04-Mar-15	28-Apr-15	07-Oct-15
Chippewas of Georgina Island First Nation	Asserted or established interest	04-Mar-15	28-Apr-15	07-Oct-15
Chippewas of Rama-Mnjikaning First Nation	Asserted or established interest	04-Mar-15	28-Apr-15	07-Oct-15
Conseil de la Nation Huronne-Wendat	Asserted or established interest	04-Mar-15	28-Apr-15	07-Oct-15
Coordinator Williams Treaty First Nations	Asserted or established interest	04-Mar-15	28-Apr-15	07-Oct-15
Curve Lake First Nation	Asserted or established interest	04-Mar-15	28-Apr-15	07-Oct-15
Haudenosaunee Confederacy Chiefs Council, Haudenosaunee Development Institute	Asserted or established interest	04-Mar-15	28-Apr-15	07-Oct-15
Hiawatha First Nation	Asserted or established interest	04-Mar-15	28-Apr-15	07-Oct-15
Kawartha Nishnawbe First Nation	Asserted or established interest	04-Mar-15	28-Apr-15	07-Oct-15
Metis Nation of Ontario	Asserted or established interest	04-Mar-15	28-Apr-15	07-Oct-15
Mississaugas of Alderville First Nation	Asserted or established interest	04-Mar-15	28-Apr-15	07-Oct-15
Mississaugas of Scugog Island First Nation	Asserted or established interest	04-Mar-15	28-Apr-15	07-Oct-15
Mississaugas of the New Credit First Nation	Asserted or established interest	04-Mar-15	28-Apr-15	07-Oct-15
Six Nations of the Grand River Territory	Asserted or established interest	04-Mar-15	28-Apr-15	07-Oct-15

TRCA Correspondence Overview

Notification #1: Notification of Commencement
Includes letter to community, study area maps, and a brief overview of the project.
Sent: March 04, 2015

Notification #2: Notice of Filing
Notice of Filing will be circulated at a future date.
To be Sent: October 7, 2015

Additional correspondence between TRCA and Aboriginal Communities
Includes additional correspondence between TRCA and Aboriginal communities, organized by community.

TRCA
Fishleigh Drive Erosion Control Project, Addendum
Notice of Intent

Courier delivery and email: March 4, 2015

5 Shoreham Drive
Downsview, ON
M3N 1S4

Toronto and Region Conservation for The Living City

March 4, 2015

Dear _____,

Re: Fishleigh Drive Erosion Control Project, Addendum – Notice of Intent

Toronto and Region Conservation Authority (TRCA) is initiating an Environmental Assessment (EA) to address a proposed extension of erosion control along the base of the Scarborough Bluffs behind 81 and 83 Fishleigh Drive in the City of Toronto (**Map 1**). TRCA invites you to participate in this study, which is subject to approval through the *Class Environmental Assessment for Remedial Flood and Erosion Control Projects* addendum process.

In 1988, the MTRCA produced an Environmental Study Report (ESR) under the Class Environmental Assessment (Class EA) for Water Management Structures (now Remedial Flood and Erosion Control Projects). This report, entitled *Fishleigh Drive Erosion Control Project*, recommended erosion control measures aimed at slowing toe erosion and realizing self-stabilization of the bluffs. While the Class EA was approved, erosion control measures were not completed for 81 and 83 Fishleigh Drive, and this unprotected area is now experiencing significant erosion and putting three houses and an intersection in jeopardy. The objective of this addendum is to extend the existing shoreline protection, at the base of Fishleigh Drive along the Scarborough Bluffs, to provide erosion control to the exposed areas below 81 Fishleigh Drive and 83 Fishleigh Drive. The proposed extension limits lay within those allowed for in the initial Class EA.

To assist you with determining your level of interest in this project, please find attached below a Notice of Intent package that includes a more detailed project history along with two maps of the study area. If you have any comments or questions about the project, or wish to be involved in this study, please do not hesitate to contact me by phone at (416) 661-6600 Ext. 5270 or by email mkenedy@trca.on.ca. We would appreciate your response by Wednesday April 15, 2015.

Sincerely,

Margie Kenedy
Archaeology Resource Management Services
Restoration Services, Toronto and Region Conservation Authority

Enclosed (1) Notice of Intent Package
CC:

FISHLEIGH DRIVE EROSION CONTROL PROJECT, ADDENDUM
NOTICE OF INTENT INFORMATION PACKAGE

CLASS ENVIRONMENTAL ASSESSMENT FOR
REMEDIAL FLOOD AND EROSION CONTROL PROJECTS

MARCH 4, 2015

NOTICE OF INTENT

FISHLEIGH DRIVE EROSION CONTROL PROJECT ADDENDUM

Toronto and Region Conservation Authority (TRCA) has commenced a study regarding the extension of erosion control along the base of the Scarborough Bluffs behind 81 and 83 Fishleigh Drive.

TRCA invites you to participate in this study, which is subject to approval through the *Class Environmental Assessment for Remedial Flood and Erosion Control Projects* addendum process.

If you wish to be involved in this study, or to receive further information, please contact:

Jet Taylor
Environmental Technician,
Environmental Engineering Projects
Toronto and Region Conservation Authority
1 Eastville Avenue, Toronto M1M 2N5
Phone: (416) 392-9690
Fax: (416) 392-9726
Email: jtaylor@trca.on.ca

Subject to comments received as a result of this study and the receipt of necessary approvals and funding, TRCA intends to proceed with the construction of this project.

Toronto and Region Conservation
for The Living City®

PROJECT HISTORY

In the 1980's, it became evident that remedial work would need to be initiated to address erosion and sediment loss along portions of the Scarborough Bluffs. As part of the TRCA Shoreline Management Program, ambitious projects were initiated to afford public safety through slope stabilization work, while providing an accessible and interactive waterfront experience.

In 1987, Keith Phillpott Consulting Limited conducted a study to determine the various options available for shoreline protection of Fishleigh Drive. Their suggested option was an armourstone revetment along the length of the shoreline allowing for the eventual self-stabilization of the slope.

In 1988, Terraprobe Limited undertook a geotechnical and subsurface investigation of the section of bluffs along Fishleigh Drive. Based on historical monitoring, they determined the average yearly slope regression rate to be between 0.3 to 0.8 m/year. Based on computation methods at the time of the study, the stable slope inclination was found to be 1.5 Horizontal (H): 1.0 Vertical (V). Terraprobe determined that long term slope stability could be achieved by providing protection against toe erosion. Assuming no further toe erosion, they predicted a long term stable slope crest would be achieved within 10 to 30 years.

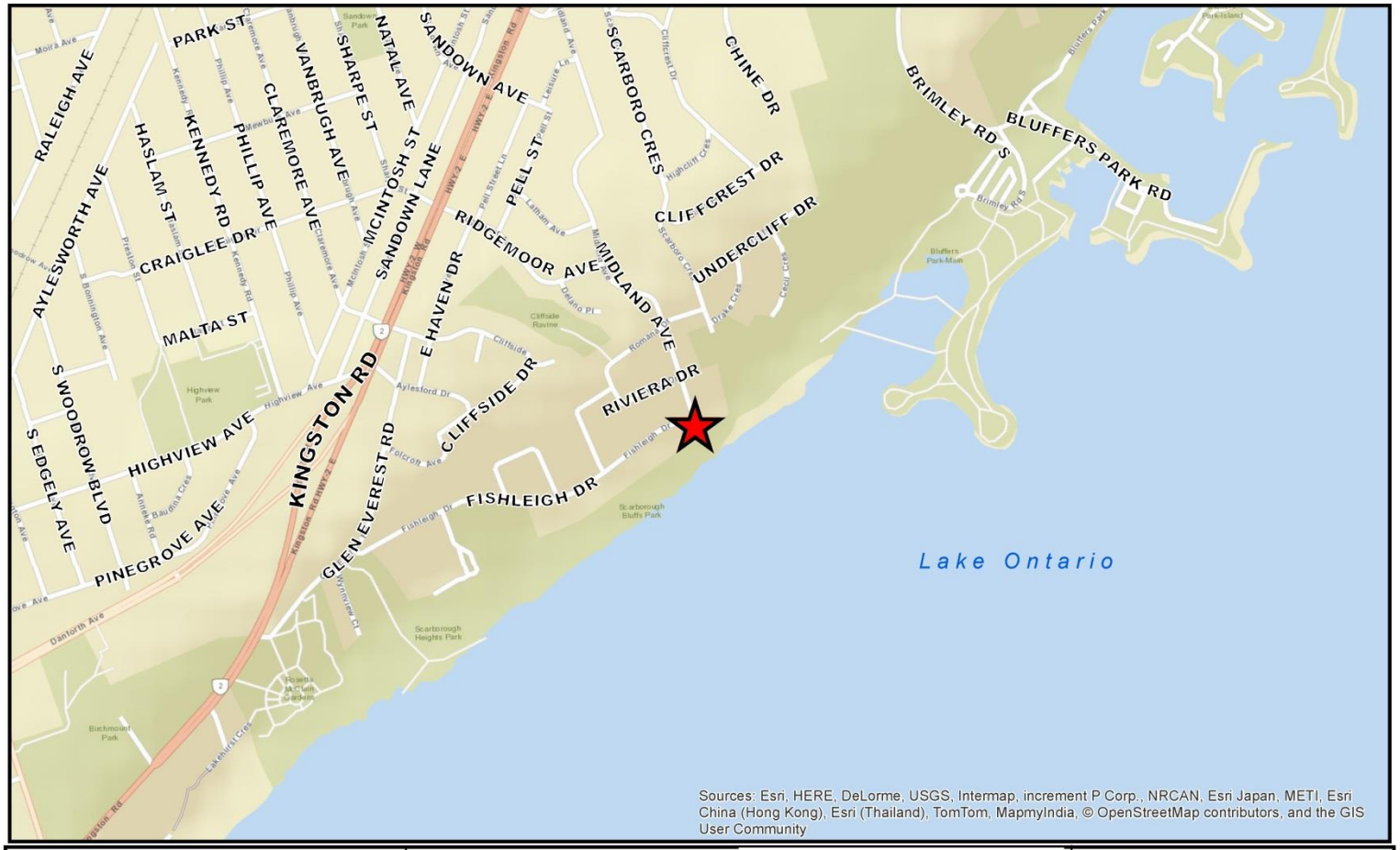
In 1988, the MTRCA produced an Environmental Study Report (ESR) under the Class Environmental Assessment (Class EA) for Water Management Structures (now Remedial Flood and Erosion Control Projects). This report, entitled *Fishleigh Drive Erosion Control Project*, recommended offshore fill and armourstone revetment approximately 560m long from 33-85 Fishleigh Drive and 1 Midland Avenue to stop toe erosion and realize self-stabilization of the bluffs. This Class EA was approved.

In 1995, in order to protect an Environmentally Significant Area (ESA) of the bluffs known as the "Needles", the easterly terminus point for the revetment structure was reassessed. W.F. Baird & Associates was retained to recommend various endpoint options.

In October of 1995, the Water and Related Land Management Advisory Board carried a motion for the Authority to commence with option C-3 (termination below 83 Fishleigh Drive) and "to investigate further options to ensure the long term safety and protection of Nos. 1 and 5 Midland Avenue and Nos. 81 and 83 Fishleigh Drive".

Presently, the area left unprotected is experiencing significant erosion and putting three houses and an intersection in jeopardy (**Maps 1** and **2**). Based on suggestions from a 2013 study by Terraprobe Limited and Shoreplan Engineering Limited, an extension of the revetment structure, along with a slope buttress, to the extent allowed for in the 1988 ESR is being sought.

MAP 1



Fishleigh Drive Erosion Control

Study Area Location

0 170 340 680 m

N

Project Area

Toronto and Region Conservation for The Living City

MAP 2

Fishleigh Drive Erosion Control

Study Area

0 37.5 75 150 m

N

Affected Properties

Proposed Revetment Extension Limits

Toronto and Region Conservation for The Living City

Disclaimer:
The Data used to create this map was compiled from a variety of sources & dates.
The T.R.C.A. takes no responsibility for errors or omissions in the data and retains the right to make changes & corrections at anytime without notice. For further information about the data on this map, please contact the T.R.C.A. Archaeology Department. (416) 661-6600.
Created By: Archaeological Resource Management Services
Orthophoto: First Base Solutions Inc., Spring 2013

This is not a plan of survey.
Date: Fenruary 2015, BN

TRCA
Fishleigh Drive Erosion Control Project, Addendum
Notice of Filing

Courier delivery and email: October 7, 2015

5 Shoreham Drive
Downsview, ON
M3N 1S4

Toronto and Region Conservation for The Living City

October 7, 2015

Dear _____,

Re: Fishleigh Drive Erosion Control Project, Addendum – Notice of Filing

We would like to update you on the progress of the Fishleigh Drive Erosion Control Project Addendum. The Environmental Assessment (EA) seeks to address a proposed extension of erosion control along the base of the Scarborough Bluffs in the City of Toronto. This Environmental Assessment is subject to approval through the *Class Environmental Assessment for Remedial Flood and Erosion Control Projects* addendum process.

In 1988, the MTRCA produced an Environmental Study Report (ESR) under the Class Environmental Assessment (Class EA) for Water Management Structures (now Remedial Flood and Erosion Control Projects). This report, entitled *Fishleigh Drive Erosion Control Project*, recommended erosion control measures aimed at slowing toe erosion and realizing self-stabilization of the bluffs. While the Class EA was approved, erosion control measures were not completed for 81 and 83 Fishleigh Drive, and this unprotected area is now experiencing significant erosion and putting three houses and an intersection in jeopardy. The objective of this addendum is to extend the existing shoreline protection, at the base of Fishleigh Drive along the Scarborough Bluffs, to provide erosion control to the exposed areas below 81 Fishleigh Drive and 83 Fishleigh Drive. The proposed extension limits lay within those allowed for in the initial Class EA.

TRCA has completed the Environmental Study Report for the EA Addendum. Please find attached the Notice of Filing. If you have any questions or would like more detailed information about the project, please do not hesitate to contact me by phone at (416) 661-6600 Ext. 5270 or by email mkenedy@trca.on.ca.

Sincerely,

Margie Kenedy
Archaeology Resource Management Services
Restoration Services, Toronto and Region Conservation Authority

Enclosed (1) Notice of Filing
CC:

NOTICE OF FILING

FISHLEIGH DRIVE
EROSION CONTROL PROJECT ADDENDUM

Toronto and Region Conservation Authority (TRCA) has now completed an Addendum to the Fishleigh Drive Erosion Control Project Environmental Study Report. The Addendum Report has been prepared in accordance with Section 3.8 of Conservation Ontario's *Class Environmental Assessment for Remedial Flood and Erosion Control Projects (2002 – amended 2013)*.

As described in the Addendum Report, the preferred solution determined through the Class Environmental Assessment process is the implementation of slope stabilization and shoreline protection measures below 81 and 83 Fishleigh Drive to provide erosion control to these properties and the infrastructure at the Fishleigh Drive and Midland Avenue road allowance.

The report is available for review electronically upon request. Hard copies are also available at the following locations:

Cliffcrest Library
3017 Kingston Road
Tues/Thurs 12:30 pm to 8:30 pm
Wed/Fri 10:00 am to 6:00 pm
Sat 9:00am to 5:00 pm

Taylor Memorial Library
1440 Kingston Road
Tues/Thurs 12:30 pm to 8:30 pm
Wed/Fri 10:00 am to 6:00 pm
Sat 9:00am to 5:00 pm

TRCA Waterfront Office
1 Eastville Avenue
Mon - Fri 8:00 am to 4:00 pm

Written comments must be received by **October 23, 2015**:

Patricia Newland, Project Manager II
Toronto and Region Conservation Authority
1 Eastville Avenue
Toronto, Ontario M1M 2N5
Phone: (416) 392-9690
Fax: (416) 392-9726
Email: pnewland@trca.on.ca

Subject to comments received as a result of this study and the receipt of necessary approvals and funding, TRCA intends to proceed with the construction of this project. If any individual feels that serious environmental concerns remain unresolved after consulting with TRCA staff, it is their right to request that the project be subject to a Part II order by the Minister of the Environment. Part II Order requests must be received by the Minister, with a copy to TRCA, at the following address by **October 23, 2015**:

The Honourable Glen Murray
Minister of the Environment and Climate Change
11th Floor, Ferguson Block
77 Wellesley Street West
Toronto ON M7A 2T5

Notice issued October 7, 2015

Toronto and Region Conservation
for The Living City®

TRCA
Fishleigh Drive Erosion Control Project, Addendum

Additional Correspondence
Between TRCA and Aboriginal Communities

Correspondence with: Beausoleil First Nation

Community Contacted Mailing Address	Beausoleil First Nation Chief Roland Monague, Mike Smith, Dave Sylvester, Dana Monague 1 0-Gema Miikaan, Christian Island, ON. L9M 0A9

TRCA Correspondence Date Contacted Via Comments	04-Mar-15 Chief Roland Monague, Mike Smith, Dave Sylvester, Dana Monague Courier, Email Notice of Intent

TRCA Correspondence Date – Follow Up Contacted Via Comments	28-Apr-15 Mike Smith Phone Mike will be in touch after reviewing information with colleagues

Fishleigh Dr Erosion Control EA - Notice of Intent

Amanda Parks to: council 03/04/2015 11:16 AM

Cc: msmith, Dave Sylvester, Dana Monague

Hello,

Please be advised that Toronto and Region Conservation Authority is initiating an Environmental Assessment (EA) to address a proposed extension of erosion control along the base of the Scarborough Bluffs behind 81 and 83 Fishleigh Drive in the City of Toronto. TRCA invites you to participate in this study, which is subject to approval through the *Class Environmental Assessment for Remedial Flood and Erosion Control Projects* addendum process.

Please find attached below a letter and a Notice of Intent information package. If you have any comments or questions about the project, or wish to be involved in this study, please do not hesitate to contact **Margie Kenedy** by phone at (416) 661-6600 Ext. 5270 or by email at mkenedy@trca.on.ca.

Thank you,
Amanda

Fishleigh Dr_2015 03 04_ NoI_Beausoleil.pdf Fishleigh Dr_2015 03 04_NoI Package.pdf

Amanda Parks, B.Sc. |Tech Assistant, Aboriginal Engagement| Archaeology Resource Management Services |
Toronto and Region Conservation Authority | 5 Shoreham Drive, Downsview, ON, M3N 1S4|
☎ 416.661.6600 x6417 | ✉aparks@trca.on.ca | www.trca.on.ca/archaeology|

Correspondence with: Chippewas of Georgina Island First Nation

Community Contacted Mailing Address	Chippewas of Georgina Island First Nation Chief Donna Big Canoe, Sheri Taylor P.O. Box 12, RR#2, Sutton West, ON. L0E 1R0

TRCA Correspondence Date Contacted Via Comments	04-Mar-15 Chief Donna Big Canoe, Sheri Taylor Courier, Email Notice of Intent

TRCA Correspondence Date – Follow Up Contacted Via Comments	28-Apr-15 Sheri Taylor Phone, Email Left voicemail and follow-up email, no response

Fishleigh Dr Erosion Control EA - Notice of Intent

Amanda Parks to: dbigcanoe 03/04/2015 11:15 AM

Cc: "Sheri Taylor"

Hello,

Please be advised that Toronto and Region Conservation Authority is initiating an Environmental Assessment (EA) to address a proposed extension of erosion control along the base of the Scarborough Bluffs behind 81 and 83 Fishleigh Drive in the City of Toronto. TRCA invites you to participate in this study, which is subject to approval through the *Class Environmental Assessment for Remedial Flood and Erosion Control Projects* addendum process.

Please find attached below a letter and a Notice of Intent information package. If you have any comments or questions about the project, or wish to be involved in this study, please do not hesitate to contact **Margie Kenedy** by phone at (416) 661-6600 Ext. 5270 or by email at mkenedy@trca.on.ca.

Thank you,
Amanda

Fishleigh Dr_2015 03 04_ NoI_Georgina Island.pdf Fishleigh Dr_2015 03 04_NoI Package.pdf

Amanda Parks, B.Sc. |Tech Assistant, Aboriginal Engagement| Archaeology Resource Management Services |
Toronto and Region Conservation Authority | 5 Shoreham Drive, Downsview, ON, M3N 1S4|
☎ 416.661.6600 x6417 | ✉aparks@trca.on.ca | www.trca.on.ca/archaeology|

Archive:

{In Archive} TRCA EAs - Follow Up

Amanda Parks to: Sheri Taylor 04/28/2015 03:34 PM

This message is being viewed in an archive.

Hello Sheri,

As per my voicemail, I am writing to follow up with you regarding two EA notifications recently circulated to you and the Chippewas of Georgina Island First Nation. I would like to confirm you have received the notifications, and to see if you have any questions about either project that I can answer.

Scarborough Waterfront Project EA
A notification was circulated by my colleague, Eric, on April 1st regarding the notice of submission for the Draft Terms of Reference for the Scarborough Waterfront Project. The date by which you can submit comments is Wednesday May 6th, so please feel free to give me a call if you have any questions or comments.

Fishleigh Drive Erosion Control EA
The notice of intent was circulated on March 4th regarding the initiation of an addendum process for an EA completed several years ago. This project deals with erosion along the Scarborough Bluffs. Again, if you have any questions about the project or would like additional information, just let me know.

I can be reached via email (aparks@trca.on.ca) or by phone at 416-661-6600 x 6417.

Thank you,
Amanda

Amanda Parks, B.Sc. |Tech Assistant, Aboriginal Engagement| Archaeology Resource Management Services |
Toronto and Region Conservation Authority | 5 Shoreham Drive, Downsview, ON, M3N 1S4|
☎ 416.661.6600 x6417 | ✉aparks@trca.on.ca | www.trca.on.ca/archaeology|

Correspondence with: Chippewas of Rama-Mnjikaning First Nation

Community Contacted Mailing Address	Chippewas of Rama-Mnjikaning First Nation Chief Rodney Noganash 5884 Rama Road, Suite 200, Rama, ON. L0K 1T0

TRCA Correspondence Date Contacted Via Comments	04-Mar-15 Chief Rodney Noganash (copied on Williams Treaty Coordinator letter) Courier, Email Notice of Intent

TRCA Correspondence Date – Follow Up Contacted	28-Apr-15 n/a

Fishleigh Dr Erosion Control EA - Notice of Intent

Amanda Parks to: k.a.sandy-mckenzie 03/04/2015 11:15 AM
Cc: chief

Hello,

Please be advised that Toronto and Region Conservation Authority is initiating an Environmental Assessment (EA) to address a proposed extension of erosion control along the base of the Scarborough Bluffs behind 81 and 83 Fishleigh Drive in the City of Toronto. TRCA invites you to participate in this study, which is subject to approval through the *Class Environmental Assessment for Remedial Flood and Erosion Control Projects* addendum process.

Please find attached below a letter and a Notice of Intent information package. If you have any comments or questions about the project, or wish to be involved in this study, please do not hesitate to contact **Margie Kenedy** by phone at (416) 661-6600 Ext. 5270 or by email at mkenedy@trca.on.ca.

Thank you,
Amanda

Fishleigh Dr_2015 03 04_ NoI_Sandy McKenzie.pdf Fishleigh Dr_2015 03 04_NoI Package.pdf

Amanda Parks, B.Sc. |Tech Assistant, Aboriginal Engagement| Archaeology Resource Management Services |
Toronto and Region Conservation Authority | 5 Shoreham Drive, Downsview, ON, M3N 1S4|
☎ 416.661.6600 x6417 | ✉aparks@trca.on.ca | www.trca.on.ca/archaeology|

Archive:

{In Archive} Re: TRCA EAs - Follow Up

Karry Sandy McKenzie to: Amanda Parks 04/28/2015 03:13 PM

Cc: "chief@ramafirstnation.ca"

This message is being viewed in an archive.

I confirm receipt, thank you.

Karry Sandy McKenzie
Please disregard formatting, spelling or grammatical issues - Sent from iPhone.

On Apr 28, 2015, at 3:12 PM, Amanda Parks <AParks@TRCA.on.ca> wrote:

> Hello Ms. Sandy-McKenzie,
>
> As per my voicemail, I am writing to follow up with you regarding two EA notifications recently circulated to you and the Williams Treaty First Nations. I would like to confirm you have received the notifications, and to see if you have any questions about either project that I can answer.
>
> *Scarborough Waterfront Project EA*
> A notification was circulated by my colleague, Eric, on April 1st regarding the notice of submission for the Draft Terms of Reference for the Scarborough Waterfront Project. The date by which you can submit comments is Wednesday May 6th, so please feel free to give me a call if you have any questions or comments.
>
> *Fishleigh Drive Erosion Control EA*
> The notice of intent was circulated on March 4th regarding the initiation of an addendum process for an EA completed several years ago. This project deals with erosion along the Scarborough Bluffs. Again, if you have any questions about the project or would like additional information, just let me know.
>
> I can be reached via email (aparks@trca.on.ca) or by phone at 416-661-6600 x 6417.
>
> Thank you,
> Amanda
>
> **Amanda Parks**, B.Sc. |Tech Assistant, Aboriginal Engagement| Archaeology Resource Management Services |
> **Toronto and Region Conservation Authority** | 5 Shoreham Drive, Downsview, ON, M3N 1S4|
> ☎ 416.661.6600 x6417 | ✉aparks@trca.on.ca | www.trca.on.ca/archaeology|
>
>

Correspondence with: Conseil de la Nation Huronne-Wendat

Community Contacted Mailing Address	Huronne-Wendat Nation Chief Line Gros-Louis, Tina Durand, Mélanie Vincent 255 Place Chef Michel Laveau, Wendake (Quebec) QC GOA4VO

TRCA Correspondence Date Contacted Via Comments	04-Mar-15 Chief Line Gros-Louis, Tina Durand, Mélanie Vincent Courier, Email Notice of Intent

TRCA Correspondence Date – Follow Up Contacted Via Comments	28-Apr-15 Tina Durand, Mélanie Vincent Phone, Email Left Voicemail, Follow-up Email

Huronne-Wendat Correspondence Date Contacted Via Comments	28-Apr-15 Amanda Parks Email Confirmed receipt of information, will contact if concerns

Fishleigh Dr Erosion Control EA - Notice of Intent

Amanda Parks to: melanievincent21 03/04/2015 11:15 AM
Cc: tina.durand

Hello,

Please be advised that Toronto and Region Conservation Authority is initiating an Environmental Assessment (EA) to address a proposed extension of erosion control along the base of the Scarborough Bluffs behind 81 and 83 Fishleigh Drive in the City of Toronto. TRCA invites you to participate in this study, which is subject to approval through the *Class Environmental Assessment for Remedial Flood and Erosion Control Projects* addendum process.

Please find attached below a letter and a Notice of Intent information package. If you have any comments or questions about the project, or wish to be involved in this study, please do not hesitate to contact **Margie Kenedy** by phone at (416) 661-6600 Ext. 5270 or by email at mkenedy@trca.on.ca.

Thank you,
Amanda

Fishleigh Dr_2015 03 04_ NoI_HWN.pdf Fishleigh Dr_2015 03 04_NoI Package.pdf

Amanda Parks, B.Sc. |Tech Assistant, Aboriginal Engagement| Archaeology Resource Management Services |
Toronto and Region Conservation Authority | 5 Shoreham Drive, Downsview, ON, M3N 1S4|
☎ 416.661.6600 x6417 | ✉aparks@trca.on.ca | www.trca.on.ca/archaeology|

Archive:

{In Archive} TRCA EAs - Follow Up

Amanda Parks to: melanievincent21 04/28/2015 01:06 PM

This message is being viewed in an archive.

Hi Mélanie,

I was just hoping to confirm with you your receipt of a two EA notifications TRCA has sent your way recently, and see if you have any questions about the projects that I can answer.

Scarborough Waterfront Project EA
A notification was circulated by my colleague, Eric, on April 1st regarding the notice of submission for the draft Terms of Reference for the Scarborough Waterfront Project. The date by which you can submit comments is Wednesday May 6th, so please feel free to give me a call if you have any questions.

Fishleigh Drive Erosion Control EA
The notice of intent was circulated on March 4th regarding the initiation of an addendum process for an EA completed several years ago. This project deals with erosion along the Scarborough Bluffs. Again, if you have any questions about the project or would like additional information, just let me know.

Thanks Mélanie!
Amanda

Amanda Parks, B.Sc. |Tech Assistant, Aboriginal Engagement| Archaeology Resource Management Services |
Toronto and Region Conservation Authority | 5 Shoreham Drive, Downsview, ON, M3N 1S4|
☎ 416.661.6600 x6417 | ✉aparks@trca.on.ca | www.trca.on.ca/archaeology|

Archive:

{In Archive} Re: TRCA EAs - Follow Up

Melanie to: Amanda Parks 04/28/2015 05:37 PM

This message is being viewed in an archive.

Hi Amanda, I will get back to you and I thank you for your patience!!
Melanie

Envoyé de mon iPad

Le 2015-04-28 à 13:06, Amanda Parks <AParks@TRCA.on.ca> a écrit :

> Hi Mélanie,
>
> I was just hoping to confirm with you your receipt of a two EA notifications TRCA has sent your way recently, and see if you have any questions about the projects that I can answer.
>
> *Scarborough Waterfront Project EA*
> A notification was circulated by my colleague, Eric, on April 1st regarding the notice of submission for the draft Terms of Reference for the Scarborough Waterfront Project. The date by which you can submit comments is Wednesday May 6th, so please feel free to give me a call if you have any questions.
>
> *Fishleigh Drive Erosion Control EA*
> The notice of intent was circulated on March 4th regarding the initiation of an addendum process for an EA completed several years ago. This project deals with erosion along the Scarborough Bluffs. Again, if you have any questions about the project or would like additional information, just let me know.
>
> Thanks Mélanie!
> Amanda

Amanda Parks, B.Sc. |Tech Assistant, Aboriginal Engagement| Archaeology Resource Management Services |
Toronto and Region Conservation Authority | 5 Shoreham Drive, Downsview, ON, M3N 1S4|
☎ 416.661.6600 x6417 | ✉aparks@trca.on.ca | www.trca.on.ca/archaeology|

Correspondence with: Coordinator of the Williams Treaty First Nations

Community Contacted Mailing Address	Coordinator Williams Treaty First Nations Ms. Karry Sandy-McKenzie 8 Creswick Court, Barrie, ON L4M 2J7

TRCA Correspondence Date Contacted Via Comments	04-Mar-15 Ms. Karry Sandy-McKenzie Courier, Email Notice of Intent

TRCA Correspondence Date – Follow Up Contacted Via Comments	28-Apr-15 Ms. Karry Sandy-McKenzie Phone, Email Left voicemail, follow-up email

WTC Follow Up Date Contacted Via Comments	28-Apr-15 Amanda Parks Phone Confirmed receipt of package

Fishleigh Dr Erosion Control EA - Notice of Intent

Amanda Parks to: k.a.sandy-mckenzie 03/04/2015 11:15 AM
Cc: chief

Hello,

Please be advised that Toronto and Region Conservation Authority is initiating an Environmental Assessment (EA) to address a proposed extension of erosion control along the base of the Scarborough Bluffs behind 81 and 83 Fishleigh Drive in the City of Toronto. TRCA invites you to participate in this study, which is subject to approval through the *Class Environmental Assessment for Remedial Flood and Erosion Control Projects* addendum process.

Please find attached below a letter and a Notice of Intent information package. If you have any comments or questions about the project, or wish to be involved in this study, please do not hesitate to contact **Margie Kenedy** by phone at (416) 661-6600 Ext. 5270 or by email at mkenedy@trca.on.ca.

Thank you,
Amanda

Fishleigh Dr_2015 03 04_ NoI_Sandy McKenzie.pdf Fishleigh Dr_2015 03 04_NoI Package.pdf

Amanda Parks, B.Sc. |Tech Assistant, Aboriginal Engagement| Archaeology Resource Management Services |
Toronto and Region Conservation Authority | 5 Shoreham Drive, Downsview, ON, M3N 1S4|
☎ 416.661.6600 x6417 | ✉aparks@trca.on.ca | www.trca.on.ca/archaeology|

{In Archive} TRCA EAs - Follow Up

Amanda Parks to: k.a.sandy-mckenzie 04/28/2015 03:12 PM
Cc: chief

Archive: This message is being viewed in an archive.

Hello Ms. Sandy-McKenzie,

As per my voicemail, I am writing to follow up with you regarding two EA notifications recently circulated to you and the Williams Treaty First Nations. I would like to confirm you have received the notifications, and to see if you have any questions about either project that I can answer.

Scarborough Waterfront Project EA
A notification was circulated by my colleague, Eric, on April 1st regarding the notice of submission for the Draft Terms of Reference for the Scarborough Waterfront Project. The date by which you can submit comments is Wednesday May 6th, so please feel free to give me a call if you have any questions or comments.

Fishleigh Drive Erosion Control EA
The notice of intent was circulated on March 4th regarding the initiation of an addendum process for an EA completed several years ago. This project deals with erosion along the Scarborough Bluffs. Again, if you have any questions about the project or would like additional information, just let me know.

I can be reached via email (aparks@trca.on.ca) or by phone at 416-661-6600 x 6417.

Thank you,
Amanda

Amanda Parks, B.Sc. |Tech Assistant, Aboriginal Engagement| Archaeology Resource Management Services |
Toronto and Region Conservation Authority | 5 Shoreham Drive, Downsview, ON, M3N 1S4|
☎ 416.661.6600 x6417 | ✉aparks@trca.on.ca | www.trca.on.ca/archaeology|

Correspondence with: Curve Lake First Nation

Community Contacted Mailing Address	Curve Lake First Nation Chief Phyllis Williams, Melissa Dokis, Nathaniel Cummings General Delivery, Curve Lake, ON. K0L 1R0

TRCA Correspondence Date Contacted Via Comments	04-Mar-15 Chief Phyllis Williams, Melissa Dokis, Nathaniel Cummings Courier, Email Notice of Intent

Curve Lake Correspondence Date Contacted Via Comments	23-Mar-15 TRCA Mail Confirmed receipt of information, will contact if concerns

TRCA Correspondence Date – Follow Up Contacted Via Comments	28-Apr-15 Melissa Dokis, Nathaniel Cummings Phone, Email Left Voicemail, Follow-up Email

Fishleigh Dr Erosion Control EA - Notice of Intent

Amanda Parks to: chief 03/04/2015 11:15 AM

Cc: "Melisa Dokis", "Nathaniel Cummings"

Hello,

Please be advised that Toronto and Region Conservation Authority is initiating an Environmental Assessment (EA) to address a proposed extension of erosion control along the base of the Scarborough Bluffs behind 81 and 83 Fishleigh Drive in the City of Toronto. TRCA invites you to participate in this study, which is subject to approval through the *Class Environmental Assessment for Remedial Flood and Erosion Control Projects* addendum process.

Please find attached below a letter and a Notice of Intent information package. If you have any comments or questions about the project, or wish to be involved in this study, please do not hesitate to contact **Margie Kenedy** by phone at (416) 661-6600 Ext. 5270 or by email at mkenedy@trca.on.ca.

Thank you,
Amanda

Fishleigh Dr_2015 03 04_ NoI_Curve Lake.pdf Fishleigh Dr_2015 03 04_NoI Package.pdf

Amanda Parks, B.Sc. |Tech Assistant, Aboriginal Engagement| Archaeology Resource Management Services |
Toronto and Region Conservation Authority | 5 Shoreham Drive, Downsview, ON, M3N 1S4|
☎ 416.661.6600 x6417 | ✉aparks@trca.on.ca | www.trca.on.ca/archaeology|

Government Services Building
22 Winookeeda Street
Curve Lake, Ontario K0L1R0

Phone: 705.657.8045
Fax: 705.657.8708
www.curvelakefirstnation.ca

Margie Kenedy
5 Shoreham Drive
Downsview Ontario M3N 1S4

March 23rd, 2015

Dear Margie Kenedy,

RE: Fishleigh Drive Erosion Control Project

I would like to acknowledge receipt of your correspondence, which was received on 3/6/2015 regarding the above noted project.

As you may be aware, the area in which your project is proposed is situated within the Traditional Territory of Curve Lake First Nation. Our First Nation's Territory is incorporated within the Williams Treaties Territory and is the subject of a claim under Canada's Specific Claims Policy. We strongly suggest that you provide Karry Sandy-Mackenzie, Williams Treaty First Nation Claims Coordinator, 8 Creswick Court, Barrie, ON L4M 2S7, with a copy of your proposal as your obligation to consult to also extend to the other First Nations of the Williams Treaties.

Although we have not conducted exhaustive research nor have we the resources to do so, Curve Lake First Nation Council is not currently aware of any issues that would cause concern with respect to our Traditional, Aboriginal and Treaty rights.

Please note that we have particular concern for the remains of our ancestors. Should excavation unearth bones, remains or other such evidence of a native burial site or any Archaeological findings, we must be notified without delay. In the case of a burial site, Council reminds you of your obligations under the Cemeteries Act to notify the nearest First Nation Government or other community of Aboriginal people which is willing to act as a representative and whose members have a close cultural affinity to the interred person. As I am sure you are aware, the regulations further state that the representative is needed before the remains and associated artifacts can be removed. Should such a find occur, we request that you contact our First Nation immediately.

Curve Lake First Nation also has available, trained Archaeological Liaisons who are able to actively participate in the archaeological assessment process as a member of a field crew, the cost of which will be borne by the proponent.

Government Services Building
22 Winookeeda Street
Curve Lake, Ontario K0L1R0

Phone: 705.657.8045
Fax: 705.657.8708
www.curvelakefirstnation.ca

If any new, undisclosed or unforeseen issues should arise, that has potential for anticipated negative environmental impacts or anticipated impacts on our Treaty and Aboriginal rights we require that we be notified regarding these as well.

Thank you for recognizing the importance of consultation and respecting your duty to consult obligations as determined by the Supreme Court of Canada.

Should you have further questions or if you wish to hire a liaison for a project, please feel free to contact the Lands and Resources Consultation Liaisons: Melissa Dokis, MelissaD@curvelake.ca or Nathaniel Cummings, NathanielC@curvelake.ca, or by phone at 705-657-8045.

Yours sincerely,

Chief Phyllis Williams
Curve Lake First Nation

Archive:

{In Archive} TRCA EAs - Follow Up

Amanda Parks to: Melisa Dokis, Nathaniel Cummings 04/28/2015 03:38 PM

This message is being viewed in an archive.

Hello Melissa and Nathaniel,

As per my voicemail, I am writing to follow up with you regarding two EA notifications recently circulated to you and Curve Lake First Nation. I would like to confirm you have received the notifications, and to see if you have any questions about either project that I can answer.

Scarborough Waterfront Project EA
A notification was circulated by my colleague, Eric, on April 1st regarding the notice of submission for the Draft Terms of Reference for the Scarborough Waterfront Project. The date by which you can submit comments is Wednesday May 6th, so please feel free to give me a call if you have any questions or comments.

Fishleigh Drive Erosion Control EA
The notice of intent was circulated on March 4th regarding the initiation of an addendum process for an EA completed several years ago. This project deals with erosion along the Scarborough Bluffs. Again, if you have any questions about the project or would like additional information, just let me know.

I can be reached via email (aparks@trca.on.ca) or by phone at 416-661-6600 x 6417.

Thank you,
Amanda

Amanda Parks, B.Sc. |Tech Assistant, Aboriginal Engagement| Archaeology Resource Management Services |
Toronto and Region Conservation Authority | 5 Shoreham Drive, Downsview, ON, M3N 1S4|
☎ 416.661.6600 x6417 | ✉aparks@trca.on.ca | www.trca.on.ca/archaeology|

Correspondence with: Haudenosaunee Confederacy Chiefs Council c/o Haudenosaunee Development Institute

Community Contacted Mailing Address	Haudenosaunee Confederacy Chiefs Council Ms. Hazel Hill at Haudenosaunee Development Institute 16 Sunrise Court, PO Box 714, Ohsweken, ON N0A 1MO

TRCA Correspondence Date Contacted Via Comments	04-Mar-15 Hazel Hill Courier, Email Notice of Intent

TRCA Correspondence Date – Follow Up Contacted Via Comments	28-Apr-15 Hazel Hill Phone, Email Contacted office and informed that Ms. Hill was out of office for the day, left message, Follow-up Email

Fishleigh Dr Erosion Control EA - Notice of Intent
Amanda Parks to: HDI 03/04/2015 11:15 AM

Hello,

Please be advised that Toronto and Region Conservation Authority is initiating an Environmental Assessment (EA) to address a proposed extension of erosion control along the base of the Scarborough Bluffs behind 81 and 83 Fishleigh Drive in the City of Toronto. TRCA invites you to participate in this study, which is subject to approval through the *Class Environmental Assessment for Remedial Flood and Erosion Control Projects* addendum process.

Please find attached below a letter and a Notice of Intent information package. If you have any comments or questions about the project, or wish to be involved in this study, please do not hesitate to contact **Margie Kenedy** by phone at (416) 661-6600 Ext. 5270 or by email at mkenedy@trca.on.ca.

Thank you,
Amanda

Fishleigh Dr_2015 03 04_ NoI_HDI.pdf Fishleigh Dr_2015 03 04_NoI Package.pdf

Amanda Parks, B.Sc. |Tech Assistant, Aboriginal Engagement| Archaeology Resource Management Services |
Toronto and Region Conservation Authority | 5 Shoreham Drive, Downsview, ON, M3N 1S4|
☎ 416.661.6600 x6417 | ✉aparks@trca.on.ca | www.trca.on.ca/archaeology|

Archive:

{In Archive} TRCA EAs - Follow Up

Amanda Parks to: hdi2 04/28/2015 01:25 PM

This message is being viewed in an archive.

Hello Ms. Hill,

I am writing to follow up with you regarding two EA notifications recently circulated to the Haudenosaunee Confederacy Chiefs Council c/o the Haudenosaunee Development Institute. I would like to confirm you have received the notifications, and to see if you have any questions about either project that I can answer.

Scarborough Waterfront Project EA
A notification was circulated by my colleague, Eric, on April 1st regarding the notice of submission for the Draft Terms of Reference for the Scarborough Waterfront Project. The date by which you can submit comments is Wednesday May 6th, so please feel free to give me a call if you have any questions or comments.

Fishleigh Drive Erosion Control EA
The notice of intent was circulated on March 4th regarding the initiation of an addendum process for an EA completed several years ago. This project deals with erosion along the Scarborough Bluffs. Again, if you have any questions about the project or would like additional information, just let me know.

I can be reached via email (aparks@trca.on.ca) or by phone at 416-661-6600 x 6417.

Thank you,
Amanda

Amanda Parks, B.Sc. |Tech Assistant, Aboriginal Engagement| Archaeology Resource Management Services |
Toronto and Region Conservation Authority | 5 Shoreham Drive, Downsview, ON, M3N 1S4|
☎ 416.661.6600 x6417 | ✉aparks@trca.on.ca | www.trca.on.ca/archaeology|

Correspondence with: Hiawatha First Nation

Community	Hiawatha First Nation
Contacted	Chief Greg Cowie, Lori Loucks
Mailing Address	123 Paudash Street, Keene, ON. K0L 2G0

TRCA Correspondence Date	04-Mar-15
Contacted	Chief Greg Cowie, Lori Loucks
Via	Courier, Email
Comments	Notice of Intent

TRCA Correspondence Date – Follow Up	28-Apr-15
Contacted	Lori Loucks
Via	Phone, Email
Comments	Spoke with Lori over the phone. Project updates requested

Fishleigh Dr Erosion Control EA - Notice of Intent

Amanda Parks to: chiefcowie 03/04/2015 11:14 AM
Cc: lloucks

Hello,

Please be advised that Toronto and Region Conservation Authority is initiating an Environmental Assessment (EA) to address a proposed extension of erosion control along the base of the Scarborough Bluffs behind 81 and 83 Fishleigh Drive in the City of Toronto. TRCA invites you to participate in this study, which is subject to approval through the *Class Environmental Assessment for Remedial Flood and Erosion Control Projects* addendum process.

Please find attached below a letter and a Notice of Intent information package. If you have any comments or questions about the project, or wish to be involved in this study, please do not hesitate to contact **Margie Kenedy** by phone at (416) 661-6600 Ext. 5270 or by email at mkenedy@trca.on.ca.

Thank you,
Amanda

Fishleigh Dr_2015 03 04_ NoI_Hiawatha.pdf Fishleigh Dr_2015 03 04_NoI Package.pdf

Amanda Parks, B.Sc. |Tech Assistant, Aboriginal Engagement| Archaeology Resource Management Services |
Toronto and Region Conservation Authority | 5 Shoreham Drive, Downsview, ON, M3N 1S4|
☎ 416.661.6600 x6417 | ✉aparks@trca.on.ca | www.trca.on.ca/archaeology|

Archive:

{In Archive} TRCA EAs - Follow Up

Amanda Parks to: lloucks 04/28/2015 04:07 PM

This message is being viewed in an archive.

Hi Lori,

I hope you are doing well! I just realized today when I tried to call you that my old phone died, and with it went my contacts and your cell phone number. Do you mind passing it along again?

I just wanted to follow up with you regarding two EA notifications recently circulated to you and Hiawatha First Nation.

Scarborough Waterfront Project EA
I know you recently received the (April 1st) notice of submission for the Draft Terms of Reference for the Scarborough Waterfront Project. As a reminder, the date by which to submit comments is Wednesday May 6th, so please feel free to give me a call if you have any questions or comments.

Fishleigh Drive Erosion Control EA
The notice of intent was circulated on March 4th regarding the initiation of an addendum process for an EA completed several years ago. This project deals with erosion along the Scarborough Bluffs. Again, if you have any questions about the project or would like additional information, just let me know.

I can be reached via email (aparks@trca.on.ca) or by phone at 416-661-6600 x 6417.

Thanks!
Amanda

Amanda Parks, B.Sc. |Tech Assistant, Aboriginal Engagement| Archaeology Resource Management Services |
Toronto and Region Conservation Authority | 5 Shoreham Drive, Downsview, ON, M3N 1S4|
☎ 416.661.6600 x6417 | ✉aparks@trca.on.ca | www.trca.on.ca/archaeology|

Correspondence with: Kawartha Nishnawbe First Nation

Community Contacted Mailing Address	Kawartha Nishnawbe Chief Kris Nahrgang PO Box 1432, Lakefield, ON, K0L 2H0

TRCA Correspondence Date Contacted Via Comments	04-Mar-15 Chief Kris Nahrgang Mail, Email Notice of Intent

TRCA Correspondence Date – Follow Up Contacted Via Comments	28-Apr-15 Chief Kris Nahrgang Phone, Email Left Voicemail, Follow-up Email

Fishleigh Dr Erosion Control EA - Notice of Intent
Amanda Parks to: cexplorer 03/04/2015 11:14 AM

Hello,

Please be advised that Toronto and Region Conservation Authority is initiating an Environmental Assessment (EA) to address a proposed extension of erosion control along the base of the Scarborough Bluffs behind 81 and 83 Fishleigh Drive in the City of Toronto. TRCA invites you to participate in this study, which is subject to approval through the *Class Environmental Assessment for Remedial Flood and Erosion Control Projects* addendum process.

Please find attached below a letter and a Notice of Intent information package. If you have any comments or questions about the project, or wish to be involved in this study, please do not hesitate to contact **Margie Kenedy** by phone at (416) 661-6600 Ext. 5270 or by email at mkenedy@trca.on.ca.

Thank you,
Amanda

Fishleigh Dr_2015 03 04_ NoI_Kawartha.pdf Fishleigh Dr_2015 03 04_NoI Package.pdf

Amanda Parks, B.Sc. |Tech Assistant, Aboriginal Engagement| Archaeology Resource Management Services |
Toronto and Region Conservation Authority | 5 Shoreham Drive, Downsview, ON, M3N 1S4|
☎ 416.661.6600 x6417 | ✉aparks@trca.on.ca | www.trca.on.ca/archaeology|

Archive:

{In Archive} TRCA EAs - Follow Up

Amanda Parks to: cexplorer 04/28/2015 03:18 PM

This message is being viewed in an archive.

Hello Chief Nahrgang,

As per my voicemail, I am writing to follow up with you regarding two EA notifications recently circulated to you and Kawartha Nishnawbe First Nation. I would like to confirm you have received the notifications, and to see if you have any questions about either project that I can answer.

Scarborough Waterfront Project EA
A notification was circulated by my colleague, Eric, on April 1st regarding the notice of submission for the Draft Terms of Reference for the Scarborough Waterfront Project. The date by which you can submit comments is Wednesday May 6th, so please feel free to give me a call if you have any questions or comments.

Fishleigh Drive Erosion Control EA
The notice of intent was circulated on March 4th regarding the initiation of an addendum process for an EA completed several years ago. This project deals with erosion along the Scarborough Bluffs. Again, if you have any questions about the project or would like additional information, just let me know.

I can be reached via email (aparks@trca.on.ca) or by phone at 416-661-6600 x 6417.

Thank you,
Amanda

Amanda Parks, B.Sc. |Tech Assistant, Aboriginal Engagement| Archaeology Resource Management Services |
Toronto and Region Conservation Authority | 5 Shoreham Drive, Downsview, ON, M3N 1S4|
☎ 416.661.6600 x6417 | ✉aparks@trca.on.ca | www.trca.on.ca/archaeology|

Correspondence with: Metis Nation of Ontario

Community Contacted Mailing Address	Metis Nation of Ontario Consultation Unit Head Office, Aly N. Alibhai 75 Sherbourne St.Suite 311, Toronto, ON M5A 2P9

TRCA Correspondence Date Contacted Via Comments	04-Mar-15 Consultation Unit Head Office, Aly N. Alibhai Courier, Email Notice of Intent

TRCA Correspondence Date – Follow Up Contacted Via Comments	28-Apr-15 Mr. Aly Alibhai Phone, Email Left Voicemail, Follow-up Email

Fishleigh Dr Erosion Control EA - Notice of Intent

Amanda Parks to: consultations 03/04/2015 11:17 AM
Cc: alya

Hello,

Please be advised that Toronto and Region Conservation Authority is initiating an Environmental Assessment (EA) to address a proposed extension of erosion control along the base of the Scarborough Bluffs behind 81 and 83 Fishleigh Drive in the City of Toronto. TRCA invites you to participate in this study, which is subject to approval through the *Class Environmental Assessment for Remedial Flood and Erosion Control Projects* addendum process.

Please find attached below a letter and a Notice of Intent information package. If you have any comments or questions about the project, or wish to be involved in this study, please do not hesitate to contact **Margie Kenedy** by phone at (416) 661-6600 Ext. 5270 or by email at mkenedy@trca.on.ca.

Thank you,
Amanda

Fishleigh Dr_2015 03 04_ NoI_MNO.pdf Fishleigh Dr_2015 03 04_NoI Package.pdf

Amanda Parks, B.Sc. |Tech Assistant, Aboriginal Engagement| Archaeology Resource Management Services |
Toronto and Region Conservation Authority | 5 Shoreham Drive, Downsview, ON, M3N 1S4|
☎ 416.661.6600 x6417 | ✉aparks@trca.on.ca | www.trca.on.ca/archaeology|

Archive:

{In Archive} TRCA EAs - Follow Up

Amanda Parks to: alya 04/28/2015 03:22 PM

This message is being viewed in an archive.

Hello Mr. Alibhai,

As per my voicemail, I am writing to follow up with you regarding two EA notifications recently circulated to you and the Métis Nation of Ontario. I would like to confirm you have received the notifications, and to see if you have any questions about either project that I can answer.

Scarborough Waterfront Project EA
A notification was circulated by my colleague, Eric, on April 1st regarding the notice of submission for the Draft Terms of Reference for the Scarborough Waterfront Project. The date by which you can submit comments is Wednesday May 6th, so please feel free to give me a call if you have any questions or comments.

Fishleigh Drive Erosion Control EA
The notice of intent was circulated on March 4th regarding the initiation of an addendum process for an EA completed several years ago. This project deals with erosion along the Scarborough Bluffs. Again, if you have any questions about the project or would like additional information, just let me know.

I can be reached via email (aparks@trca.on.ca) or by phone at 416-661-6600 x 6417.

Thank you,
Amanda

Amanda Parks, B.Sc. |Tech Assistant, Aboriginal Engagement| Archaeology Resource Management Services |
Toronto and Region Conservation Authority | 5 Shoreham Drive, Downsview, ON, M3N 1S4|
☎ 416.661.6600 x6417 | ✉aparks@trca.on.ca | www.trca.on.ca/archaeology|

Correspondence with: Mississaugas of Alderville First Nation

Community Contacted Mailing Address	Mississaugas of Alderville First Nation Chief James Marsden, David Simpson, P.O. Box 46, RR#4, Roseneath, ON. K0K 2X0

TRCA Correspondence Date Contacted Via Comments	04-Mar-15 Chief James Marsden, David Simpson Courier, Email Notice of Intent

TRCA Correspondence Date – Follow Up Contacted Via Comments	28-Apr-15 Mr. David Simpson Phone, Email Left Voicemail, Follow-up Email

Fishleigh Dr Erosion Control EA - Notice of Intent

Amanda Parks to: jbmarsden 03/04/2015 11:14 AM
Cc: dsimpson

Hello,

Please be advised that Toronto and Region Conservation Authority is initiating an Environmental Assessment (EA) to address a proposed extension of erosion control along the base of the Scarborough Bluffs behind 81 and 83 Fishleigh Drive in the City of Toronto. TRCA invites you to participate in this study, which is subject to approval through the *Class Environmental Assessment for Remedial Flood and Erosion Control Projects* addendum process.

Please find attached below a letter and a Notice of Intent information package. If you have any comments or questions about the project, or wish to be involved in this study, please do not hesitate to contact **Margie Kenedy** by phone at (416) 661-6600 Ext. 5270 or by email at mkenedy@trca.on.ca.

Thank you,
Amanda

Fishleigh Dr_2015 03 04_ NoI_Alderville.pdf Fishleigh Dr_2015 03 04_NoI Package.pdf

Amanda Parks, B.Sc. |Tech Assistant, Aboriginal Engagement| Archaeology Resource Management Services |
Toronto and Region Conservation Authority | 5 Shoreham Drive, Downsview, ON, M3N 1S4|
☎ 416.661.6600 x6417 | ✉aparks@trca.on.ca | www.trca.on.ca/archaeology|

ALDERVILLE FIRST NATION
P.O. Box 46
11696 Second Line
Roseneath, Ontario K0K 2X0

March 12, 2015

Toronto and Region Conservation
5 Shoreham Drive
Downsview, ON M3N 1S4

Att: Margie Kenedy, Archaeology Resource Management Services

Re: Fishleigh Drive Erosion Control Project, Addendum – Notice of Intent

Dear Margie,

Thank you for the information to Alderville First Nation regarding the **Fishleigh Drive Erosion Control Project** which is being proposed within our Traditional and Treaty Territory. We appreciate the fact that **Toronto and Region Conservation** recognizes the importance of First Nations Consultation and that your office is conforming to the requirements within the Duty to Consult Process.

Please keep us apprised of any further developments and any environmental impacts during construction, should any occur. I can be contacted at the mailing address above or electronically via email, at the email address below.

In good faith and respect,

Dave Simpson dsimpson@aldervillefirstnation.ca
Lands and Resources

Communications Officer Tele: (905) 352-2662
Alderville First Nation Fax: (905) 352-3242

Correspondence with: Mississaugas of Scugog Island First Nation

Community Contacted Mailing Address	Mississaugas of Scugog Island First Nation Chief Kelly LaRocca, Dave Mowat 22521 Island Road, Port Perry, ON. L9L 1B6

TRCA Correspondence Date Contacted Via Comments	04-Mar-15 Chief Kelly LaRocca, Dave Mowat Courier, Email Notice of Intent

TRCA Correspondence Date – Follow Up Contacted Via Comments	28-Apr-15 Mr. Dave Mowat Phone, Email Left Voicemail, Follow-up Email

Fishleigh Dr Erosion Control EA - Notice of Intent

Amanda Parks to: klarocca 03/04/2015 11:14 AM
Cc: dmowat

Hello,

Please be advised that Toronto and Region Conservation Authority is initiating an Environmental Assessment (EA) to address a proposed extension of erosion control along the base of the Scarborough Bluffs behind 81 and 83 Fishleigh Drive in the City of Toronto. TRCA invites you to participate in this study, which is subject to approval through the *Class Environmental Assessment for Remedial Flood and Erosion Control Projects* addendum process.

Please find attached below a letter and a Notice of Intent information package. If you have any comments or questions about the project, or wish to be involved in this study, please do not hesitate to contact **Margie Kenedy** by phone at (416) 661-6600 Ext. 5270 or by email at mkenedy@trca.on.ca.

Thank you,
Amanda

Fishleigh Dr_2015 03 04_ NoI_Scugog Island.pdf Fishleigh Dr_2015 03 04_NoI Package.pdf

Amanda Parks, B.Sc. |Tech Assistant, Aboriginal Engagement| Archaeology Resource Management Services |
Toronto and Region Conservation Authority | 5 Shoreham Drive, Downsview, ON, M3N 1S4|
☎ 416.661.6600 x6417 | ✉aparks@trca.on.ca | www.trca.on.ca/archaeology|

Archive:

{In Archive} TRCA EAs - Follow Up

Amanda Parks to: dmowat 04/28/2015 03:19 PM

This message is being viewed in an archive.

Hello Mr. Mowat,

As per my voicemail, I am writing to follow up with you regarding two EA notifications recently circulated to you and Scugog Island First Nation. I would like to confirm you have received the notifications, and to see if you have any questions about either project that I can answer.

Scarborough Waterfront Project EA
A notification was circulated by my colleague, Eric, on April 1st regarding the notice of submission for the Draft Terms of Reference for the Scarborough Waterfront Project. The date by which you can submit comments is Wednesday May 6th, so please feel free to give me a call if you have any questions or comments.

Fishleigh Drive Erosion Control EA
The notice of intent was circulated on March 4th regarding the initiation of an addendum process for an EA completed several years ago. This project deals with erosion along the Scarborough Bluffs. Again, if you have any questions about the project or would like additional information, just let me know.

I can be reached via email (aparks@trca.on.ca) or by phone at 416-661-6600 x 6417.

Thank you,
Amanda

Amanda Parks, B.Sc. |Tech Assistant, Aboriginal Engagement| Archaeology Resource Management Services |
Toronto and Region Conservation Authority | 5 Shoreham Drive, Downsview, ON, M3N 1S4|
☎ 416.661.6600 x6417 | ✉aparks@trca.on.ca | www.trca.on.ca/archaeology|

Correspondence with: Mississaugas of the New Credit First Nation

Community	Mississaugas of the New Credit First Nation
Contacted	Chief Bryan LaForme, Margaret Sault, Carolyn King, Fawn Sault, Megan Devries
Mailing Address	2789 Mississauga Road, R.R. #6, Hagersville, N0A 1H0

TRCA Correspondence Date	04-Mar-15
Contacted	Chief Bryan LaForme, Margaret Sault, Carolyn King
Via	Courier, Email
Comments	Notice of Intent

TRCA Correspondence Date – Follow Up	28-Apr-15
Contacted	Ms. Fawn Sault, Ms. Carolyn King
Via	Phone, Email
Comments	Left Voicemail, Follow-up Email

Fishleigh Dr Erosion Control EA - Notice of Intent

Amanda Parks to: bryanlaforme 03/04/2015 11:14 AM
Cc: margaret.sault, Carolyn Woodland

Hello,

Please be advised that Toronto and Region Conservation Authority is initiating an Environmental Assessment (EA) to address a proposed extension of erosion control along the base of the Scarborough Bluffs behind 81 and 83 Fishleigh Drive in the City of Toronto. TRCA invites you to participate in this study, which is subject to approval through the *Class Environmental Assessment for Remedial Flood and Erosion Control Projects* addendum process.

Please find attached below a letter and a Notice of Intent information package. If you have any comments or questions about the project, or wish to be involved in this study, please do not hesitate to contact **Margie Kenedy** by phone at (416) 661-6600 Ext. 5270 or by email at mkenedy@trca.on.ca.

Thank you,
Amanda

Fishleigh Dr_2015 03 04_ NoI_New Credit.pdf Fishleigh Dr_2015 03 04_NoI Package.pdf

Amanda Parks, B.Sc. |Tech Assistant, Aboriginal Engagement| Archaeology Resource Management Services |
Toronto and Region Conservation Authority | 5 Shoreham Drive, Downsview, ON, M3N 1S4|
☎ 416.661.6600 x6417 | ✉aparks@trca.on.ca | www.trca.on.ca/archaeology|

{In Archive} TRCA EAs - Follow Up

Amanda Parks to: fawn.sault 04/28/2015 03:27 PM
Cc: Megan.DeVries

Archive: This message is being viewed in an archive.

Hello Fawn,

I am writing to follow up with you regarding two EA notifications recently circulated to you and the Mississaugas of the New Credit. I would like to confirm you have received the notifications, and to see if you have any questions about either project that I can answer.

Scarborough Waterfront Project EA
A notification was circulated by my colleague, Eric, on April 1st regarding the notice of submission for the Draft Terms of Reference for the Scarborough Waterfront Project. I have spoken with Megan recently about the proposed timelines for the Stage 1 and 2 archaeology work, but I wanted to touch base with you about the Draft Terms of Reference. The date by which you can submit comments is Wednesday May 6th, so please feel free to give me a call if you have any questions or comments.

Fishleigh Drive Erosion Control EA
The notice of intent was circulated on March 4th regarding the initiation of an addendum process for an EA completed several years ago. This project deals with erosion along the Scarborough Bluffs. Again, if you have any questions about the project or would like additional information, just let me know.

I can be reached via email (aparks@trca.on.ca) or by phone at 416-661-6600 x 6417.

Thank you,
Amanda

Amanda Parks, B.Sc. |Tech Assistant, Aboriginal Engagement| Archaeology Resource Management Services |
Toronto and Region Conservation Authority | 5 Shoreham Drive, Downsview, ON, M3N 1S4|
☎ 416.661.6600 x6417 | ✉aparks@trca.on.ca | www.trca.on.ca/archaeology|

Correspondence with: Six Nations of the Grand River

Community	Six Nations of the Grand River
Contacted	Chief Ava Hill, Lonny Bomberry, Joanne Thomas, Paul General
Mailing Address	Six Nations Wildlife EcoCentre, 2676 4th Line Road, P.O Box 5000, Ohsweken ON, N0A 1M0

TRCA Correspondence Date	04-Mar-15
Contacted	Chief Ava Hill, Lonny Bomberry, Joanne Thomas, Paul General
Via	Courier, Email
Comments	Notice of Intent

TRCA Correspondence Date – Follow Up	28-Apr-15
Contacted	Mr. Lonny Bomberry, Ms. Joanne Thomas
Via	Phone, Email
Comments	Spoke to Mr. Lomberry and directed to Ms. Thomas. Left voicemail and sent follow-up email

Fishleigh Dr Erosion Control EA - Notice of Intent

Amanda Parks to: avahill 03/04/2015 11:18 AM
Cc: lonnybomberry, jthomas, pgeneral

Hello,

Please be advised that Toronto and Region Conservation Authority is initiating an Environmental Assessment (EA) to address a proposed extension of erosion control along the base of the Scarborough Bluffs behind 81 and 83 Fishleigh Drive in the City of Toronto. TRCA invites you to participate in this study, which is subject to approval through the *Class Environmental Assessment for Remedial Flood and Erosion Control Projects* addendum process.

Please find attached below a letter and a Notice of Intent information package. If you have any comments or questions about the project, or wish to be involved in this study, please do not hesitate to contact **Margie Kenedy** by phone at (416) 661-6600 Ext. 5270 or by email at mkenedy@trca.on.ca.

Thank you,
Amanda

Fishleigh Dr_2015 03 04_ NoI_Six Nations.pdf Fishleigh Dr_2015 03 04_NoI Package.pdf

Amanda Parks, B.Sc. |Tech Assistant, Aboriginal Engagement| Archaeology Resource Management Services |
Toronto and Region Conservation Authority | 5 Shoreham Drive, Downsview, ON, M3N 1S4|
☎ 416.661.6600 x6417 | ✉aparks@trca.on.ca | www.trca.on.ca/archaeology|

Archive:

{In Archive} TRCA EAs - Follow Up

Amanda Parks to: jthomas 04/28/2015 03:21 PM

This message is being viewed in an archive.

Hello Ms. Thomas,

As per my voicemail, I am writing to follow up with you regarding two EA notifications recently circulated to you and the Six Nations of the Grand River Territorty. I would like to confirm you have received the notifications, and to see if you have any questions about either project that I can answer.

Scarborough Waterfront Project EA
A notification was circulated by my colleague, Eric, on April 1st regarding the notice of submission for the Draft Terms of Reference for the Scarborough Waterfront Project. The date by which you can submit comments is Wednesday May 6th, so please feel free to give me a call if you have any questions or comments.

Fishleigh Drive Erosion Control EA
The notice of intent was circulated on March 4th regarding the initiation of an addendum process for an EA completed several years ago. This project deals with erosion along the Scarborough Bluffs. Again, if you have any questions about the project or would like additional information, just let me know.

I can be reached via email (aparks@trca.on.ca) or by phone at 416-661-6600 x 6417.

Thank you,
Amanda

Amanda Parks, B.Sc. |Tech Assistant, Aboriginal Engagement| Archaeology Resource Management Services |
Toronto and Region Conservation Authority | 5 Shoreham Drive, Downsview, ON, M3N 1S4|
☎ 416.661.6600 x6417 | ✉aparks@trca.on.ca | www.trca.on.ca/archaeology|

FISHLEIGH DRIVE EROSION CONTROL PROJECT, ADDENDUM

CLASS ENVIRONMENTAL ASSESSMENT FOR REMEDIAL FLOOD AND EROSION CONTROL PROJECTS

ABORIGINAL ENGAGEMENT

PREPARED BY:

ERIC BEALES

OCTOBER 5, 2015

ABORIGINAL ENGAGEMENT

Prior to the delivery of any notifications, Aboriginal Affairs and Northern Development Canada (AANDC) and the Ministry of Aboriginal Affairs (MAA) were contacted for advice and information on the Aboriginal communities that should be contacted during the Aboriginal Consultation process. Additional Aboriginal community contact lists were also considered, including the lists held by the City of Toronto and Toronto and Region Conservation Authority (TRCA). Communities that were contacted had established or asserted rights and interests in the Study Area, and are listed below.

- Beausoleil First Nation
- Chippewas of Georgina Island First Nation
- Chippewas of Rama-Mnjikaning First Nation
- Conseil de la Nation Huronne-Wendat
- Coordinator of the Williams Treaty First Nations
- Curve Lake First Nation
- Haudenosaunee Confederacy Chiefs Council via Haudenosaunee Development Institute
- Hiawatha First Nation
- Kawartha Nishnawbe First Nation
- Metis Nation of Ontario
- Mississaugas of Alderville First Nation
- Mississaugas of the New Credit First Nation
- Mississaugas of Scugog Island First Nation
- Six Nations of the Grand River

A notification letter was sent on March 4, 2015 to the identified First Nations and Metis communities to inform them of the initiation of the Fishleigh Drive Environmental Assessment Addendum. Any interested communities were invited to contact Margie Kenedy at TRCA. Enclosed with the notification letter were two study area maps and the project brief.

Few responses were received, so TRCA conducted follow up phone calls or emails on April 28, 2015 to ensure each community received the notification package, and to answer any questions that could help evaluate interest in the project. Few communities responded to express interest in the project. Responses are described in the table below.

The Notice of Filing is scheduled to be circulated to all of the communities on October 7, 2015

Documentation of Aboriginal Consultation is provided in **Appendix A**.

1.1 Summary of Aboriginal Engagement

The following table details a summary of correspondence with Aboriginal communities during the course of the Fishleigh Drive Environmental Assessment Addendum.

TABLE 0-1 SUMMARY OF CORRESPONDENCE WITH ABORIGINAL COMMUNITIES

Aboriginal Community	Consultation
Beausoleil First Nation	Notification #1: *March 4, 2015*: Mailed and emailed Notification #1 package *April 28, 2015:* Follow up phone call; Spoke with a Resource Management Officer, who indicated the community received the notification package, would review it in more detail, and would be in contact.
Chippewas of Georgina Island First Nation	Notification #1: *March 4, 2015*: Mailed and emailed Notification #1 package *April 28, 2015:* Follow up phone call; Left voice mail for Community Consultation Officer; sent follow up email
Chippewas of Rama-Mnjikaning First Nation	Notification #1: *March 4, 2015*: As previously requested, mailed and emailed Notification #1 package to Williams Treaty First Nations Coordinator, and cc'd Chief Rodney Noganash *April 28, 2015*: As previously requested, directed follow up phone calls to Williams Treaty Coordinator
Conseil de la Nation Huronne-Wendat	Notification #1: *March 4, 2015*: Mailed and emailed Notification #1 package *April 28, 2015:* Follow up phone call; Left voice mail for Consulting Services Project Manager; sent follow up email *April 28, 2015:* Representative from community confirmed receipt of information, would review and contact if any concerns
Coordinator Williams Treaty First Nations	Notification #1: *March 4, 2015*: Mailed and emailed Notification #1 package *April 28, 2015:* Follow up phone call; Left voice mail and sent follow up email *April 28, 2015:* Coordinator confirmed receipt of information, would review and contact if any concerns
Curve Lake First Nation	Notification #1: *March 4, 2015:* Mailed and emailed Notification #1 package *March 23, 2015:* Letter received by TRCA from Chief Phyllis Williams confirming receipt of the notification package, had no current concerns related to Constitutional or Treaty Rights, and requested regular updates about the project. Chief Williams also noted that Curve Lake must be notified should any archaeological sites or burials be identified *April 28, 2015:* Follow up phone call; Left voice mail and sent follow

Aboriginal Community	Consultation
	up email to enquire if there was any other information that the community requires
Haudenosaunee Confederacy Chiefs Council via Haudenosaunee Development Institute	Notification #1: *March 4, 2015*: Mailed and emailed Notification #1 package *April 28, 2015:* Follow up phone call; Left voice mail for Council Secretary; sent follow up email
Hiawatha First Nation	Notification #1: *March 4, 2015*: Mailed and emailed Notification #1 package *April 28, 2015:* Follow up phone call, spoke with Lands Resource Representative; Confirmed receipt of information, requested project updates
Kawartha Nishnawbe First Nation	Notification #1: *March 4, 2015*: Mailed and emailed Notification #1 package. *April 28, 2015:* Follow up phone call; Left voice mail and sent follow up email.
Metis Nation of Ontario	Notification #1: *March 4, 2015*: Mailed and emailed Notification #1 package. *April 28, 2015*: Follow up phone call; Left voice mail and sent follow up email.
Mississaugas of Alderville First Nation	Notification #1: *March 4, 2015*: Mailed and emailed Notification #1 package. *April 28, 2015:* Follow up phone call; Left voice mail and sent follow up email.
Mississaugas of Scugog Island First Nation	Notification #1: *March 4, 2015*: Mailed and emailed Notification #1 package. *April 28, 2015:* Follow up phone call; Left voice mail and sent follow up email.
Mississaugas of the New Credit First Nation	Notification #1: *March 4, 2015*: Mailed and emailed Notification #1 package. *April 28, 2015:* Follow up phone call; Left voice mail and sent follow up email.
Six Nations of the Grand River	Notification #1: *March 4, 2015*: Mailed and emailed Notification #1 package. *April 28, 2015:* Follow up phone call; Left voice mail and sent follow up email.

1.2 Summary of Aboriginal Community Comments

No project specific comments have been raised by any of the contacted First Nations and Métis communities.

Toronto and Region Conservation
for The Living City

1 Eastville Avenue
Scarborough, ON
M1M 2N5

March 4, 2015

Dear Resident,

Re: Fishleigh Drive Erosion Control Project Addendum

This letter is to inform you that the Toronto and Region Conservation Authority (TRCA) has recently commenced the addendum process for the "Fishleigh Drive Erosion Control Project", set out under Section 3.8 of Conservation Ontario's *Class Environmental Assessment for Remedial Flood and Erosion Control Projects (2002 – Amended 2013)*. The study involves the extension of the erosion control structure along the base of the Scarborough Bluffs adjacent to Fishleigh Drive and Midland Avenue.

A Notice of Intent of Addendum formally initiating the project was published in today's edition of the *Bluffs Monitor* and will be in tomorrow's edition of the *Scarborough Mirror*; copies are enclosed for your records.

If you wish to be involved in this study, or to receive further information, please contact the undersigned at 416-392-9690 or jtaylor@trca.on.ca by March 31, 2015.

Sincerely,

Jet Taylor
Environmental Technician
Engineering Projects
Restoration & Infrastructure Division

Encl.

cc: P. Newland
M. McDonnell

Toronto and Region Conservation
for The Living City

1 Eastville Avenue
Scarborough, ON
M1M 2N5

March 4, 2015

Gary Crawford
Councillor, Ward 36
City Hall
100 Queen Street West, Suite A11
Toronto, ON
M5H 2N2

Dear Councillor Crawford,

Re: Fishleigh Drive Erosion Control Project Addendum

Please be advised that the Toronto and Region Conservation Authority recently commenced the addendum process to extend existing shoreline protection along the Scarborough Bluffs below Fishleigh Drive. A notice formally initiating the addendum process, under Section 3.8 of Conservation Ontario's *Class Environmental Assessment for Remedial Flood and Erosion Control Projects (2002 – Amended 2013)*, was published in today's edition of the *Bluffs Monitor* and will be in tomorrow's edition of the *Scarborough Mirror*; copies are enclosed for your records.

Be assured that we will keep you apprised of the developments of this project. If you have any questions or comments, please do not hesitate to contact the undersigned at 416-392-9690.

Sincerely,

Jet Taylor
Environmental Technician
Engineering Projects
Restoration & Infrastructure Division

Encl.

cc: P. Newland
M. McDonnell

Toronto and Region Conservation for The Living City

1 Eastville Avenue
Scarborough, ON
M1M 2N5

March 4, 2015

Dan Harris
M.P., Scarborough Southwest
Constituency Office
1674 Kingston Road (Main Office)
Scarborough, ON
M1N 1S5

Dear Mr. Harris,

Re: Fishleigh Drive Erosion Control Project Addendum

Please be advised that the Toronto and Region Conservation Authority recently commenced the addendum process to extend existing shoreline protection along the Scarborough Bluffs below Fishleigh Drive. A notice formally initiating the addendum process, under Section 3.8 of Conservation Ontario's *Class Environmental Assessment for Remedial Flood and Erosion Control Projects (2002 – Amended 2013)*, was published in today's edition of the *Bluffs Monitor* and will be in tomorrow's edition of the *Scarborough Mirror*; copies are enclosed for your records.

Be assured that we will keep you apprised of the developments of this project. If you have any questions or comments, please do not hesitate to contact the undersigned at 416-392-9690.

Sincerely,

Jet Taylor
Environmental Technician
Engineering Projects
Restoration & Infrastructure Division

Encl.

cc: P. Newland
M. McDonnell

Toronto and Region Conservation for The Living City

1 Eastville Avenue
Scarborough, ON
M1M 2N5

March 4, 2015

Lorenzo Berardinetti
M.P.P., Scarborough Southwest
Constituency Office
3090 Kingston Road
Scarborough, ON
M1M 1P2

Dear Mr. Berardinetti,

Re: Fishleigh Drive Erosion Control Project Addendum

Please be advised that the Toronto and Region Conservation Authority recently commenced the addendum process to extend existing shoreline protection along the Scarborough Bluffs below Fishleigh Drive. A notice formally initiating the addendum process, under Section 3.8 of Conservation Ontario's *Class Environmental Assessment for Remedial Flood and Erosion Control Projects (2002 – Amended 2013)*, was published in today's edition of the *Bluffs Monitor* and will be in tomorrow's edition of the *Scarborough Mirror*; copies are enclosed for your records.

Be assured that we will keep you apprised of the developments of this project. If you have any questions or comments, please do not hesitate to contact the undersigned at 416-392-9690.

Sincerely,

Jet Taylor
Environmental Technician
Engineering Projects
Restoration & Infrastructure Division

Encl.

cc: P. Newland
M. McDonnell

Toronto and Region Conservation
for The Living City

1 Eastville Avenue
Scarborough, ON
M1M 2N5

March 4, 2015

Beth McEwen
City of Toronto Parks - Manager, Urban Forest Renewal
Locke House
355 Lesmill Road,
Toronto, ON
M3B 2W8

Dear Ms. McEwen,

Re: Fishleigh Drive Erosion Control Project Addendum

This letter is to inform you that a Notice of Intent for an addendum to the Fishleigh Drive Erosion Control Project has been published in today's edition of the *Bluffs Monitor* and will be in tomorrow's edition of the *Scarborough Mirror*; copies are enclosed for your records.

As stated in the notice, the project will be undertaken in compliance with Section 3.8 of the *Class Environmental Assessment for Remedial Flood and Erosion Control Projects (2002 – Amended 2013).*

If you have any questions or comments regarding this project, please do not hesitate to contact the undersigned at 416-392-9690.

Sincerely,

Jet Taylor
Environmental Technician
Engineering Projects
Restoration & Infrastructure Division

Encl.

cc: P. Newland
M. McDonnell

Toronto and Region Conservation
for The Living City

1 Eastville Avenue
Scarborough, ON
M1M 2N5

March 4, 2015

Nancy Lowes
City of Toronto Parks Manager – Scarborough District
Brimley Yard
451 Brimley Road
Scarborough, ON
M1J 2A1

Dear Ms. Lowes,

Re: Fishleigh Drive Erosion Control Project Addendum

This letter is to inform you that a Notice of Intent for an addendum to the Fishleigh Drive Erosion Control Project has been published in today's edition of the *Bluffs Monitor* and will be in tomorrow's edition of the *Scarborough Mirror*; copies are enclosed for your records.

As stated in the notice, the project will be undertaken in compliance with Section 3.8 of the *Class Environmental Assessment for Remedial Flood and Erosion Control Projects (2002 – Amended 2013).*

If you have any questions or comments regarding this project, please do not hesitate to contact the undersigned at 416-392-9690.

Sincerely,

Jet Taylor
Environmental Technician
Engineering Projects
Restoration & Infrastructure Division

Encl.

cc: P. Newland
M. McDonnell

Toronto and Region Conservation
for The Living City

1 Eastville Avenue
Scarborough, ON
M1M 2N5

August 28, 2015

Samantha Dupre
Conservation Ontario
Box 11, 120 Bayview Parkway
Newmarket, ON L3Y 4W3

Dear Ms. Dupre,

Re: Fishleigh Drive Erosion Control Project Addendum

I apologize for this late notice. Conservation Ontario was inadvertently left off the notification list for this project.

Please be advised that Toronto and Region Conservation Authority recently initiated the addendum process to the Fishleigh Drive Erosion Control Project. The addendum involves the implementation of slope stabilization and the extension of an existing revetment structure to provide erosion control protection along the Scarborough Bluffs below 81 and 83 Fishleigh Drive. A notice formally initiating the addendum process, under Section 3.8 of Conservation Ontario's *Class Environmental Assessment for Remedial Flood and Erosion Control Projects (2002 – Amended 2013)*, was published in the March 04, 2015 edition of the *Bluffs Monitor* and in the March 05, 2015 edition of the *Scarborough Mirror*; copies are enclosed for your records.

If you have any questions or comments, please do not hesitate to contact the undersigned at 416-688-7627 or jtaylor@trca.on.ca

Sincerely,

Jet Taylor
Environmental Technician
Engineering Projects - Restoration & Infrastructure Division

Encl.

cc: P. Newland
M. McDonnell

1 Eastville Avenue
Scarborough, ON
M1M 2N5

August 28, 2015

Ms. Kathleen Hedley
Director, Environmental Approvals Branch
Ministry of the Environment and Climate Change
135 St. Clair Avenue West Toronto, Ontario M4V 1P5

Dear Ms. Hedley,

Re: Fishleigh Drive Erosion Control Project Addendum

I apologize for this late notice. The Ministry of Environment and Climate Change was inadvertently left off the notification list for this project.

Please be advised that Toronto and Region Conservation Authority recently initiated the addendum process to the Fishleigh Drive Erosion Control Project. The addendum involves the implementation of slope stabilization and the extension of an existing revetment structure to provide erosion control protection along the Scarborough Bluffs below 81 and 83 Fishleigh Drive. A notice formally initiating the addendum process, under Section 3.8 of Conservation Ontario's *Class Environmental Assessment for Remedial Flood and Erosion Control Projects (2002 – Amended 2013)*, was published in the March 04, 2015 edition of the *Bluffs Monitor* and in the March 05, 2015 edition of the *Scarborough Mirror*; copies are enclosed for your records.

If you have any questions or comments, please do not hesitate to contact the undersigned at 416-688-7627 or jtaylor@trca.on.ca

Sincerely,

Jet Taylor
Environmental Technician
Engineering Projects - Restoration & Infrastructure Division

Encl.

cc: P. Newland
M. McDonnell

NEW STREETCAR ON 510 SPADINA LINE

The newest of the new streetcars had its first official trip earlier this week

Car 4405 entered service Monday on the 510 Spadina line. It's the fourth of the new fleet under manufacture by Bombardier.

Toronto's deployment of the new fleet to replace the three-decades-old streetcars currently in service is going far slower than expected, with Bombardier blaming the delay on the effects of a 2014 strike at its Thunder Bay plant, and technical issues with the low-floor vehicles' retractable accessibility ramp.

TTC TARDY PASS CIRCULATING

Toronto commuters have had to endure a harsh winter marked by frequent transit delays and lengthy waits for service to be restored.

Now it seems an unknown rider was fed-up enough to create a TTC Tardy Pass, copies of which were found in the subway

over the weekend, demanding reasons for the latest delay. The form gives a long list of choices to select for a service hold-up, from a medical emergency to "stalled politicians".

While not official, it does encourage riders to get actual TTC staff to fill out and sign the form, which could then be presented to an employer or significant other to excuse tardiness.

Visit www.imgur.com/K4AKURD to view the tardy passes.

CYCLING ON THE UPSWING

A study by the group Bike to Transit shows an increase in the number of people choosing two wheels over four to get to work.

The 2014 Cycle-Transit user survey (www.tinyurl.com/nfx3rnr) found 72 per cent of respondents either commuted via bicycle for the first time last summer or had been doing so two to five years prior. The study, released in late February, also found cycling to transit stations in the Greater Toronto Area has doubled over the last three years.

PRO ATHLETES PREFER THE BETTER WAY

He scored few goals for the blue and white, but newly departed Maple Leaf David Clarkson was a winner when it came to taking transit.

Clarkson made a point of regularly taking the Better Way, something that was pointed out in a discussion thread on Reddit Toronto following his trade last week to the Columbus Blue Jackets. His preference of subways over sports cars was most notably featured on a 2013 episode of the HBO hockey series *24/7*.

Perhaps the Toronto pro-athlete most synonymous with public transit is Matt "Red Rocket" Bonner, who, as his nickname suggests, took the TTC while playing for the Raptors.

i **Rahul Gupta is The Mirror's transit reporter. His column appears on Thursday. Reach him on Twitter: @TOinTRANSIT**

School Closings: Maybe Cliffside?

by Larry Johnston

Cliffside may be one vulnerable school as the province has ordered a purge of the Toronto District School Board's underused schools and property.

Lists were passed back and forth between the ministry of education and the school board that has closed a handful of its 640 schools in recent years. The minister suggested any school that did not have enough students to fill 65 per cent of its spaces should be considered for closing. That turned out to be 131, but the board debated the issue and finally made a list of 48. Most will probably survive, but repairs beyond annual maintenance will be unlikely.

There were few elementary schools on the hit list in southern or eastern Scarborough, but the schools most vulnerable here appear to be in Cliffside, and Guildwood. Other possibilities include Jack Miner, as the board added 30 east end schools at the last minute.

More secondary schools are on the list than off, including Wilfred Laurier, Robert Borden, and West Hill.

Changes in provincial policy may have something to do with this as the technical schools, even Danforth Tech and Central Tech, are listed. So are senior public schools like Robert Service and Jack Miner that are now generally being discouraged.

Many of the school buildings also house day cares as provided by provincial policy. Others have English as a second language or adult learning centres that may be federally funded. The province partially recognizes day cares, but other educational uses in schools that the school board does not run are not. The province would not want the board to pay for the same space or students twice.

The board has projected the student occupancy of its schools two decades into the future and in most cases it predicts increasing enrolment. If left alone, both Cliffside and Guildwood should reach acceptable sizes for small schools. Guildwood was built on a former golf course in 1952 after two years in portables. Current official numbers are 118 students with more than half in primary grades (junior kindergarten to grade three.)

One veteran trustee said at the last meeting before the provincial deadline that school population is unpredictable. Forecasts can only be made two years ahead, she said. "You can't stop people from having children and moving."

Another experienced trustee said the ideal thing in his area would be for the Roman Catholic Board to take over the underused school because the two they already had there were "bursting at the seams." Another had seen schools closed and later reopened with a new generation of children. Another pointed out that schools with too small a population loose specialists in music and other subjects so children loose exposure to full programs.

One school in the old west end is nearly full with federal programs.

Such a school is no help if the pubic board is ever to qualify for lot levies from developers to pay for additions like the separate and other greater Toronto boards receive. The TDSB would have to have more students than pupil spaces and meet some other conditions to be able to charge development fees.

The trustees spent most of the evening debating whether to add schools to their list. There was one group that was just under the provincial 65 per cent guideline, and another with tenants such as day cares, that would have trouble finding other places to go, particularly downtown. There were also four schools that the board had agreed it could sell to the separate board late last year.

Several trustees prefaced their remarks by saying they were new. Half have just been elected for the first time. Others were definitely veterans and had been through it all before. But only one from Etobicoke expressed anger with the province.

Jerry Chadwick, from Scarborough East, said he was an "old" trustee. While board and ministry staff had had conversations about what might be acceptable, there was nothing new in writing. "We don't know what process we will be allowed to follow." Closing a school usually seems to take two or three school years after the original board decision

Elsewhere, Toronto city council had the list of 131 schools, many of which have day care facilities, and others adult or special education. One school on the list is for children in wheel chairs. Councillor Gary Crawford seconded councillor Michael Layton's motion asking the province to recognize schools as "community hubs."

The minister finally replied that the board would have to do more work, although she was not yet ready to appoint a supervisor (who would take over the powers of the trustees.)

Year of Ice – *Enough!!*

by Larry Johnston

The winter of 2013-14 was considered the worst for many years, if ever, for ice and snow that nearly crippled the City. This winter of 2014-15 has been even colder although not as many City snow plows have been out. Resident Doug Watling questioned the City why the laneway behind George P. Mackie School was not plowed for the first time in years. The City advised "they had never included this." (?!)

Torontonians fought back hoping for more ice time for City-maintained outdoor rinks of which many were closing by the end of February. Ice is expensive. It costs about $5,000 to maintain a rink with the accompanying facilities for one week. Thanks to the generous donations of Tim Hortons and the MLSE Foundation of $100,000 sponsorship each, there is enough for a total of 29 rinks (including the Scarborough Civic Centre) to remain open until March 22nd – weather permitting.

Community council's request to build artificial ice rinks outdoors in Scarborough and North York hit a snag with the full council. Councillor Shelley Caroll pointed out that Scarborough could not order facilities up for North York.

As for indoor ice, organized hockey is trying to make a comeback. The City may have been trying to take advantage of this by increasing rates to help balance the budget.

A city meeting on the budget in Scarborough February 2 drew more delegations from hockey organizations than any other group. Ice now costs about $5000 per year for a child at the top level, and about the same for adults now playing outside Toronto or Scarborough, at weird hours.

Leagues of police, firefighters and even electrical workers that used to use up daytime hours in Toronto or Scarborough can no longer afford them. The rates for such off hours are now less at suburban for-profit rinks. Scott Harrison has been complaining for years about the price of ice for the professional services leagues who can use hockey for recreation and fitness during the day. He also would like outdoor rinks in Scarborough for everyone.

Dennis Moulds, coordinator of a group of men who have been playing recreational, no body-checking hockey in Scarborough arenas for about 40 years, said they are now playing at a Scarborough rink late at night. He can't understand why the rink appears to be empty for two hours before they get there. The same seems to be the case with other arenas. He said a new group would not have the resources to get started.

Harrison suggested the parks and recreation department should do the same thing they did for swimming. Lower the rate to make it attractive, and people will come out as they have for the pools.

"Me Pipes are Frozen"

Fill plastic bottles with boiling water and pack around the frozen pipes.

(For your own pipes, don't forget to wear a jacket that comes down over your kidneys!!)

NOTICE OF INTENT

FISHLEIGH DRIVE
EROSION CONTROL PROJECT
ADDENDUM

Toronto and Region Conservation Authority (TRCA) has commenced a study regarding the extension of erosion control along the base of the Scarborough Bluffs behind 81 and 83 Fishleigh Drive.

TRCA invites you to participate in this study, which is subject to approval through the Class Environmental Assessment for Remedial Flood and Erosion Control Projects addendum process.

If you wish to be involved in this study, or to receive further information, please contact:

Jet Taylor
Environmental Technician,
Environmental Engineering Projects
Toronto and Region Conservation Authority
1 Eastville Avenue, Toronto M1M 2N5
Phone: 416-392-9690
Fax: 416-392-9726
Email: jtaylor@trca.on.ca

Subject to comments received as a result of this study and the receipt of necessary approvals and funding, TRCA intends to proceed with the construction of this project.

Toronto and Region Conservation
for The Living City

Fishleigh Drive Erosion Control Project Addendum

Public Meeting
August 25, 2015

The Living City Foundation

Toronto and Region Conservation for The Living City

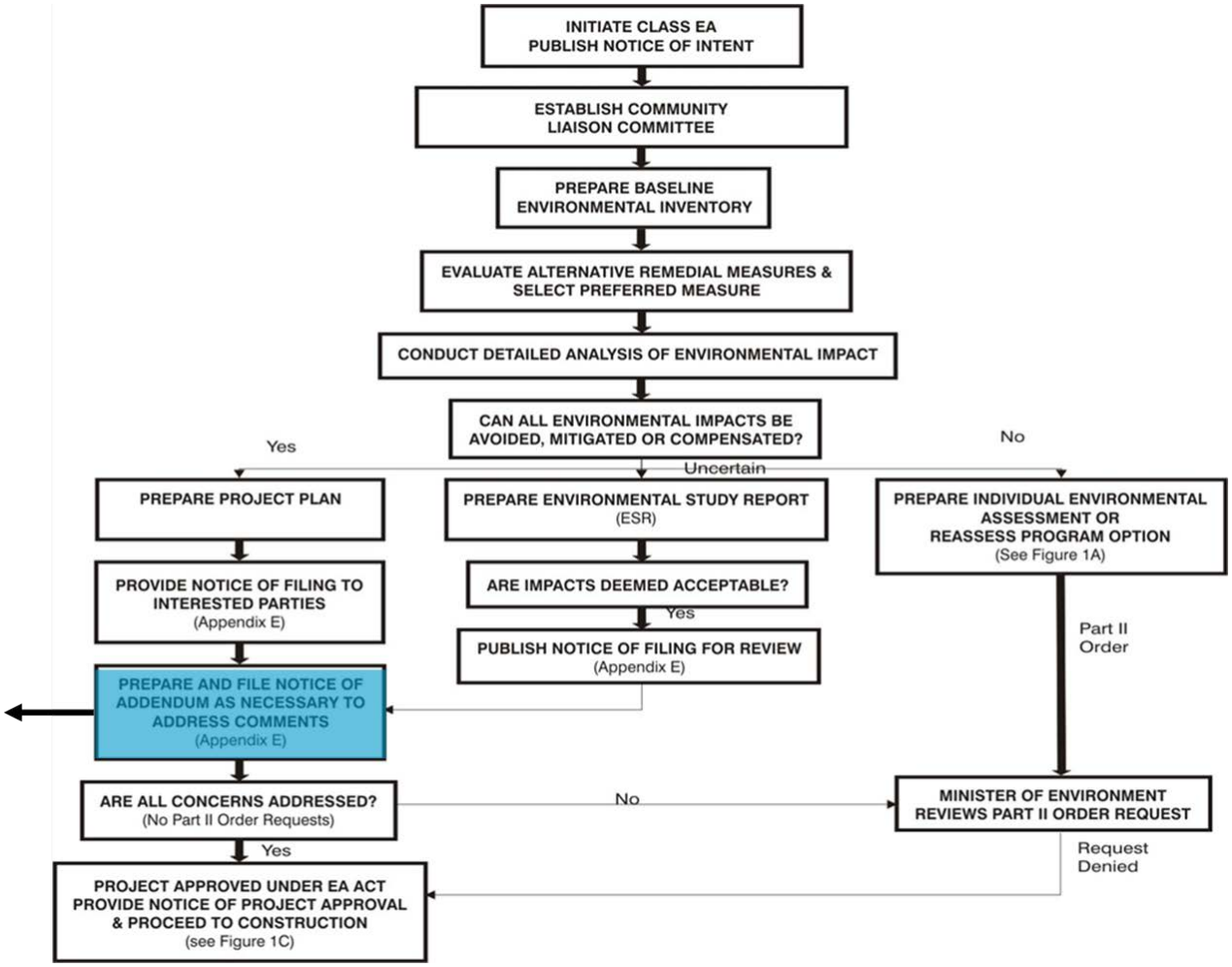
Presentation Outline

1. Project Objectives
2. Class EA and Addendum Process
3. Project Location and Description
4. Project and Erosion Control Alternative History
5. Preferred Alternative and Fisheries Compensation
6. Detailed Designs
7. Next Steps

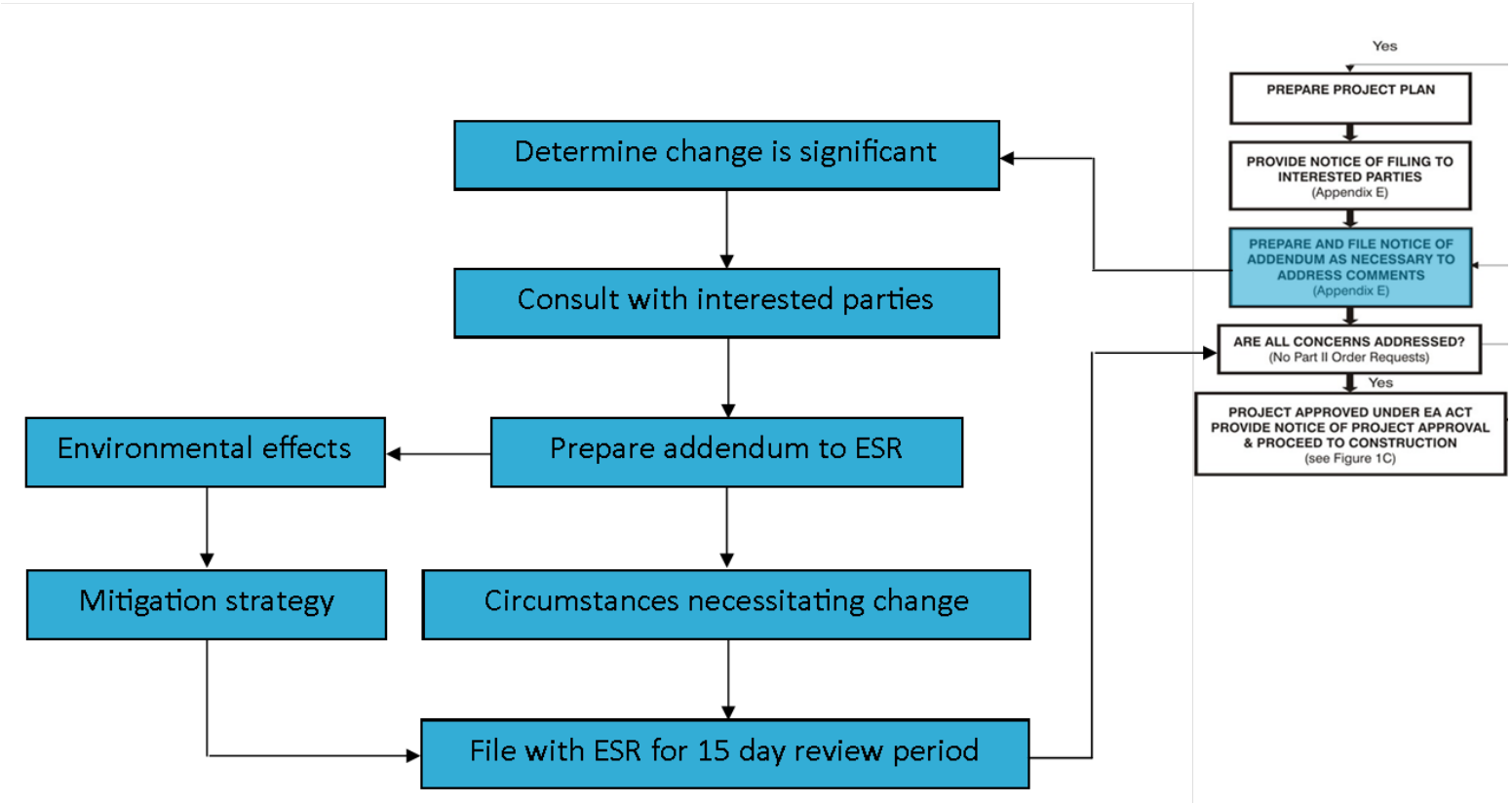
Project Objectives

- To provide protection for human life and property from ongoing crest recession at 81 and 83 Fishleigh Drive through:
  - Installation of a slope buttress below 81 and 83 Fishleigh Drive
  - Extension of the existing revetment structure to protect the buttress
- To consider the conservation of the Bluffs by limiting the scope of the project to a length sufficient to provide protection to 81 and 83 Fishleigh Drive

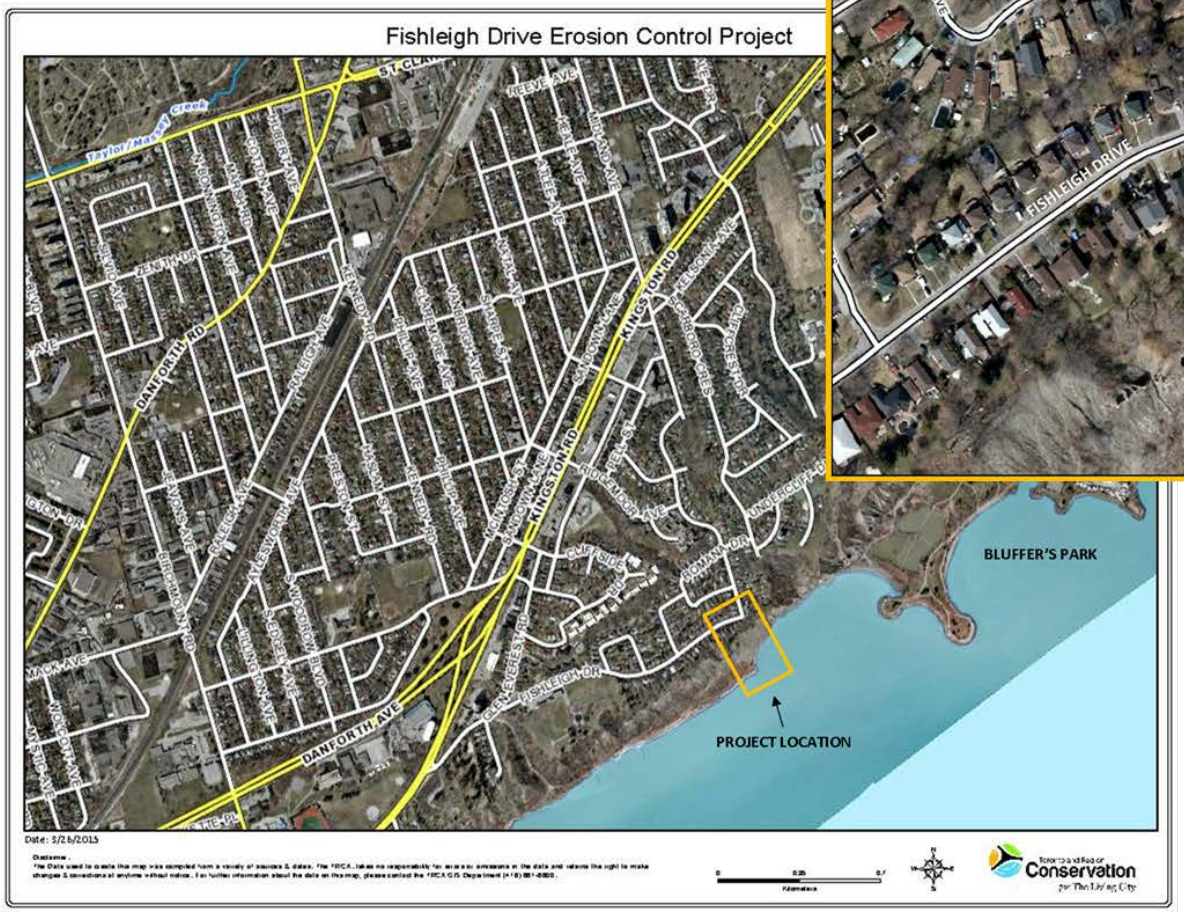
Class EA Process



Class EA Addendum Process



Project Location



Project Location Continued

Source: http://www.flickr.com/photos/heatherbee/2873429474/

Project Location Continued

General Site Description

Fishleigh Drive

- North shore of Lake Ontario atop the table lands of the Scarborough Bluffs directly west of Bluffer's Park
- Erosion control revetment structure currently in place from 33 – 83 Fishleigh Drive
- 81 and 83 Fishleigh Drive currently unprotected from easterly waves and subject to toe erosion

Local Site Description

- ~65 metres of shoreline below 81 and 83 Fishleigh Drive
- Bluffs are approximately 53 metres high
  - Slope inclination of 1.5 V : 1 H along the lower slope
  - Slope inclination nearly vertical approaching the apex
- Unique Stratigraphy
  - Sunnybrook Till at lake level
  - Thorncliff Till middle section
  - Overlain with a thin layer of Iroquois Sand
- Slope predominately bare of vegetation
- Rubble beach providing partial protection

Scarborough Bluff Stabilization Early History

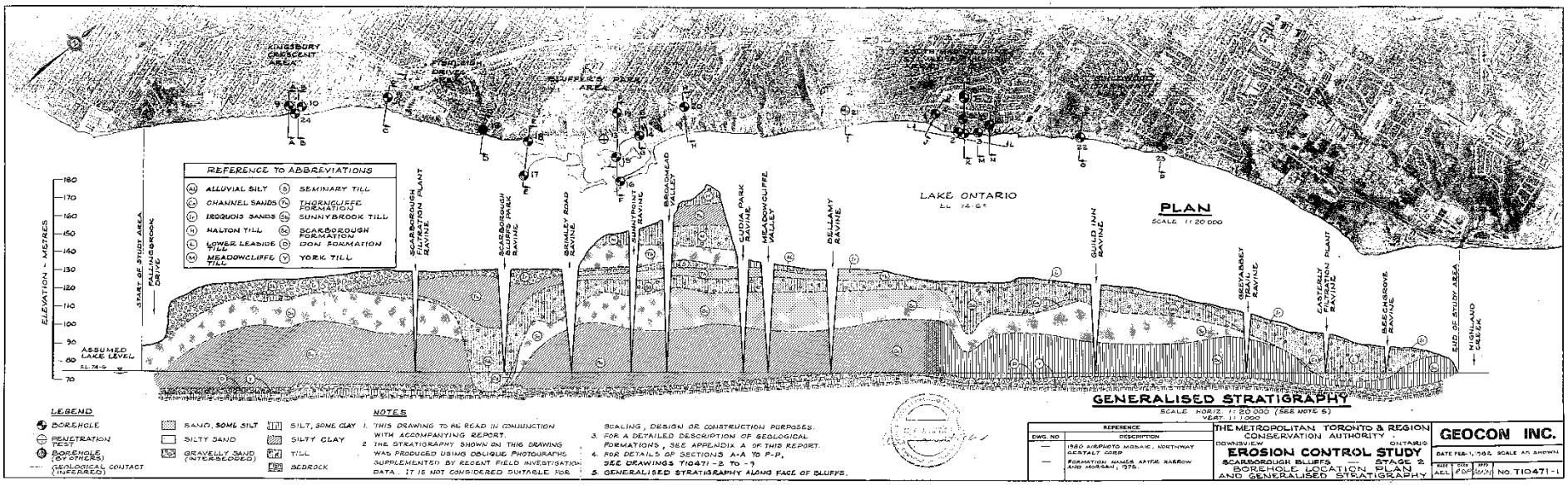
1980/1981 Geocon Inc. Report

- To provide geotechnical information to the TRCA
- To aide in the formulation of a Master Plan for stabilization of the Scarborough Bluffs

Focused on:

- Soil stratigraphy
- Slope regression rates
- Groundwater conditions
- Factors pertinent to slope stability
- Remedial measures

Geocon Inc. Bluff Stratigraphy



Project History

1980/1981: Geocon Inc.

- Geotechnical study of the Bluffs as a whole

1987: Keith Phillpott Consulting Limited

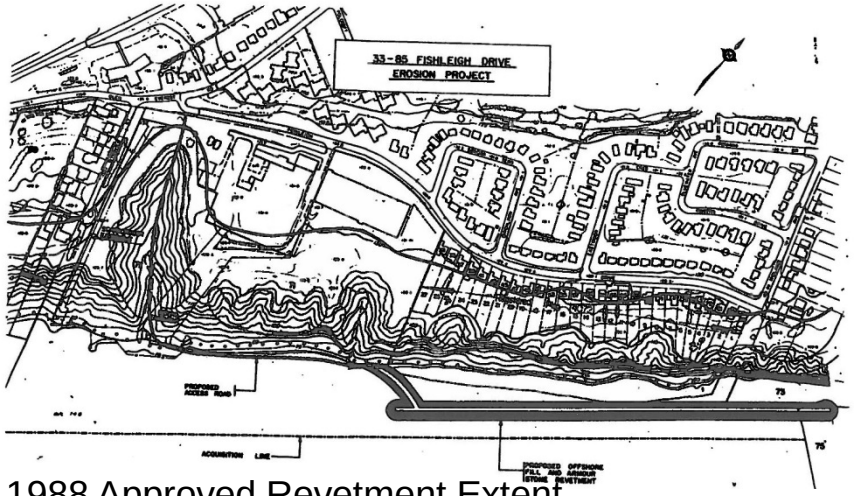
- Shoreline protection options
- Armourstone revetment to allow for self-stabilization

1988: Terraprobe Inc.

- Slope regression rate 0.3 – 0.8 m/year
- With toe protection – Stable slope realized in 10 – 30 years

1988: TRCA Environmental Study Report

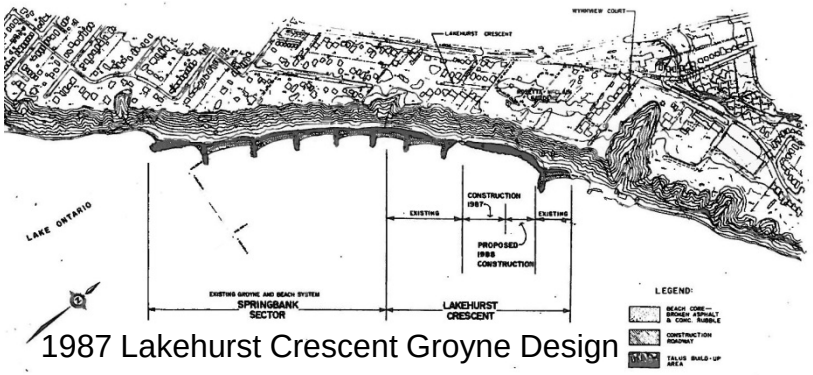
- Revetment structure and offshore fill
- 33 Fishleigh Drive – 1 Midland Avenue
- Approved through Class EA process



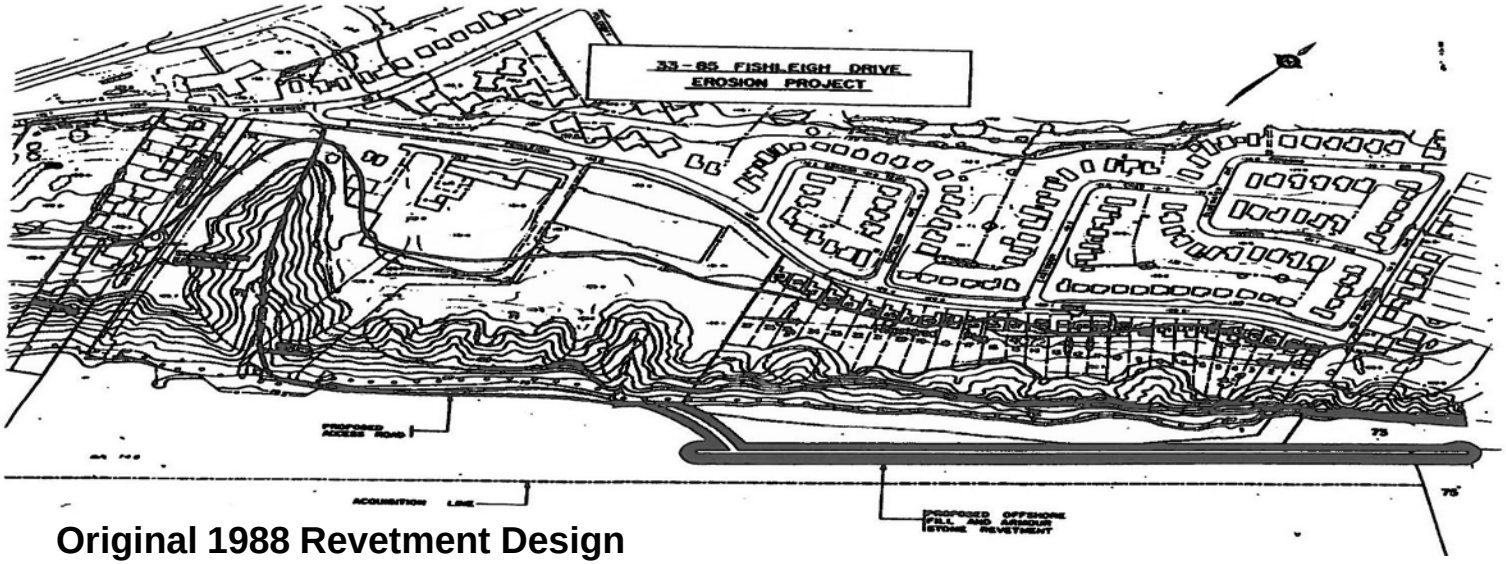
1988 Approved Revetment Extent

Original 1988 Class EA Options

1. Property Acquisition
2. Artificial Beach + Groynes
3. Revetment
4. Revetment with a Fill Berm behind 83 and 85 Fishleigh Drive



1987 Lakehurst Crescent Groyne Design



Original 1988 Revetment Design

Project History Continued

1989 – 1994: Construction

- Revetment built from 33 – 83 Fishleigh Drive

1993: 85 Fishleigh Drive Demolished

- Crest would be within 10 metres in 15 years

1994/1995: Easterly Endpoint Reassessed

- Protection of the “Needles”
- W.F. Baird & Associates
- 6 Endpoint Options

1995: Endpoint Selection

- Public and Agency consultation
- Water and Related Land Management Advisory Board motion:
  - End Below 83 Fishleigh Drive (Option C-3)
    - Small headland with cobble reef fisheries compensation
  - Investigate further options to protect 81 – 83 Fishleigh Drive and 1 – 5 Midland Avenue

Six Revetment Endpoint Designs (1994/1995)

Option A – Extension of revetment to beyond 1 Midland Avenue

Modified Option A – Submerged berm in place of revetment extension

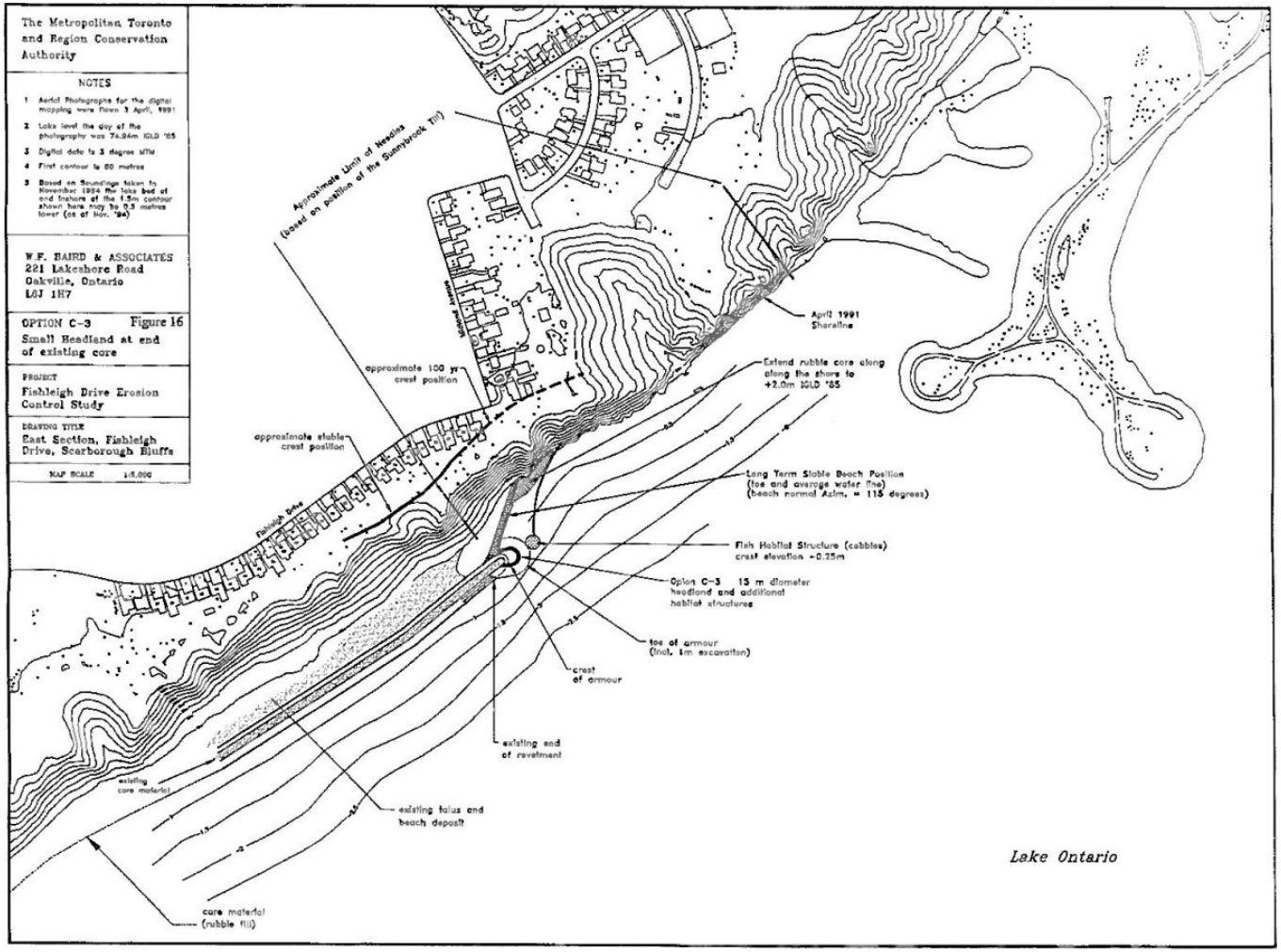
Option B – Extension of revetment to Midland Avenue

Option C-2 – Large headland - ending revetment below 83 Fishleigh Drive

Option C-3 – Small headland - ending revetment below 83 Fishleigh Drive

Option D – Reinforcement of existing offshore shoal

Selected Option C-3



Project History Continued

2002/2003: Terraprobe Geotechnical Assessment

- Slope at 1 Midland Avenue has receded 6 – 16 metres over previous 12 years (0.5 – 1.3 m/year)
- Recommended that revetment be extended

2005: Terraprobe Site Review and Assessment

- Without toe protection LTSSC would be within 1 metre of 81 Fishleigh Drive and beyond 83 Fishleigh Drive and 1 Midland Avenue

2006: Terraprobe Slope Stability Review

- Unique stratigraphy of site
- Stable slope can be as steep as 1.2 to 1.3 H : 1 V

2012: Terraprobe Slope Stability Review

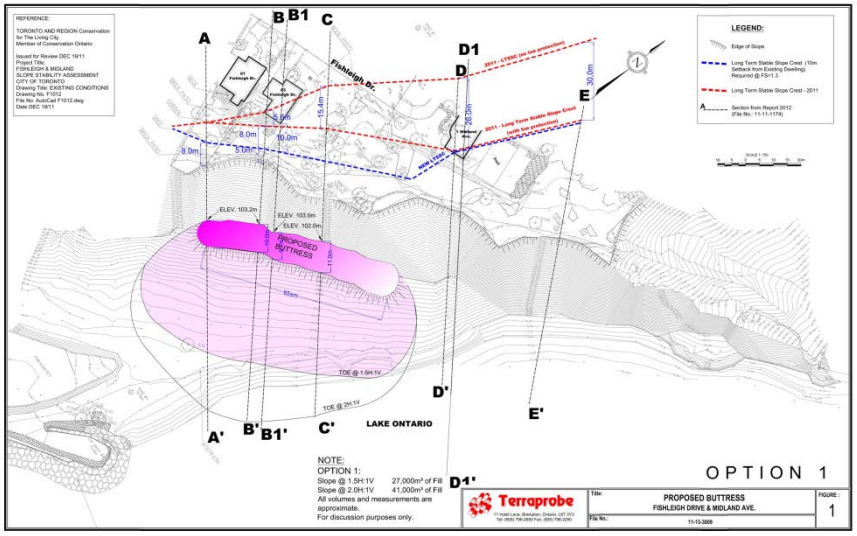
- With no further toe erosion, LTSSC through 1 Midland Avenue and within 1 m of 83 Fishleigh Drive

2014: Terraprobe and Shoreplan Review and Options

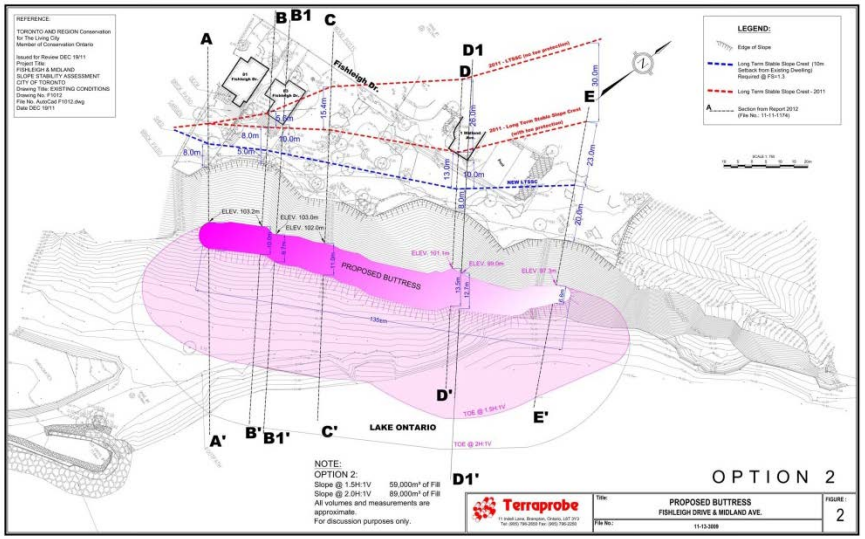
- 2 Buttress and 6 beach and revetment options proposed

2014 Terraprobe Slope Stabilization Options

- Option 1 – 65 ±m short buttress ending before 1 Midland Avenue
- Option 2 – 135 ±m long buttress ending past 1 Midland Avenue
- Each to be incorporated with toe protection (Shoreplan)



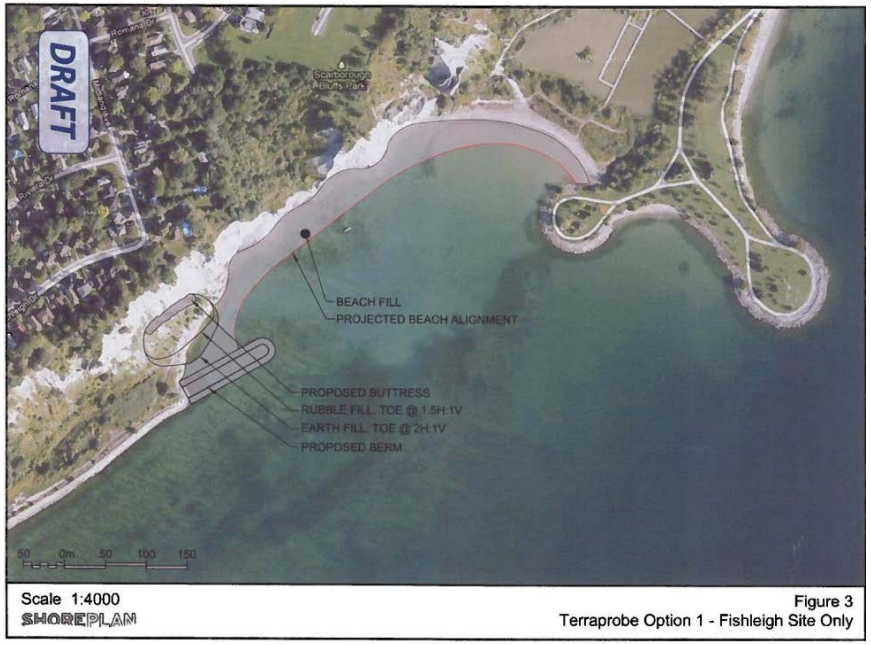
Short Buttress Option



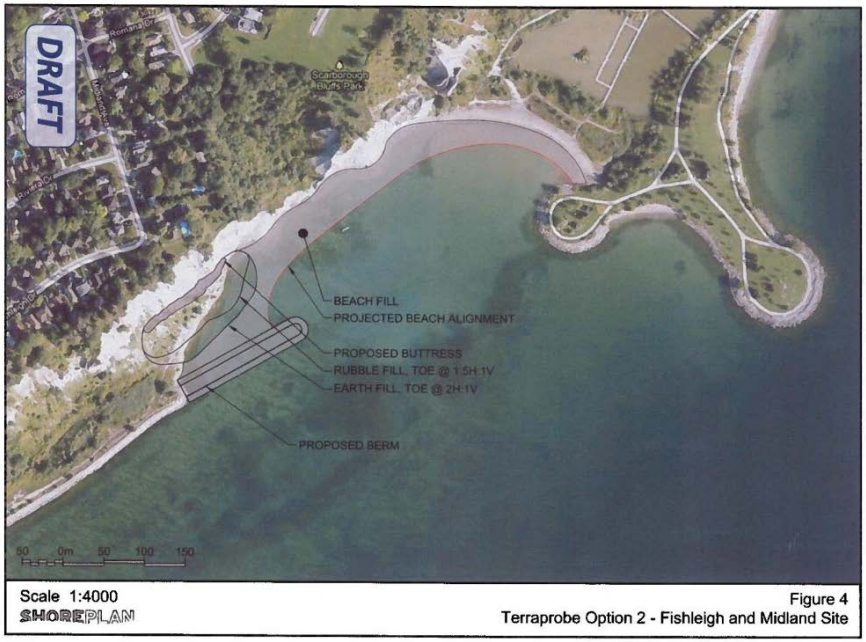
Long Buttress Option

2014 Shoreplan Toe Protection Options

- Gravel beach between end of revetment and Bluffer's Park
  - Modification of revetment in conjunction with Terraprobe buttress options



Beach and Revetment with Short Buttress



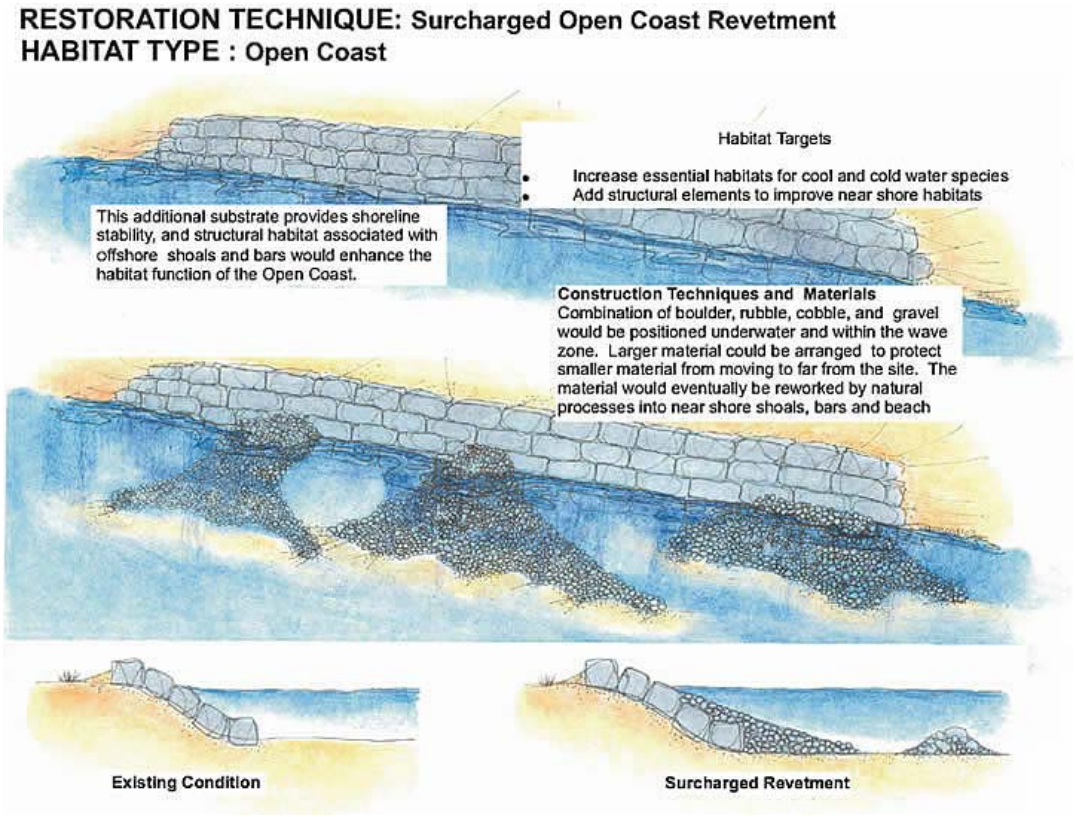
Beach and Revetment with Long Buttress

Preferred Erosion Control Alternative

- Terraprobe Option 1 (short buttress) with associated Shoreplan toe protection - Modified
  - Elimination of gravel beach
  - Focus on reducing the scope of the erosion control units to a length necessary to provide protection only to 81 and 83 Fishleigh Drive

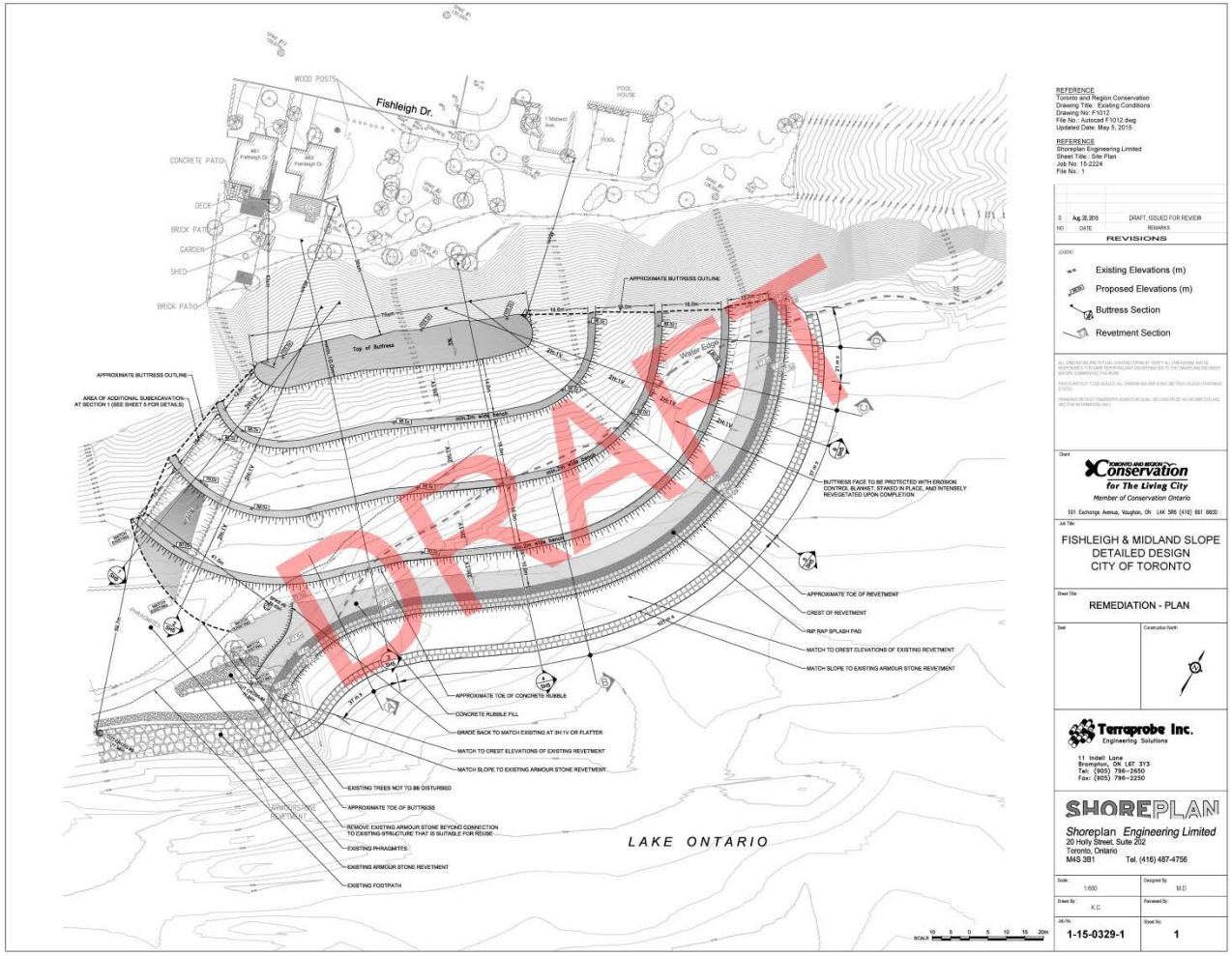
Fisheries Compensation Opportunity

- Surcharged Open Coast Revetment

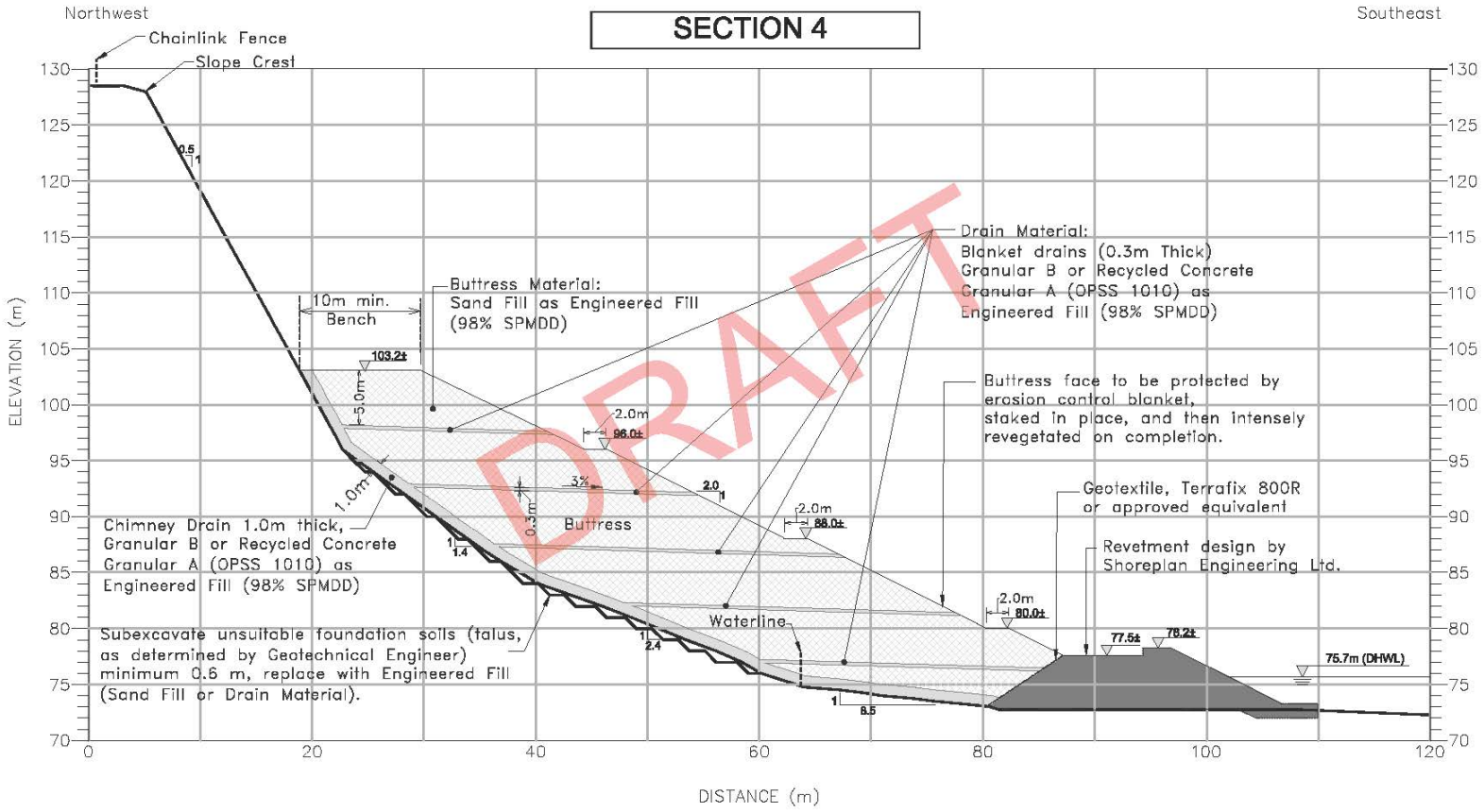


Aquatic Habitat Toronto, *Accessed 2015*

Draft Detailed Designs



Draft Detailed Design Continued



Next Steps

- Refine detailed designs
- File Addendum Report with original ESR for review
- Acquire necessary permits and approvals
- Commence construction

MINUTES
FISHLEIGH DRIVE EROSION CONTROL PROJECT ADDENDUM
PUBLIC INFORMATION MEETING

LOCATION: Training room 1, 1 Eastville Ave, Toronto
DATE: 25 August, 2015
TIME: 1:30 PM – 3:15 PM

PARTICIPANTS

Patricia Newland, TRCA	Jim Adams, [redacted]
Brook Piotrowski, TRCA	Cristina van Blommestein, [redacted]
Jet Taylor, TRCA	Tom Morgan, [redacted]
Jason Crowder, Terraprobe Inc.	Dennis Tsogkas, [redacted]
Michael Diez de Aux, Terraprobe Inc.	Agnes Bristow, [redacted]
Casey Chan, [redacted]	Leif Bristow, [redacted]
Frank Wehrmann, [redacted]	Shashi Shetty, [redacted]
Michelle Convey, [redacted]	Rishi Luthra, [redacted]

DISTRIBUTION

☒File ☒Participants
Nick Saccone, TRCA
Moranne McDonnell, TRCA

MINUTES

Item	*Description*	*Action By*
Introduction	• Meeting commenced at approximately 1:40 pm. • Patricia Newland (PN) welcomed the group to the Public Information Meeting. • TRCA and Terrarpobe staff introduced themselves including their role in the project. Following that, attendees introduced themselves providing their addresses. • PN delivered a brief PowerPoint presentation providing project history and information pertinent to the project to date. Jason Crowder (JC) and Michael Deiz de Aux (MD) provided input throughout, particularly pertaining to site stratigraphy, general bluff erosion and Terraprobe's Draft Detailed Design.	
	• Cristina van Blommestein (CvB) asked if the bluffs behind her property could be more accurately described as an "escarpment"	

	rather than a bluff. JC explained the terms are essentially interchangeable and that an escarpment usually refers to a rock face and a bluff usually implies the presence of a lake. • Dennis Tsogkas (DT) inquired about crest recession estimates and the existence of seepage and drainage issues. JC explained that all Long Term Stable Slope Crest (LTSSC) estimates were based on industry best practices and did not constitute any guarantees. He also mentioned that all estimates were based on conditions on inspection date and any change between the inspection date and remediation implementation could impact estimates. Following this, in response to seepage and drainage concerns, JC used the Geocon Inc. 1982 Generalized Stratigraphy map to show that although some groundwater seepage is present, it is not as great a concern as other parts of the bluffs because of the project area's unique stratigraphy. DT expressed concern of pooling and road flooding around his property during storm events. JC and MD explained that this was a localized surficial storm water management issue and not related to bluff ground water. • CvB asked if the original LTSSC estimate was realized by implementation of the original revetment structure constructed between 1989 and 1995. JC mentioned that although he is unsure as to exactly where the current crest location is in relation to the original LTSSC estimate he can say that the toe protection is working to allow the bluffs to find their natural angle of repose. PN offered that other portions of the bluffs (outside of Fishleigh Drive) have continued to experience erosion past their respective anticipated LTSSCs. • Michelle Convey (MC) asked how far down from the top of the bluffs the buttress will be. JC told her 25m. • Leif Bristow (LB) inquired if the design was a "terraced buttress". MD responded that yes, it was a terraced buttress to meet with Ministry of Transportation standards. JC explained further that the current design allowed for three 8 metre tiers at 35° with a 2 metre bench between each. • DT asked about a possible trail extension between the proposed revetment and Bluffer's Park. PN explained that there may be future plans as part of Phase 2 of the Scarborough Waterfront Plan (SWP) but that this is a separate project and that current designs were developed to provide remedial erosion protection to 81 and 83 Fishleigh Drive and infrastructure in the area only. • Casey Chan (CC) asked for an estimate regarding construction duration. Brook Piotrowski (BP) responded that construction duration was material dependent but that he anticipated two years for the construction of the revetment and buttress. • MC asked if the construction access would be through the current access road. BP told her yes. DT asked if that was the same access that recently had a landslide. BP told him yes.	

	• Shashi Shetty (SS) asked if construction was to start this year. PN responded that approvals and permitting are in the works and that the aggressive start timeline is November 2015. • CvB asked if construction truck vibration would lead to more instability of the bluffs. JC responded that there have been a number of studies which indicate that the vibration caused by construction trucks do not contribute to soil instability. • DT asked if taxes would be raised as a result of this project. PN informed him that she cannot speak for the City of Toronto and that she is not on the budget committee but that the City of Toronto provides TRCA with funding annually to complete projects of this nature. • Rishi Luthra (RL) asked if there would be vegetation of the slope buttress. MD informed him that yes, it would be vegetated. • Frank Wehrmann (FW) asked for further description of the proposed surcharged revetment for fisheries compensation. PN and BP spoke to its function, implementation and how it relates to permitting and approvals. (FW) was satisfied with the explanation and offered no follow up questions. • CC asked when 1 Midland would be demolished. PN informed him that TRCA is currently leasing to the previous owner with a five year contract and that monitoring is ongoing to insure the safety of the tenant. The date of demolition will be based on property safety and terms of the lease. • CC asked what could be done to impede crest recession at his property. PN offered to circulate bluff homeowner information material (to be distributed with the meeting package) and suggested contacting Urban Forestry for further direction. • RL asked if the tree close to the edge of the bluffs at 81 Fishleigh Dr. was in danger of being lost, and whether it should be removed. JC told him that yes it is at risk and will probably be lost, and recommended that if the homeowner decides to proactively cut the tree down, that the roots be left in place. DT offered a contact at Urban Forestry. Jet Taylor (JT) also offered to provide appropriate contact information.	
Meeting Adjournment	• PN and JT thanked everyone for attending the meeting. • Meeting adjourned at approximately 3:15 pm.	

Prepared By: Jet Taylor
Date Issued: September 18, 2015

This confirms and records TRCA's interpretation of the discussions which occurred during this meeting. Unless notified in writing within ten (10) business days, these minutes will be considered final.

TORONTO AND REGION CONSERVATION AUTHORITY

FISHLEIGH DRIVE EROSION CONTROL PROJECT ADDENDUM

PUBLIC INFORMATION MEETING

TUESDAY, AUGUST 25, 2015
1:30 PM

TRCA WATERFRONT OFFICE – TRAINING ROOM 1 – 1 EASTVILLE AVENUE, TORONTO

RECORD OF ATTENDEES

NAME (Please print)	SIGNATURE	ADDRESS/ORGANIZATION	DAYTIME PHONE	EMAIL ADDRESS
Tim Adams	[redacted]			
CRISTINA VAN BLOMMESTEIN				
Tom Morgan				
Agnes Bristow				
Leif Bristow				
Frank Wichmann				
Michaela Conway				
Casey Chen				
DENNIS TSOKAS				
Shashi Shetty				
RISHI LUTHRA				

Toronto and Region Conservation for The Living City

Toronto and Region Conservation
for The Living City

1 Eastville Avenue
Scarborough, ON
M1M 2N5

October 7, 2015

Dear Resident,

Please be advised that Toronto and Region Conservation Authority has completed the Addendum to the Fishleigh Drive Erosion Control Project Environmental Study Report. The Addendum Report has been prepared in accordance with Section 3.8 of Conservation Ontario's *Class Environmental Assessment for Remedial Flood and Erosion Control Projects (2002 – amended 2013)*.

As described in the Addendum Report, the preferred solution determined through the Class Environmental Assessment process is the implementation of slope stabilization and shoreline protection measures below 81 and 83 Fishleigh Drive to provide erosion control to these properties and the infrastructure at the Fishleigh Drive and Midland Avenue road allowance.

The enclosed Notice of Filing has been prepared in accordance with the above-noted process and is being distributed to all interested parties to inform them of their ability to review and provide comment on the Addendum Report. The report is available for public review as of October 7, 2015 for a minimum of fifteen (15) calendar days at the locations identified in the Notice.

An electronic copy has been made available via Dropbox and can be accessed at the following link: https://www.dropbox.com/sh/e7e70rmii1plt26/AACwqcYCvqE3dubJ432Yu_Tua?dl=0

Should you have any questions or concerns regarding the Notice of Filing or if you would like a hardcopy of the Addendum Report sent to you, please do not hesitate to contact the undersigned.

Sincerely,

Jet Taylor
Environmental Technician
Engineering Projects
Restoration & Infrastructure Division
Phone: 416-688-7627 Email: jtaylor@trca.on.ca

Encl.

cc: P. Newland
M. McDonnell

Toronto and Region Conservation
for The Living City

1 Eastville Avenue
Scarborough, ON
M1M 2N5

October 7, 2015

Gary Crawford
Councillor, Ward 36
City Hall
100 Queen Street West, Suite A11
Toronto, ON M5H 2N2

Dear Councillor Crawford,

Re: Fishleigh Drive Erosion Control Project Addendum

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Sincerely,

Jet Taylor
Environmental Technician
Engineering Projects
Restoration & Infrastructure Division
Phone: 416-688-7627 Email: jtaylor@trca.on.ca

Encl.

cc: G. Ross, City of Toronto
P. Newland, TRCA
M. McDonnell, TRCA

Toronto and Region Conservation
for The Living City

1 Eastville Avenue
Scarborough, ON
M1M 2N5

October 7, 2015

Dan Harris
M.P., Scarborough Southwest
Constituency Office
1674 Kingston Road (Main Office)
Scarborough, ON M1N 1S5

Dear Mr. Harris,

Re: Fishleigh Drive Erosion Control Project Addendum

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Sincerely,

Jet Taylor
Environmental Technician
Engineering Projects
Restoration & Infrastructure Division
Phone: 416-688-7627 Email: jtaylor@trca.on.ca

Encl.

cc: P. Newland
M. McDonnell

Toronto and Region Conservation
for The Living City

1 Eastville Avenue
Scarborough, ON
M1M 2N5

October 7, 2015

Lorenzo Berardinetti
M.P.P., Scarborough Southwest
Constituency Office
3090 Kingston Road
Scarborough, ON M1M 1P2

Dear Mr. Berardinetti,

Re: Fishleigh Drive Erosion Control Project Addendum

Please be advised that Toronto and Region Conservation Authority has completed the Addendum to the Fishleigh Drive Erosion Control Project Environmental Study Report. The Addendum Report has been prepared in accordance with Section 3.8 of Conservation Ontario's *Class Environmental Assessment for Remedial Flood and Erosion Control Projects (2002 – amended 2013)*.

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Sincerely,

Jet Taylor
Environmental Technician
Engineering Projects
Restoration & Infrastructure Division
Phone: 416-688-7627 Email: jtaylor@trca.on.ca

Encl.

cc: P. Newland
M. McDonnell

Toronto and Region Conservation
for The Living City

1 Eastville Avenue
Scarborough, ON
M1M 2N5

October 7, 2015

Beth McEwen
City of Toronto Parks - Manager, Urban Forest Renewal
Locke House
355 Lesmill Road,
Toronto, ON M3B 2W8

Dear Ms. McEwen,

Re: Fishleigh Drive Erosion Control Project Addendum

Please be advised that Toronto and Region Conservation Authority has completed the Addendum to the Fishleigh Drive Erosion Control Project Environmental Study Report. The Addendum Report has been prepared in accordance with Section 3.8 of Conservation Ontario's *Class Environmental Assessment for Remedial Flood and Erosion Control Projects (2002 – amended 2013)*.

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The enclosed Notice of Filing has been prepared in accordance with the above-noted process and is being distributed to all interested parties to inform them of their ability to review and provide comment on the Addendum Report. The report is available for public review as of October 7, 2015 for a minimum of fifteen (15) calendar days at the locations identified in the Notice.

An electronic copy has been made available via Dropbox and can be accessed at the following link: https://www.dropbox.com/sh/e7e70rmii1plt26/AACwqcYCvqE3dubJ432Yu_Tua?dl=0

Should you have any questions or concerns regarding the Notice of Filing or if you would like a hardcopy of the Addendum Report sent to you, please do not hesitate to contact the undersigned.

Sincerely,

Jet Taylor
Environmental Technician
Engineering Projects
Restoration & Infrastructure Division
Phone: 416-688-7627 Email: jtaylor@trca.on.ca

Encl.

cc: P. Newland
M. McDonnell

Toronto and Region Conservation
for The Living City

1 Eastville Avenue
Scarborough, ON
M1M 2N5

October 7, 2015

Nancy Lowes
City of Toronto Parks Manager – Scarborough District
Brimley Yard
451 Brimley Road
Scarborough, ON M1J 2A1

Dear Ms. Lowes,

Re: Fishleigh Drive Erosion Control Project Addendum

Please be advised that Toronto and Region Conservation Authority has completed the Addendum to the Fishleigh Drive Erosion Control Project Environmental Study Report. The Addendum Report has been prepared in accordance with Section 3.8 of Conservation Ontario's *Class Environmental Assessment for Remedial Flood and Erosion Control Projects (2002 – amended 2013)*.

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Encl.

cc: P. Newland
M. McDonnell

Toronto and Region Conservation
for The Living City

1 Eastville Avenue
Scarborough, ON
M1M 2N5

October 7, 2015

Leslie Rich
Conservation Ontario
Box 11, 120 Bayview Parkway
Newmarket, ON L3Y 4W3

Dear Ms. Rich,

Re: Fishleigh Drive Erosion Control Project Addendum

Please be advised that Toronto and Region Conservation Authority has completed the Addendum to the Fishleigh Drive Erosion Control Project Environmental Study Report. The Addendum Report has been prepared in accordance with Section 3.8 of Conservation Ontario's *Class Environmental Assessment for Remedial Flood and Erosion Control Projects (2002 – amended 2013)*.

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Jet Taylor
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Engineering Projects
Restoration & Infrastructure Division
Phone: 416-688-7627 Email: jtaylor@trca.on.ca

Encl.

cc: P. Newland
M. McDonnell

Toronto and Region Conservation for The Living City

1 Eastville Avenue
Scarborough, ON
M1M 2N5

October 7, 2015

Ms. Kathleen Hedley
Director, Environmental Approvals Branch
Ministry of the Environment and Climate Change
135 St. Clair Avenue West Toronto, Ontario M4V 1P5

Dear Ms. Hedley,

Re: Fishleigh Drive Erosion Control Project Addendum

Please be advised that Toronto and Region Conservation Authority has completed the Addendum to the Fishleigh Drive Erosion Control Project Environmental Study Report. The Addendum Report has been prepared in accordance with Section 3.8 of Conservation Ontario's *Class Environmental Assessment for Remedial Flood and Erosion Control Projects (2002 – amended 2013)*.

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Restoration & Infrastructure Division
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Encl.

cc: P. Newland
M. McDonnell

NOTICE OF FILING

FISHLEIGH DRIVE
EROSION CONTROL PROJECT ADDENDUM

Toronto and Region Conservation Authority (TRCA) has now completed an Addendum to the Fishleigh Drive Erosion Control Project Environmental Study Report. The Addendum Report has been prepared in accordance with Section 3.8 of Conservation Ontario's *Class Environmental Assessment for Remedial Flood and Erosion Control Projects (2002 – amended 2013)*.

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The report is available for review electronically upon request. Hard copies are also available at the following locations:

Cliffcrest Library
3017 Kingston Road
Tues/Thurs 12:30 pm to 8:30 pm
Wed/Fri 10:00 am to 6:00 pm
Sat 9:00am to 5:00 pm

Taylor Memorial Library
1440 Kingston Road
Tues/Thurs 12:30 pm to 8:30 pm
Wed/Fri 10:00 am to 6:00 pm
Sat 9:00am to 5:00 pm

TRCA Waterfront Office
1 Eastville Avenue
Mon - Fri 8:00 am to 4:00 pm

Written comments must be received by **October 23, 2015**:

Patricia Newland, Project Manager II
Toronto and Region Conservation Authority
1 Eastville Avenue
Toronto, Ontario M1M 2N5
Phone: (416) 392-9690
Fax: (416) 392-9726
Email: pnewland@trca.on.ca

Subject to comments received as a result of this study and the receipt of necessary approvals and funding, TRCA intends to proceed with the construction of this project. If any individual feels that serious environmental concerns remain unresolved after consulting with TRCA staff, it is their right to request that the project be subject to a Part II order by the Minister of the Environment. Part II Order requests must be received by the Minister, with a copy to TRCA, at the following address by **October 23, 2015**:

The Honourable Glen Murray
Minister of the Environment and Climate Change
11th Floor, Ferguson Block
77 Wellesley Street West
Toronto ON M7A 2T5

Notice issued October 8, 2015

Toronto and Region Conservation
for The Living City®

NOTICE OF FILING

FISHLEIGH DRIVE
EROSION CONTROL PROJECT ADDENDUM

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1 Eastville Avenue, Toronto, Ontario M1M 2N5
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Email: pnewland@trca.on.ca

Toronto and Region Conservation for The Living City

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Minister of the Environment and Climate Change
The Honourable Glen Murray
11th Floor, Ferguson Block, 77 Wellesley Street West, Toronto ON M7A 2T5

Notice issued October 7, 2015

APPENDIX B
Fishleigh Drive Erosion Control Project
Environmental Study Report – 1988

AN ENVIRONMENTAL STUDY REPORT

UNDER THE

CLASS ENVIRONMENTAL ASSESSMENT

FOR

WATER MANAGEMENT STRUCTURES

(CONSERVATION AUTHORITIES OF ONTARIO)

FISHLEIGH DRIVE EROSION CONTROL PROJECT

THE METROPOLITAN TORONTO AND REGION CONSERVATION AUTHORITY

MAY 1988

LIST OF TABLES AND FIGURES

TABLES

FIGURES

1. INTRODUCTION

The following Environmental Study Report (ESR) has been prepared in compliance with the Environmental Assessment Act following the planning and design process outlined in the report "Class Environmental Assessment for Water Management Structures" (Conservation Authorities of Ontario 1986) (Class EA). This document applies to a range of Conservation Authority capital works designed to reduce hazards to life and property from riverine/coastal flooding and erosion that are small scale and similar in nature in their environmental effects. The ESR represents the documentation of the environmental assessment process for certain water management undertakings for which the Class EA has been accepted and approved under the Act. The ESR documents the planning and design phase of a process which terminates with the construction of the undertaking. It includes a discussion of the undertaking, the approach to the undertaking, the existing natural and social environmental conditions in the area, the alternatives to the undertaking and alternative methods of carrying out the undertaking, and the construction requirements associated with the implementation of the undertaking.

As part of its Erosion and Sediment Control Program, one of nine programs under our Watershed Plan, The Metropolitan Toronto and Region Conservation Authority implements a program of major remedial works for the control of erosion and sediment loss (MTRCA 1980). Candidate sites are established based on a process which emphasizes the degree of hazard to life, structures and property. Each year a list of sites requiring remedial work is prepared within each municipality, and project files, which include engineering details and environmental inventory information, are developed for funding approval.

The Fishleigh Drive Erosion Control Project was developed to provide erosion protection to Nos. 33-85 Fishleigh Drive in the City of Scarborough.

Fishleigh Drive is located within the boundaries of Metropolitan Toronto in the City of Scarborough as shown on Figure I. The site is located on the Scarborough Bluffs adjacent to Nos. 33-85 Fishleigh Drive and comprises about 600m of Lake Ontario shoreline. This section of the Scarborough Bluffs is unprotected and therefore subject to direct wave attack. With continuing erosion of the toe, the bluffs are unable to attain a stable slope and remain oversteepened. Resulting recession rates range from a few centimetres to several meters in any given year. The erosion processes have been aggravated and accelerated as a result of recent high water levels in the Great Lakes. At the present time the homes range anywhere from 23m to 60m from the crest of the 53m high bluff.

As a result of the accelerated erosion and the growing concern being expressed by the residents of the area, Authority staff retained the coastal engineering firm of Keith Philpott Consulting Limited to prepare a design for the required shoreline protection works and the geotechnical firm of Terraprobe Limited to investigate and recommend remedial slope stabilization measures for the bluff face. These two studies are complete and the following remedial solutions have been recommended.

Keith Philpott Limited has recommended that an offshore fill and armourstone revetment approximately 560m long be constructed adjacent to 33-85 Fishleigh Drive. This should effectively stop the active continuing wave action at the toe of the Bluffs.

For the purposes of the investigation carried out by Terraprobe Limited, they assumed the toe of the bluffs would be protected. Based on this assumption and given their soils analysis and the distance of the homes to the face of the bluffs, they have recommended that the slopes be permitted to stabilize naturally (self stabilization). Self stabilization is a process whereby the slope is permitted to erode or fail and the material (talus) is permitted to accumulate at the toe of the Bluffs. This results in the long term flattening of the slope until a stable angle is achieved.

The primary advantage of self stabilization is that it will require little intervention or construction after the toe is in place, hence it will be low in cost. The primary disadvantage is that it will result in regression at the crest and the loss of additional property. The study indicates that the loss of table land would be from several meters up to twenty (20) metres, however, the stable crest will generally be more than 10m from the existing dwellings. In the case where the stable crest encroaches within 10m of the existing dwelling, the Authority may consider acquisition. However, there is only two property that the study has indicated might be in this position and it will be 5 to 10 years before the regression of the crest approaches the 10m line.

Another major component to this project is the construction of an access road to facilitate the construction of the offshore revetment. Staff considered several locations for gaining access to the shoreline and are recommending a that a road be constructed down the Fishleigh Ravine and 400 metres eastward to along the shoreline below Scarborough Heights Park Sector to the revetment location. This would be a permanent access road which would be used to maintain not only the Fishleigh revetment but also the extensive artificial beach and groyne system located to the west of the ravine. Therefore for the purposes of this report, the area influenced by the project covers two sectors: the Fishleigh Drive Sector and the Scarborough Heights Park Sector and extends from Wynnview Court in the west to Midland Ravine in the east as illustrated on Figure II.

The total estimated cost for the project including: construction of the access road, construciton of the offshore revetment, filling of the zone between the back of the revetment and the shore, and revegetation is $1,545,000. The construction is expected to take 4-5 years to complete depending upon the availability of fill and rubble materials.

Since all work is either on Authority or public property, no contribution from the owners is required.

2. BACKGROUND

The Metropolitan Toronto and Region Conservation Authority first became involved in shoreline management works under its 1977-1981 Waterfront Project. Under this Project, the Authority's shoreline erosion control works concentrated on the problem reaches of the Scarborough Bluffs. The Scarborough Bluffs are the most dramatic shoreline feature within Metropolitan Toronto. They comprise approximately 21.4km of shoreline and the eroded face in some sectors reaches heights of almost 65m.

In 1980, the MTRCA consolidated its resource management plans and programs into its Watershed Plan. The Watershed Plan identifies 10 component programs which collectively express how the MTRCA implements its mandate. One of those programs is the Shoreline Management Program designed to protect and prevent hazardous problem areas along the Lake Ontario shoreline.

A priority system for carrying out remedial works was developed in view of the total length of shoreline requiring assistance and the limited funds available. In order to establish priorities along the 21.4km of the Scarborough Bluffs, the shoreline was divided up into design blocks/sectors. These design blocks/ sectors are shoreline segments with similar physical characteristics which permit the segments to be protected as a unit. The characteristics to be considered include, shoreline configuration, construction access, bank conditions, talus formations and wave energy climate among others. Our priority and ranking system and our continuing review and updating of the information ensures the works we are proposing for a given year are addressing the most hazardous erosion sites along the waterfront.

To assist us in the ranking and updating of the priority system the Authority established an extensive monitoring system to record the amount of recession occurring along the crest of the bluffs at critical points. Tables I and II give a summary of the slope crest measurements carried out at Fishleigh between 1979-1987. In addition, the Authority in 1980-1981 retained Geocon Limited to examine in a comprehensive manner the problems along the Scarborough Bluffs. Another component of this study examined preliminary designs for the defined sectors. This information was used to better define the sectors and the priorities.

As a result of the increased hazard associated with the continuing recession at the crest of the slope adjacent to Fishleigh Drive and in response to the growing concerns of the residents on Fishleigh Drive, the Authority in January 1987 retained the coastal engineering firm of Keith Philpott Consultants Ltd. to prepare a design for shoreline protection works. The Geocon study had already outlined the need for shoreline protection works for the Fishleigh Sector and therefore Philpott Consultants Ltd. were only required to finalize the method of protection. However, the problems associated with the oversteepened bluff face still remained to be resolved. Therefore, Terraprobe Ltd., a geotechnical firm, was retained to investigate and recommend slope stabilization measures for the bluff face. The study was divided into two parts namely; site investigation and analysis and preliminary design. The prime objective of the investigation and analysis section was to determine the degree of hazard and recommend what approach to stabilizing the bluffs would be technically and economically the most practical. The second part would involve preliminary design of the recommended approach.

TABLE 1 - SUMMARY OF SLOPE CREST MEASUREMENTS

FISHLEIGH DRIVE	MTRCA				NORTHWAYS SURVEY		TERRAPROBE
House #	08/79	05/84	9/85	7/87	04/87	04/87	11/87
33	78	80	80	-	N/A	72.5	N/A
35	75.2	77.1	77.1	-	N/A	75	N/A
37	-	51.7	51.7	52.2	72.5	66	66.2
39	35	38.4	38.0	0	46.5	43	50.4
41	43	45.2	45	45	46	45	45
43	49.7	51.0	52.2	-	52	51	52
45	46	46.1	39.75	39.75	40	39.5	36.5
47	-	51.5	45.7	45.7	48	44.0	44.5
49	54	55.5	43.6	40	42	31.5	32.1
51	41	39.9	39.9	39.3	41.5	32.0	N/A
53	30	29.8	29.8	-	33.0	29.0	N/A
55	34.5	33.5	33.5	-	39.5	36.5	35.8
57	29.6	29.6	29.4	-	34.0	29.5	29.5
61	-	47.2	47.2	-	50	40.5	40.8
63	47.5	47.2	47.5	-	48.5	39.5	N/A
65	52.5	54	54	-	53.0	38.0	N/A
67	-	32.6	31.6	-	34.0	30.0	31.8
69	26	26	21	-	23.5	23.5	23.7
71	24.5	23.4	22.4	-	26.0	25.0	27.9
73	28.5	28.5	28.5	-	25.0	38.0	39.0
75	54.4	56.4	56.0	-	64.0	57.0	59.0
77	59.1	66.3	65.2	-	64.0	52.5	N/A

TABLE 1 - SUMMARY OF SLOPE CREST MEASUREMENTS - CONT'D

FISHLEIGH DRIVE	MTRCA				NORTHWAYS SURVEY		TERRAPROBE
House #	08/79	05/84	9/85	7/87	04/87	04/87	11/87
79	59	61	61	-	56.54	46.5	47.3
81	-	4.9	43.8	-	48.0	40.0	N/A
83	36.2	34.0	33.5	-	34.0	33.5	N/A
85	25	21.4	20.0	-	23.0	19.0	N/A

NOTES:
1) Measurements in metres
2) Most measurements taken from rear of dwelling to slope crest
3) N/A indicates that measurements not taken from same point
4) - indicates measurements not available.

TABLE 2

Measured regression distances (m)

House No.	MTRCA 1979-1985	MTRCA 1985-1987	MTRCA Total	Air Photos 1986-1987
37	0	0	0	6.5
39	0	-	*	3.5
45	6.4	0	6.4	0
47	5.8	0	5.8	4.0
49	10.4	3.6	14	10.5
51	1.1	0.6	1.7	9.5
53	0	-	*	4.0
55	0	-	*	3.0
57	0	-	*	4.5
59	0	-	*	2.0
61	0	-	*	9.5
63	0	-	*	9.0
65	0	-	*	15.0
67	0	-	*	4.0
69	5.0	-	*	0
71	2.1	-	*	1.0
75	0	-	*	7.0
77	1.1	-	*	11.5
79	0	-	*	10.0
81	1.1	-	*	8.0
83	2.7	-	*	-
85	5.0	-	*	4

Notes: 1) - refers to no data
2) * indicates no 1987 data, hence total regression cannot be compared to regression measured from 1986-87 air photos.
3) regression of less than 1 m not reported.

In anticipation of the remedial works, the Authority retained Michael Michaelski Associates to carry out a Botanical Inventory and Analysis. An aquatic inventory was carried out and a report prepared by Authority staff entitled: "1987 Waterfront Erosion Control Site Report - Scarborough Sector". Based on the recommendations by Keith Philpott Consultants Limited and Terraprobe Ltd., staff have recommended to the Ministry of Natural Resources, the Authority and affected owners that remedial works commence adjacent to 33-85 Fishleigh Drive in 1988.

3. APPROACH TO THE UNDERTAKING

Table 3 outlines the study process, noting the dates of completion of important milestones. The process closely follows that outlined in the Class EA and consists of four phases:

Phase I Problem Identification
Phase 2 Site Investigation - Alternative Examination
Phase 3 Preferred Solution
Phase 4 Implementation/Monitoring

The project team include the following Authority staff:

Coordinator of Environmental Project
Fisheries and Wildlife Technician
Resource Management Technician
Coordinator Water Control Structures

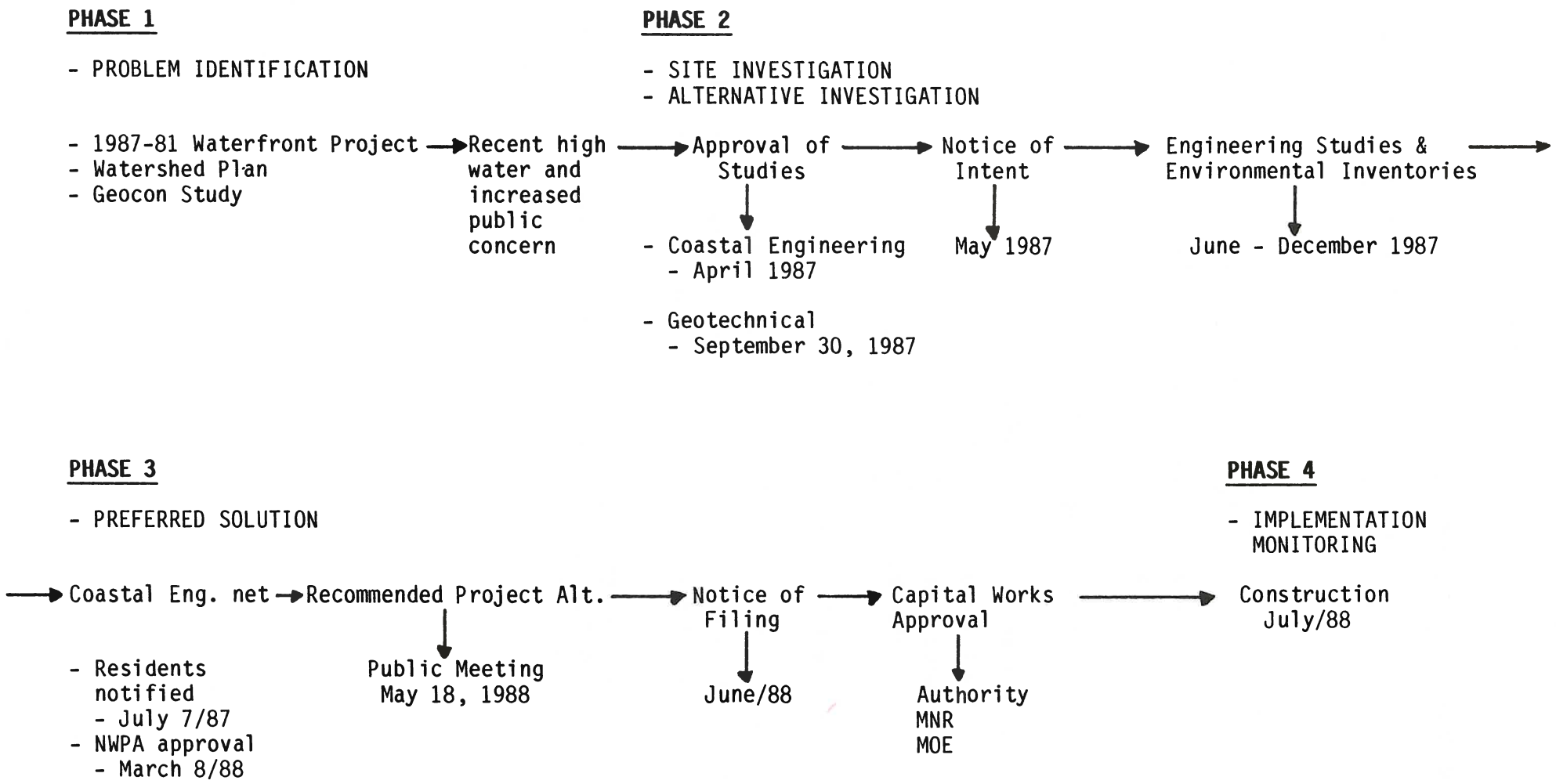
In addition, the following consulting firms were involved:

Terraprobe Limited - Geotechnical Engineers
Keith Philpott Consulting Limited - Coastal Engineering
Michael Michaelski Associates - Botanical Inventory and Analysis

As noted on Table 3, the Notice of Intent for the ESR was advertised in May 1987. Final engineering design was completed in 1988 with construction planned for July 1988.

TABLE 3

STUDY PROCESS



4. INVOLVEMENT

Documented public concern which includes correspondence which the Authority has on files dates from April 1984.

In light of our concerns regarding the existing hazard, the Authority in April 1987 retained Keith Philpott Consulting Limited to carry out an engineering study to determine the required coastal protection. The study was funded through the Ministry of Natural Resources under the Technical Advisory Service. These funds were made available in response to the recent high water levels on the Great Lakes.

A "Notice of Intent" was advertized in the Scarborough Mirror in May 1987. A copy of the Notice is included in the appendix. No inquiries or comments from the general public was received.

On July 7, 1987 a letter summarizing the findings of the Keith Philpott Ltd. coastal engineering study was sent to the interested parties on Fishleigh Drive and Midland Avenue.

On September 30, 1987 at Executive Committee Meeting #3/87, the Authority awarded the Geotechnical Investigation and Slope Stabilization Study to Terraprobe Limited.

On January 15, 1988 the Authority applied to the Minister of Transportation for approval of the coastal works under the Navigable Waters Protection Act. Approval under the N.W.P.A. was received on March 8, 1988.

A public meeting was held on May 18, 1988 - 7:30 p.m. at the Cliffside Public School in the Fishleigh Drive vicinity, to discuss the Authority's proposal. The benefiting property owners along 33-85 Fishleigh Drive and 1-3 Midland Avenue along with the residents adjacent to the top of the access into Fishleigh Ravine at Wynnview Court and Glen Everest Road were invited to attend. Also, a number of the local politicians attended the meeting.

Generally, the proposal was well received. Since there is no private land or contribution required, no further direct contact with the homeowners will be solicited.

The Fishleigh Drive Project was approved by the Full Authority at its meeting held on May 6, 1988.

TABLE 4

EXTERNAL AGENCY CONTACTS

Agency & Department	Type of Contact			
	Phone	Corresp.	Mtg.	Data Base*
Ministry of Natural Resources - Maple District	X	X		
Ministry of Natural Resources - Central Region	X	X		
Ministry of Citizenship and Culture				X
Ministry of the Environment - Central Region (NWPA)		X		
Environment Canada - Conservation & Protection (NWPA)		X		
Minister of Transportation - Canadian Coast Guard (NWPA)		X		
City of Scarborough - Works Department	X	X		
City of Scarborough P.U.C.	X	X		
Metropolitan Toronto - Works Department - Parks Department	X X	X X		

* Consult current data base as supplied by responsible agency.

5. EXISTING CONDITIONS

5.1 DESCRIPTION

The Scarborough Bluffs generally extend along the shoreline of Lake Ontario from Fallingbrook Drive in the west to Highland Creek in the east. A conspicous feature of the Scarborough Bluffs is the steep slope between the crest and the toe of the slope, which parallels the Lake Ontario shoreline. The height of the slopes along the Bluffs varies from about 50 metres to greater than 80 metres.

The Fishleigh Drive Project area which includes the Fishleigh Drive Sector and the Scarborough Heights Park Sector is bound by Fishleigh Drive Ravine (Wynnview Court) in the west and the Midland Ravine in the east.

Fishleigh Drive is located immediately west of Bluffers Waterfront Park and runs parallel to and just north of the Scarborough Bluffs. A total of 27 single family residences located on the tablelands along the south side of the road as well as two additional houses at the southern end of the adjacent Midland Avenue, are now at increasing risk due to the severe erosion. The bluff face and waterlots are owned by the Authority.

Scarborough Heights Park is an informal open space owned by the Authority. The Fishleigh Drive Ravine which is the proposed access point to the lake is located at the westerly edge of the park and is generally well vegetated with trees, underbrush and shrubs. There is little surface erosion and the base of the ravine appears to be relatively stable with no large or significant zones of active downcutting or erosion. An abandoned pumping station is situated at the toe of the ravine and bluff slope in this area. A seawall structure, consisting of timber and steel bulkheads filled with coarse rock is located along the shoreline adjacent to the buildings.

This the only reach of shoreline projected from direct wave action in this sector. The remaining shoreline is exposed to direct wave attack and ongoing toe erosion of the bluffs is occurring. Much of the nearshore environment is disturbed by eiher the erosion or the resulting talus accumulation.

The bluff slopes are uniform in height along the study area ranging from 53 to 55 metres. The gradient of the slope is as steep as 0.4 to 1 (horizontal to vertical) behind 85 Fishleigh and as gentle as 2:1 at the westerly end of Scarborough Heights Park. The easterly face of the bluffs is completely bare of vegetation while the mid and upper slopes behind the westerly end of Fishleigh Drive and Scarborough Heights Park is vegetated.

5. EXISTING CONDITIONS

5.2 CAUSES OF BANK INSTABILITY & ASSOCIATED HAZARDS

The results of the site inspection, air photo interpretation, and study of regression rates all indicate that slope instability is related directly to toe erosion. This observation is supported by studies conducted by others (Geocon 1982). The failure mechanism is outlined below:

- oversteepening of the toe of the slope by erosion and removal of soil by wave action
- shallow, surficial failure of the upper slope area, resulting in accumulation of talus at the toe of slope,
- erosion and removal of the talus, which results in further slope failure.

The failures which occur in the upper slope are characterized by movement of relatively thin masses of soil, parallel to the slope face. These failures result in small regression of the slope crest. A single slide does not cause ground movement for large distances (< 5m) behind the slope crest.

The Authority considers a structure to be at imminent risk when the crest of the stable slope line falls within 10m of the structure. In this case Nos. 83 and 85 Fishleigh Drive would be at imminent risk.

With an average regression rate of just over 1 metre per year, it would not take long for a number of other homes to be placed at risk. Obviously in the longer term all the homes on the south side of Fishleigh Drive and the two homes on Midland would be lost.

5.3 ENVIRONMENTAL SETTING

An integral part of all the Authority's remedial works program is to ensure that such works are carried out in an environmentally sound manner to reduce environmental impacts to a minimum wherever possible.

Since the inception of the Environmental Assessment Act in 1976, the Authority began establishing its own process for incorporating environmental concerns into the design and construction of remedial work. This process was formalized through the Authority's participation in the Association of Conservation Authorities of Ontario Water Management Class Environmental Assessment Document 1986.

As part of the remedial works project development for Fishleigh Drive, the following reports were prepared which outlines major environmental features and recommends site specific measures to reduce impacts:

(i) Botanical Inventory and Analysis - Fishleigh Drive
- Michael Michalski Associates

(ii) 1987 Waterfront Erosion Control Site Report - Scarborough Sector
- M.T.R.C.A.

The following is a summary of these reports:

A summary of the terrestrial environment at the Fishleigh Drive Erosion Control Project was undertaken in September 1987 to ascertain the impact(s) the remedial work proposed for this site may have on the shoreline's natural features. On September 24, 1987 the vegetation communities of the area were identified and mapped. Five (5) communities were assessed representing four (4) community types (forest, wet meadow, old field/thicket complex and cliff community). No significant features and/or species were found.

A review of the aquatic environment at the Fishleigh Drive Erosion Control Project was undertaken in 1987 and summarized in the report entitled: "1987 Waterfront Erosion Control Site Report - Scarborough Sector". The report reviewed existing data and information collected by The Metropolitan Toronto and Region Conservation Authority for shoreline bluff area in the Scarborough area. The report focussed on four (4) aspects of the aquatic environment including:

(i) Sediment Quality
(ii) Water Quality
(iii) Benthic Invertebrate Community
(iv) Fisheries Resource

The report indicated the only significant fish species found in the area were trout-perch and longnose sucker and also indicated the spawning requirements of these fish species would not be met at this site. In fact the report concluded the remedial work would benefit the nearshore ecosystem by reducing sediment loading and turbidity and improve fish habitat.

In addition, the Authority's archaeologist reviewed the site and indicated there are no known sites in the area and considering the environmental setting and previous alteration of the site, archaeological resources are not anticipated.

6. ALTERNATIVES TO THE UNDERTAKING

1. DO NOTHING

In consideration that two homes are already considered to be at imminent risk condition and 25 others will be within a number of years, the do nothing alternative is not realistic. It does, however, serve the purpose of providing a basis of comparison of all other alternatives.

2. PURCHASE PROPERTIES

The average price of the homes along the south side of Fishleigh Drive is $280,000. At the current value of the homes, the Authority would eventually be required to spend $7,560,000 to purchase the 27 properties. The purchase and demolition of such valuable properties is not considered a practical solution.

3. PROTECTION OF PROPERTIES

The long term protection of the properties can be achieved through the control of the erosion at the toe of the bluffs (nearshore bottom profile) and the creation of a stable bluff by allowing a natural long term stable slope to form (natural stabilization). In the case where the stable crest encroaches within 10m of the existing dwelling, the Authority may consider acquisition.

A benefit cost ratio of 4.1 is achieved by using an estimate of $1,840,000 (1988 dollars) which includes some provision for acquisition as the cost of carrying out the work at a current value of $7,560,000 for the economic value of the property. Therefore, it is quite apparent the protection of the properties is a viable alternative.

7. ALTERNATIVE METHODS (SOLUTIONS)

7.1 SHORELINE PROTECTION

The Authority has been involved in shoreline protection since 1977 and have found that generally only two methods are suitable or practical along the bluffs. The two basic shoreline protection methods used are the groyne and artificial beach systems and revetments. Groynes are wall-like structures constructed perpendicular to the shoreline, whose primary function is to retain beach formations and thereby provide additional wave protection to adjacent shorelines. These are usually combined with the beach nourishment which is the process of replenishing or increasing the supply of materials to a beach system. Figure III shows a typical example of this type of protection. Revetments are sloping face structures running more or less parallel to the shoreline, used to stabilize or protect an embankment and resist wave attacks by dissipating energy through turbulence.

There are of course a number of different ways in which either type of protection may actually be implemented. The main criteria in selecting the protection methods were determined to be:

(a) the ability of the shore protection to perform with a minimum risk of failure;

(b) minimizing the construction and maintenance costs; and

(c) minimizing the volume of scrap material required.

Scrap rubble which has been increasingly more difficult to get is usually provided at the site with no material cost but does have an associated handling cost. The volume of rubble should be minimized not only because of the handling costs but also because of uncertainty of supply. The rubble is usually the product of building demolition or road repair work and the supply is both difficult to predict and difficult to guarantee.

If an artificial beach is to provide reliable shore protection then it must be designed for extreme water levels and it is critical that material lost offshore be replaced immediately. The recent high water levels experienced on the Great Lakes give some indication of how unpredictable the lake levels are. A rise in lake levels above the design height would result in a need for more beach material to increase the beach and backshore height. On the other hand, a rise in water level would only require an additional row of armourstone for a revetment. A shortage of rubble supply would greatly increase the risk of failure for an artificial beach because protection depends on the beach being wide enough to absorb the wave energy.

To summarize, an artificial beach provides adequate protection only if it is maintained. As water levels increase, the beach must also be raised. Small increases in water level can lead to large beach fill requirements. This type of shore protection is recommended where there is a large realiable source of beach fill. Some maintenance will invariably be required to replace material lost offshore.

A revetment would require substantially less material for both construction and maintenance. It is easily upgraded if lake levels rise above the design level. This is therefore the preferred solution in the Fishleigh area.

7. ALTERNATIVE METHODS (SOLUTIONS)

7.2 SLOPE STABILIZATION

The results of the stability analysis confirm that the most likely failure mode will be shallow to intermediate slides. As an example, a slide occurred behind No. 61 to 67 Fishleigh during 1986. The regression as a result of this slide appears to be about 5 to 10 m, based on aerial photos and field measurements. This type of slide is considered to be an intermediate slide.

Deep seated failures, which extend for a considerable distance behind the crest of the slope, are not observed in the field or predicted in the analysis. This is the result of the competent ('strong') nature of the various strata.

It is observed that the stability of the slopes increases if talus is permitted to accumulate at the toe. The comparison of the stability of Sections 1-1 (no talus), Sections 3-3 (minor talus) and Section 7-7 (stable talus) shown on Figure IV support this conclusion. While lower groundwater levels improve the stability of the slope, surficial failures of the steep sections (such as Section 1-1) are predicted even under dry slope conditions. This suggests that drainage measures alone will not ensure slope stability under present conditions.

Based on these conditions, it appears that flattening of the slopes is the only suitable stabilization measure. This could be accomplished by:

- permitting the slopes to regress naturally and talus to accumulate at the toe (self-stabilization). This would require construction of appropriate erosion protection measures to ensure that the talus is not removed by wave erosion. This alternative will result in regression of the crest from its present position and associated loss of property;

- construction of a stabilizing fill berm at the toe of the slope. This could prevent or reduce regression of the crest of the slope from its present location and minimize property loss. Erosion protection measures would be required to protect the toe of the fill from wave erosion.

In order to access the impacts of self-stabilization, the location of the stable crest was determined on the basis of the stability analysis along with observation of the slope conditions in stable areas of adjacent sites such as Bluffers Park and assuming that the talus would be protected.

The approximate location of the predicted stable crest is plotted on Figure IV. It is noted that there are three typical cases regarding the crest location.

(i) areas where there will be minimal regression of the crest from its present position. These occur in the Scarborough Heights Park Area, and the ravines throughout the site. These areas are relatively stable as the result of currently gentle slope angles, or talus accumulation at the toe of the slope,

(ii) areas where there will be about 10 to 20 m of slope regression from the current position. This condition is expected over much of the area between No. 33 and 73 Fishleigh, in the central and eastern portion of the study area,

(iii) areas where there will be greater than 20 m of regression from the current position. This condition is expected to occur only in the eastern portion of the site, behind No. 75 to 85 Fishleigh.

For the purposes of this study, it is assumed that a minimum of 10 m of setback is required between the rear of an existing dwelling, and the stable crest of slope. This will provide a usable rear yard to the homeowners. It will also provide a buffer zone in the event that the slope regression is slightly greater than expected in local areas.

The results of the study suggest that this minimum 10 m setback will be achieved in all areas except at 83-85 Fishleigh. At this location the stable crest of slope will be at the rear of the existing dwelling or pool and therefore the following alternatives for Nos. 83 and 85 Fishleigh are discussed below.

A fill berm could be constructed at the toe of the slope, instead of permitting talus to accumulate. Typically, the fill would consist of common earth and concrete rubble obtained from local construction projects. It is expected that the fill would be trucked to the base of the slope, and then spread and compacted in a controlled manner.

If compacted to about 92 per cent Standard Proctor Maximum Dry Density, the fill could be constructed to an inclination of about 1.5 to 1 to 2 to 1, in order to minimize the volume of material required.

The results of stability analysis suggest that at this inclination (1.5 to 1) the fill would require drainage in order to ensure stability. Typically, the drainage would consist of fingers of well graded granular material, such as MTC Granular 'B', or similar graded granular material with no more than 10 per cent silt. The finger drains would be placed about every 3 m in elevation. The granular fill would be placed in a trench of about 1 m width and depth, extending from the face of the natural slope to the face of the finished fill slope, on 10 m centres.

As an alernative, the fill could be placed at more gentle slope, without the need for drainage. The results of stability analysis suggest that a slope inclination of about 2.5 to 1 will be required if no internal drainage is provided.

The exposed face of the fill could be left to vegetate naturally, while repairing any erosion which occurs; or could be seeded to minimize erosion.

It is expected that the fill would be placed to about 115 m elevation and that the crest of the natural slope would be permitted to regress naturally.

The fill method has the advantage reducing the regression of the slope crest. This would ensure that a minimum of 10 m was maintained between the crest and the dwelling at No. 85 Fishleigh. It will also maintain a 10 m separation between the pool and the crest at No. 83 Fishleigh.

The rate of construction would depend on the availability of 'free' fill from local projects. Since the average rate of slope regression measured in the area is about 0.4 m/yr., it is considered that the filling could be extended over a period of many years, without threatening the safety of the dwellings.

The disadvantage of this method are the costs, and the noise and nuisance factor associated with placement of the fill. It is expected that some 150,000 cu.m. of fill would be required to construct a berm behind No. 83 and 85 Fishleigh, if the fill were placed and compacted in a controlled fashion at a 1.5 to 1 slope with granular drains. About 310,00 cu.m. would be required for a 2.5 to 1 slope constructed without drains. The following costs are calculated for each alternative:

	1.5 to 1 slope	2.5 to 1 slope
Common earth fill (no charge)	--	--
Select granular fill ($15/cu.m.)	$ 45,000	--
Spreading and compaction ($3/cu.m.)	$450,000	$930,000
Total	$495,000	$930,000

It is estimated that the cost of acquiring No. 85 Fishleigh would be about $300,000. The cost of compensating the homeowner at No. 83 Fisheigh for possible loss of the pool is estimated as $15,000.

7.3 ACCESS CONSIDERATIONS

Transport of construction material, equipment and personnel to the work sites at the base of the Scarborough Bluffs is always a problem. Materials used may be either transported along the base of the bluff from an access point or trucked to a site and pushed over the edge by a loader and rehandled again at the bottom. In this case we are recommending that an access point (road) be constructed down the Fishleigh Drive Ravine to Lake Ontario and transported 400 m eastward to the construction site as shown on Figure II.

Advantages and disadvantages of various sites that were considered are listed below:

1. Access along the shoreline from Bluffers Park

Advantages:
- access road to Lake Ontario already exists

Disadvantages:
- distance from construction site
- disruption to ESA #123
- disruption of park activities

2. Road through Midland Ravine

Advantage:
- close proximity to construction area

Disadvantages:
- disruption to ESA #123
- City property
- distance from main arterial road

3. Top dumping from Scarborough Heights Park

Advantages:
- close proximity to construction area
- Authority property

Disadvantages:
- loss and breakage of material
- safety concerns - Ministry of Labour
- equipment must be floated in
- no permanent maintenance access

4. Road access through Fishleigh Ravine and 400 m eastward along shoreline

Advantages:
- Authority property
- ease of construction
- close to main arterial road
- permanent maintenance access
- also provides a maintenance access to the Authority's extensive artificial groyne and beach system located just west of Fishleigh Ravine
- no environmental significance

Disadvantages:
- disturbance to local neighbourhood
- distance from construction site

8. PREFERRED SOLUTIONS

8.1 PRELIMINARY DESIGN

It is recommended that the following measures be taken to stabilize the slopes:

(i) offshore fill and armourstone revetment approximately 560 m long be constructed adjacent to Nos. 33 - 85 Fishleigh Drive and No. 1 Midland Avenue as shown on Figures V, VI & VII to eliminate the toe erosion; this would include filling of the zone between the back of the revetment and the shore; and

(ii) that self stabilization be allowed to occur to flatten and stabilize the slope. In the vicinity of Nos. 83 and 85 Fishleigh Drive, self stabilization may bring the crest too close to the existing pool and dwelling. In this area, it appears less expensive to acquire the dwelling at No. 85, and compensate the owner for the pool at No. 83, than to construct a filled slope.

It is noted that there is no immediate danger to the pool or dwelling at No. 83 and 85, and that some further regression of the crest can be permitted. It is recommended that the crest location behind these dwellings be monitored on a semi-annual basis. If the crest comes closer than 10 m to the dwelling or 5 m to the pool, then the structure should be removed. Since the crest is currently 20 m from the dwelling, and 25 m from the pool, this regression may take 5 to 10 years.

The stabilization process should be monitored on a semi annual basis, to ensure that the performance is as expected. This will generally be confined to:

- visual inspection of the slope face,
- visual inspection of the development of the talus slopes,
- measurement of the location of the slope crest relative to the rear of the dwellings (Table 1),
- measurement of the groundwater levels in the existing piezometers in Boreholes 1 and 2.

It is expected that the above monitoring will be conducted by MTRCA staff. It is recommended that a qualified geotechnical engineer conduct a site visit on an annual basis, and review the data collected by MTRCA.

8.2 ENVIRONMENTAL ASPECTS

The erosion in this area is generally causing the following environmental/social problems: the loss of valuable open space, both publicly and privately owned, and an increase in sedimentation. The proposed erosion control works will resolve or minimize the problems and may enhance the fisheries habitat in the nearshore ecosystem.

Access to the site is difficult due to the extreme topographic constraints and the need to develop an access road to the base of the bluffs is obvious. The access road shown on Figure II will travel through the Fishleigh Ravine (located on the west side of the erosion area) and 400 metres eastward along the shoreline. The ravine has been disturbed somewhat in the past and supports the remains of a former road to the filtration plant at the base of the bluffs. To facilitate the construction and use of the access road, limited tree removal will be required and to every extent possible the aesthetic and natural screening qualities of the plant cover will be maintained. This road will be retained permanently to provide maintenance access to the Authority's extensive artificial groyne and beach system in the area.

The Botanical Inventory and Analysis, attached herewith, shows that the plant communities occurring at the site are generally common, abundant and well represented throughout this and adjacent regions. Although the geological features in this area are similar and contiguous with the section of the Scarborough Bluffs designated as an ESA (MTRCA) and a Provincial Significant Area (Ministry of Natural Resources), it was not included in the ESA designation and has no botanical basis to be designated as an ESA.

The aquatic environmental review, also attached herewith, showed the presence of two (2) regionally rare fish species:

(i)	Trout-perch	(Percopsis omiscomaycus)
(ii)	Longnose Sucker	(Catostomus catostomus)

However, the information for this area indicates the habitat does not support the spawning requirements for these species.

In the long-term, almost every aspect of the nearshore ecosystem will benefit from the slope stabilization works. Lake filling related turbidity and sediment loading may change the nature of the biotic community. However, any short-term alterations will be outweighed by the long-term benefits of a stable shoreline. Only clean fill and rubble material will be used for this project and the Authority will record the sources of the material and ensure its quality before it is placed in the water. Sediment loading will be minimized through advancing the core of the revetment with rubble.

These benefits include: the reduction in the amount of fine sediments available for transport and deposition; a reduction in nearshore turbidity; development of a more diverse substrate and associated benthic invertebrate community; improved habitat for fish at the revetment structure - Lake Ontario interface.

To help minimize and control noise and dust, we will be carrying out the following mitigating measures:

- we will have a contract with the City of Scarborough to sweep and flush the residential streets on a regular basis - twice daily during peak construction activity

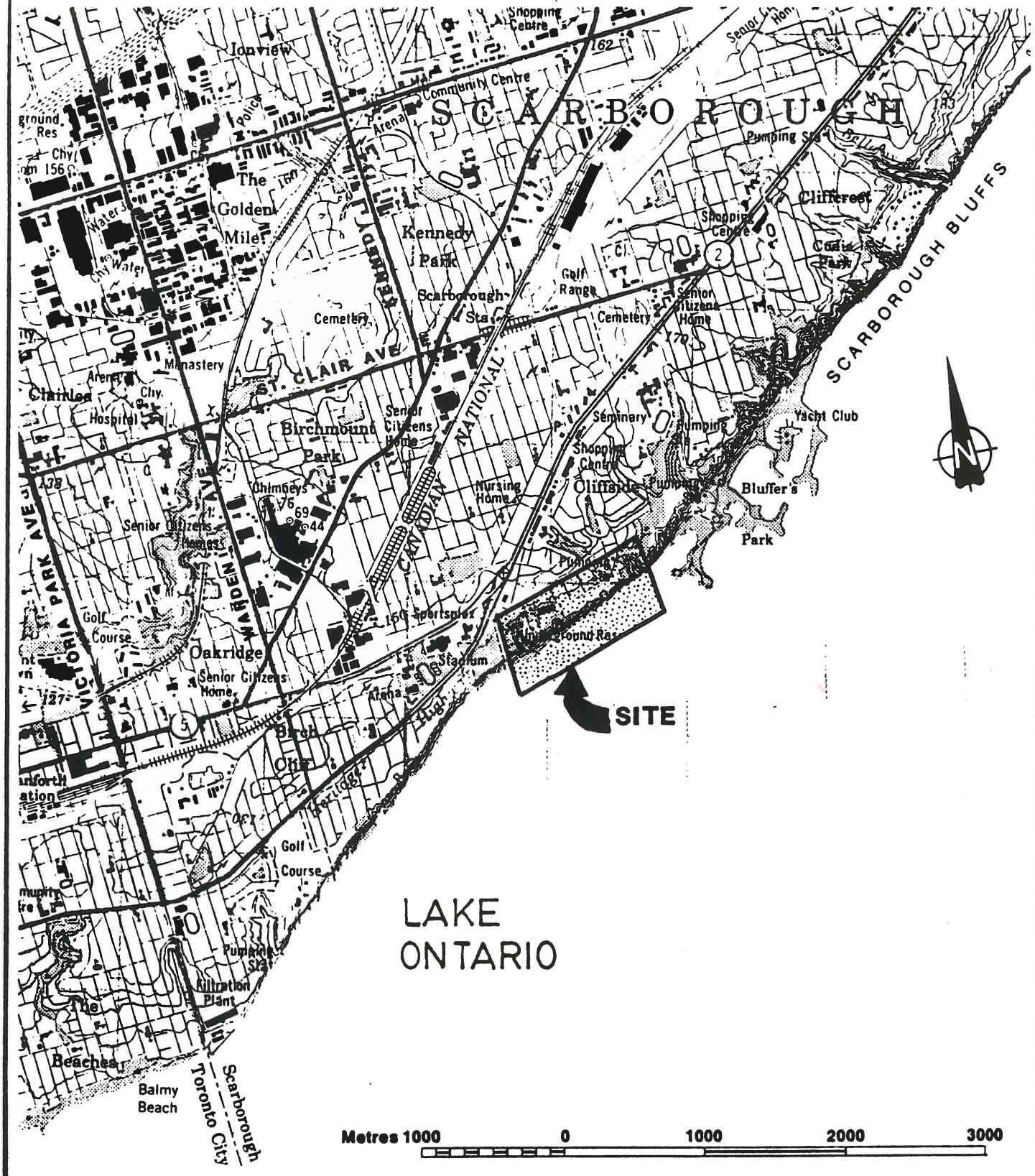
- the P.U.C. has given us permission to use the nearby hydrants on an as required basis and therefore we will be able to keep the roadways damp at all times

- calcium will be spread on a regular basis in the work compound and access road

- a 8' high temporary wooden fence will be erected around the work compound, located at the top of the Fishleigh Ravine, as a noise and visual barrier

- priority will be given to the loaded trucks to avoid any line ups on the paved roadway

- speed limits on residential streets will be enforced.



SITE LOCATION PLAN

TERRAPROBE LIMITED

Job no.	87354
Scale	shown
Date	JAN 88

FIGURE 1

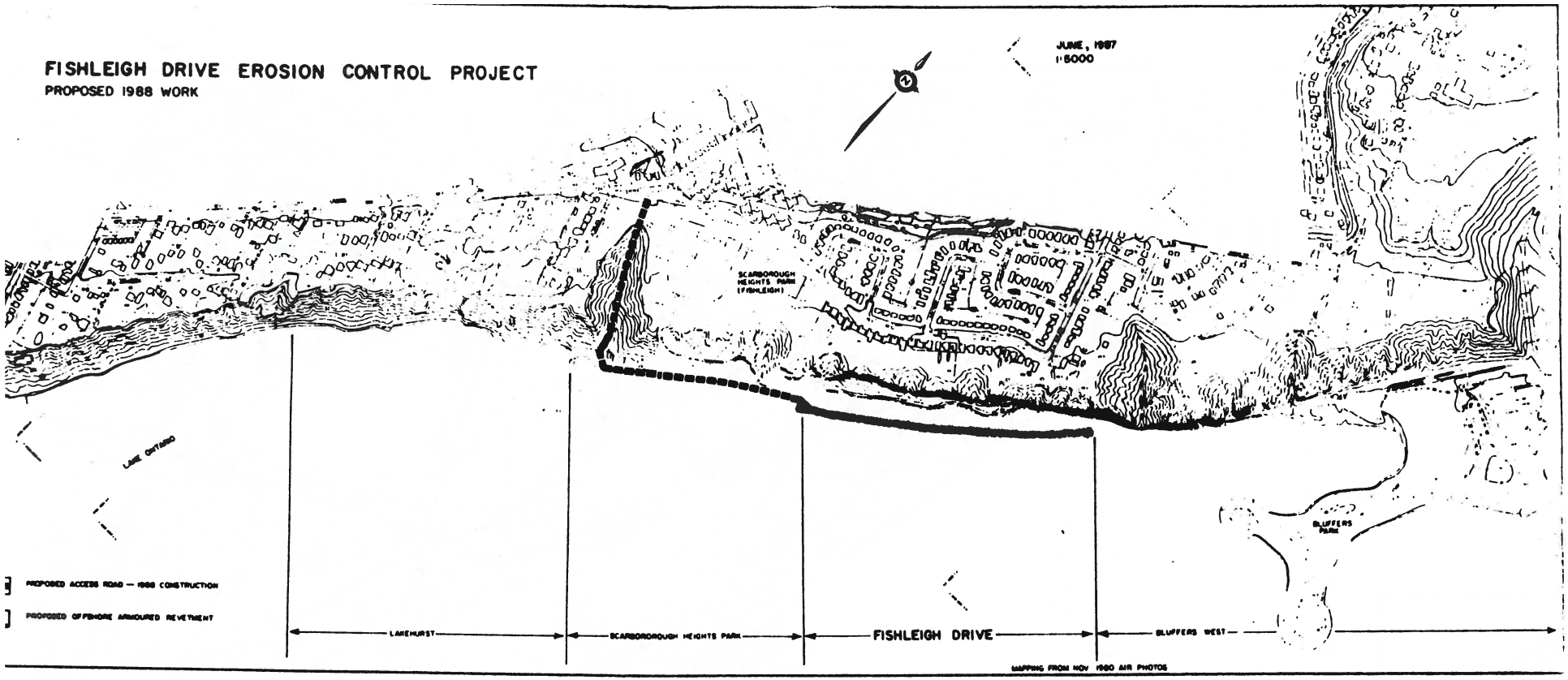
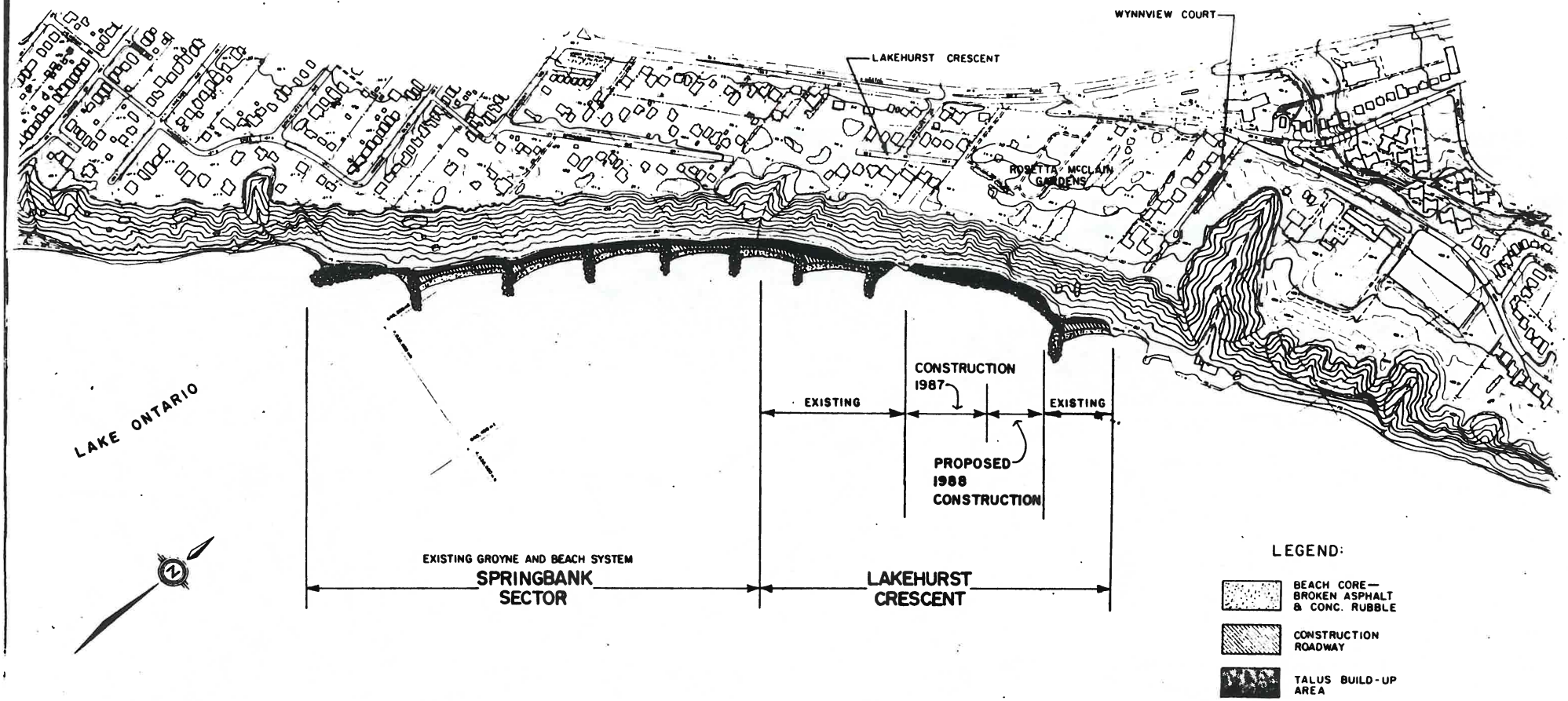

FISHLEIGH DRIVE EROSION CONTROL PROJECT
PROPOSED 1988 WORK
JUNE, 1987
1:5000
SCARBOROUGH HEIGHTS PARK (FISHLEIGH)
LAKE ONTARIO
BLUFFERS PARK
PROPOSED ACCESS ROAD — 1988 CONSTRUCTION
PROPOSED OFFSHORE ARMOURED REVETMENT
LAKEHURST
SCARBOROUGH HEIGHTS PARK
FISHLEIGH DRIVE
BLUFFERS WEST
MAPPING FROM NOV 1980 AIR PHOTOS

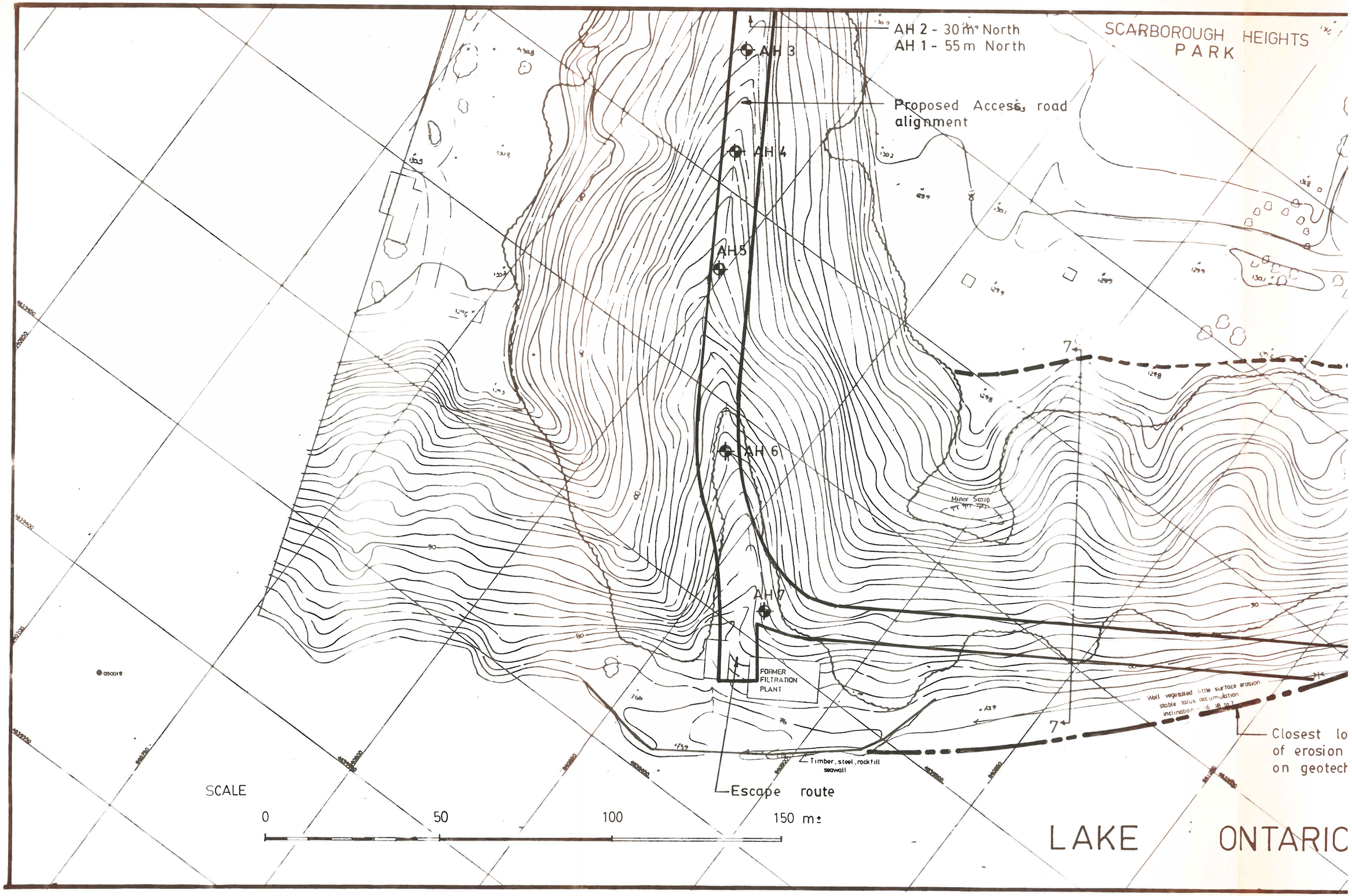
FIGURE II

LAKEHURST CRESCENT EROSION CONTROL PROJECT



JULY, 1987

FIGURE III


AH 2 - 30 m North
AH 1 - 55 m North
SCARBOROUGH HEIGHTS PARK
AH 3
Proposed Access road alignment
AH 4
AH 5
AH 6
AH 7
Minor Scarp
FORMER FILTRATION PLANT
Well vegetated little surface erosion
stable talus accumulation
Timber, steel, rockfill seawall
Escape route
Closest lo
of erosion
on geotech
SCALE
0
50
100
150 m±
LAKE ONTARIO

EIGHTS

Parking Lot

Approximate Location of Stable Crest after 10 to 30 years

BIRCHLAWN AVE.

EASTMOOR

FISHLEIGH

33 35 37 39 41 43 45 47 49 51 53 55 57

BH 1

Line of seepage minor vegetation

Slope bare, talus accumulation on bottom third inclination ~ 1:1 to 1

some erosion of talus at toe 3-4m talus scarp at base mid and basal section at slope bare inclination ~ 1:2 to 1

RAVINE - well vegetated with 5m bare scarp at base inclination ~ 2:1 to 1

Line of seepage minor vegetation

Extent of talus on slope face

Most of slope bare from this point eastward except in gullies
Talus accumulation on bottom 10 to 15m at slope face
Beach of 3 to 5m width

Extensive talus accumulation at toe, beach 3 to 10m wide
First noted on March 85 photos

inclination 0.5 to 1

Stumps trees (recent talus)

inclination 1.5 to 1

Line of seepage minor vegetation

Extent of talus on slope face

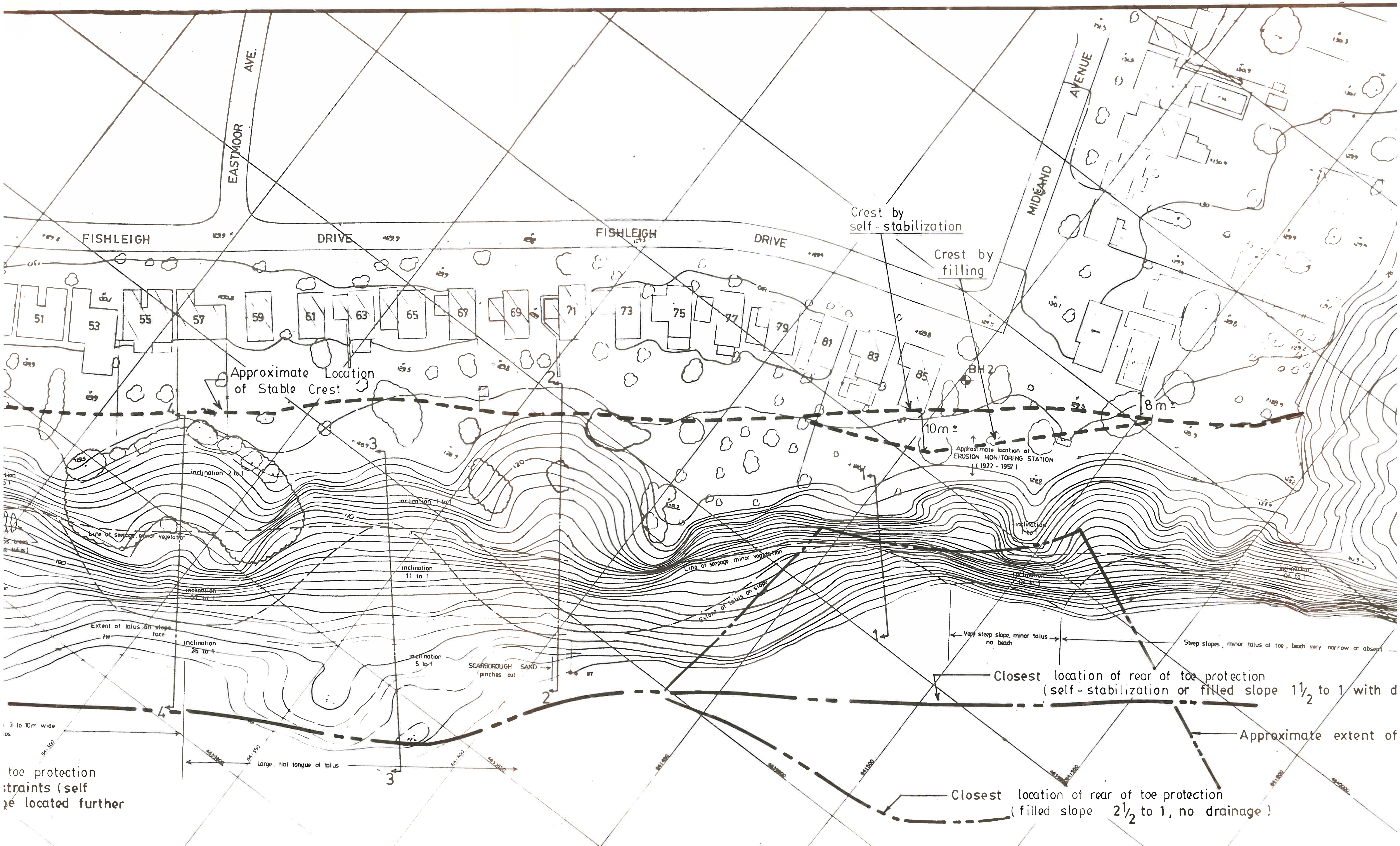
inclination 2.5 to 1

inclination 2 to 1

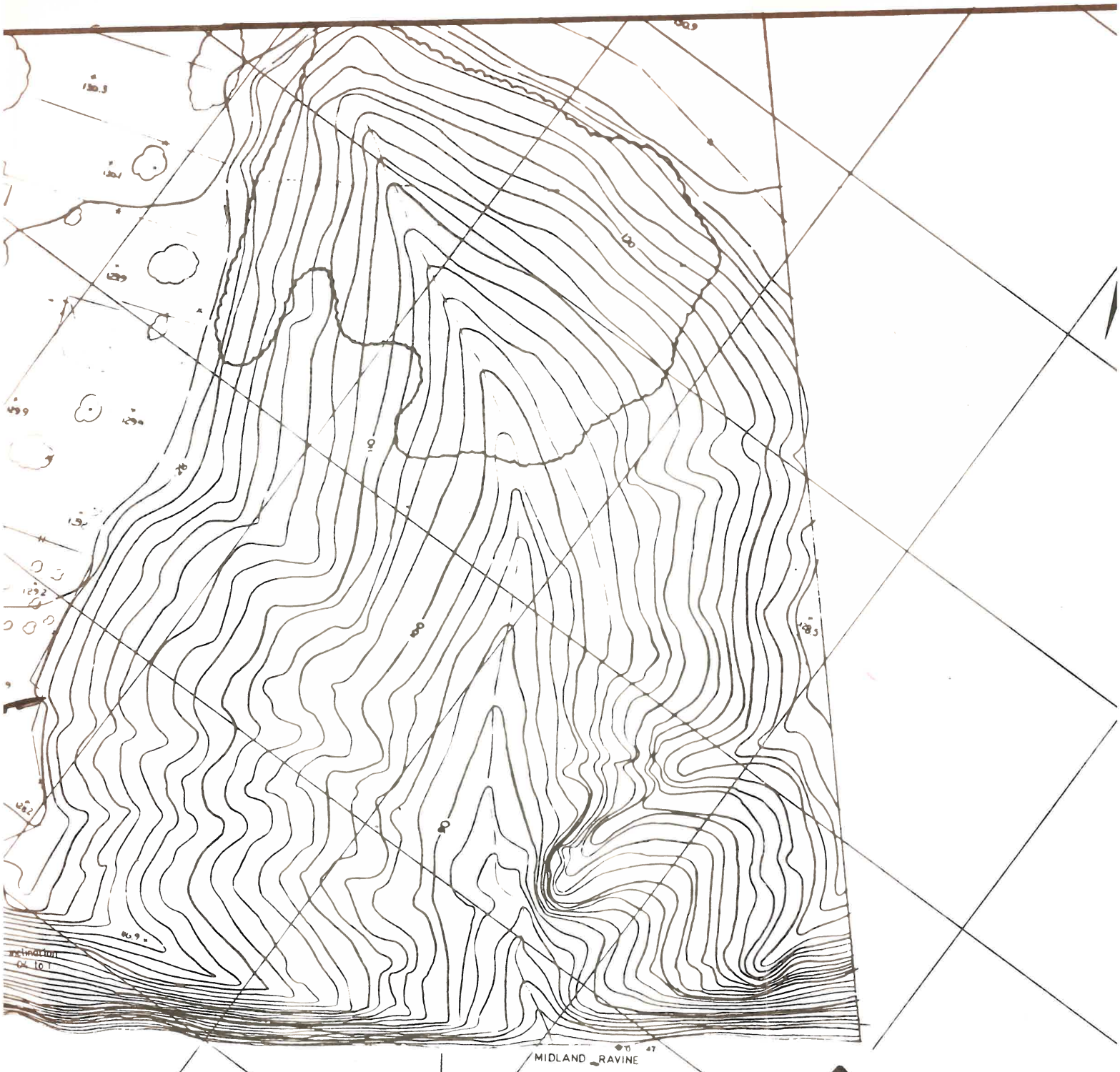
— Closest location of rear of erosion protection based on geotechnical constraints

— Closest Location of rear of toe protection based on geotechnical constraints (self stablization option). Can be located further off-shore if required.

NTARIO



EASTMOOR AVE.
MIDLAND AVENUE
FISHLEIGH DRIVE
FISHLEIGH DRIVE
Crest by self-stabilization
Crest by filling
Approximate Location of Stable Crest
BH2
8m ±
10m ±
Approximate location of EROSION MONITORING STATION (1922 - 1957)
inclination 2 to 1
inclination 1 to 1
Line of seepage, minor vegetation
inclination 11 to 1
Extent of talus on slope
Extent of talus on slope face
inclination 25 to 1
inclination 5 to 1
SCARBOROUGH SAND pinches out
Very steep slope, minor talus no beach
Steep slopes, minor talus at toe, beach very narrow or absent
Closest location of rear of toe protection (self-stabilization or filled slope 1½ to 1 with d
Approximate extent of
Closest location of rear of toe protection (filled slope 2½ to 1, no drainage)
Large flat tongue of talus
3 to 10m wide
toe protection
straints (self
e located further



toe, beach very narrow or absent

$1\frac{1}{2}$ to 1 with drainage)

aximate extent of filled slope

the metropolitan toron
conservation authority

SITE PL

TERRAPROBE LIM

Job no.	87354
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Date	JAN. '88

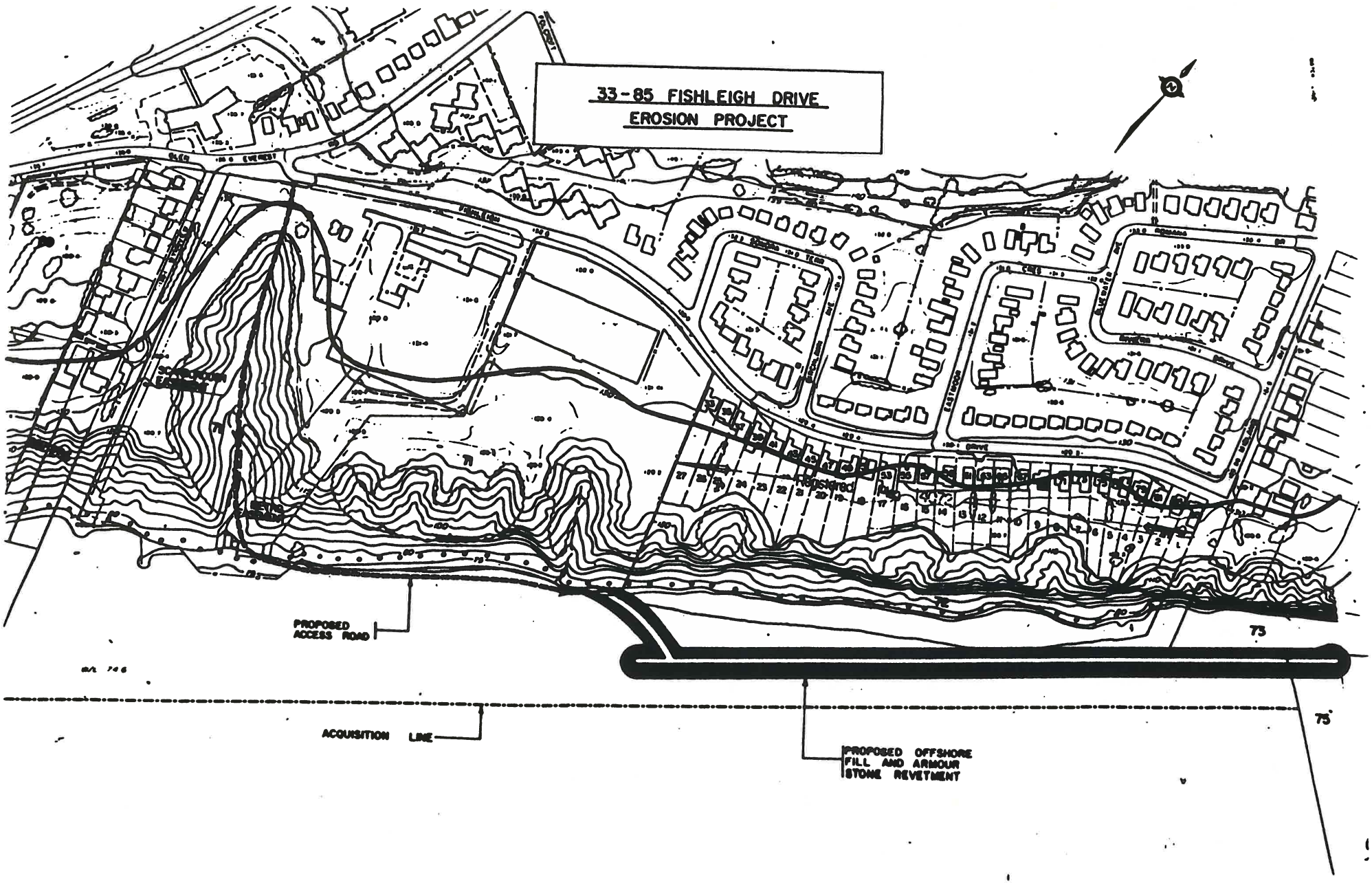
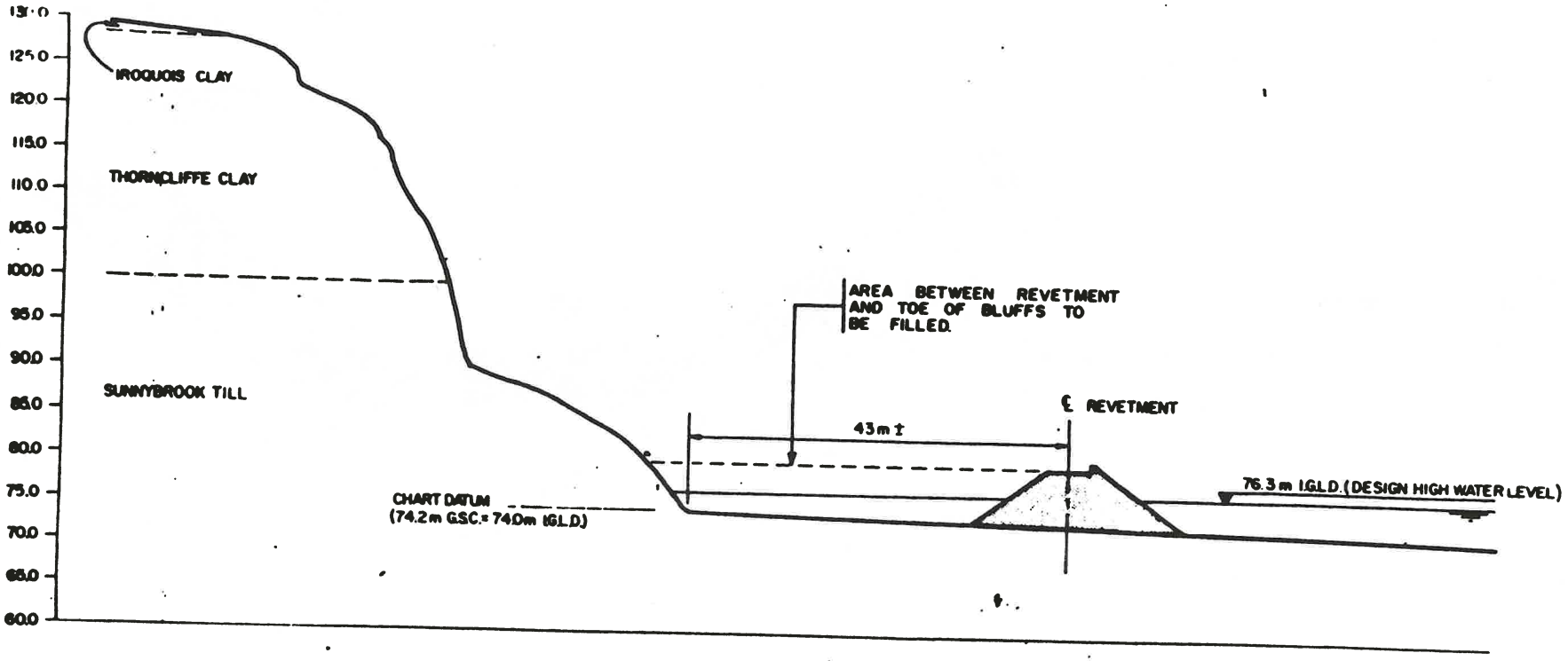

33-85 FISHLEIGH DRIVE
EROSION PROJECT
PROPOSED ACCESS ROAD
ACQUISITION LINE
PROPOSED OFFSHORE FILL AND ARMOUR STONE REVETMENT
75
75

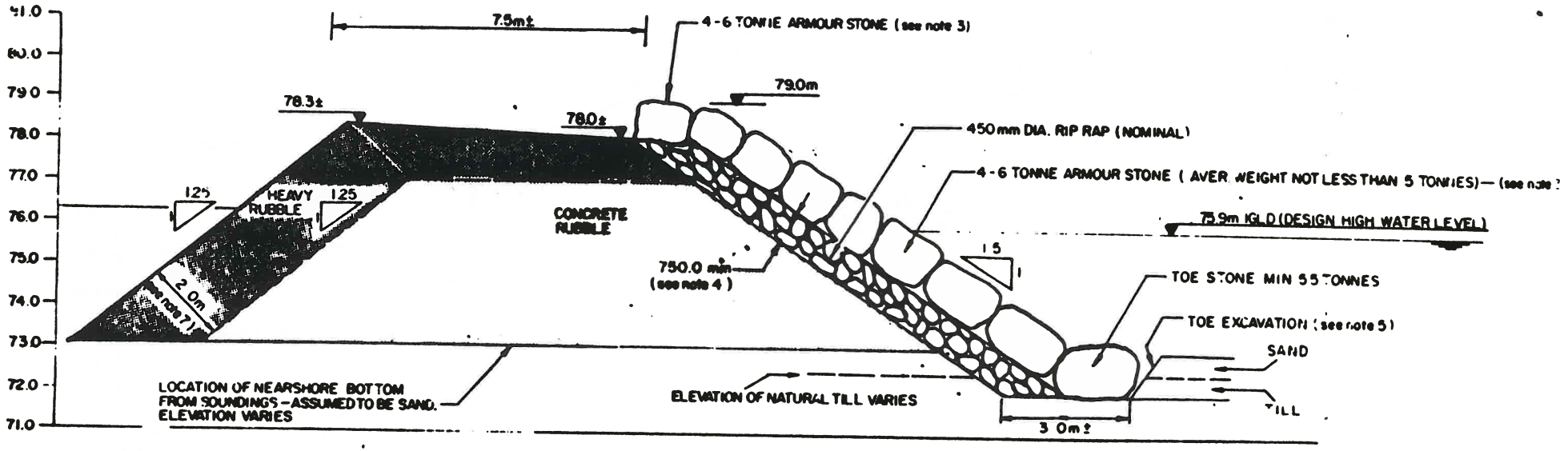
FIGURE V



Typical Bluff Section "A-A"

(Scale 1:500)

FIGURE VI



Typical Revetment Section

(Scale 1:100)

FIGURE VII

9. APPENDICES

1. Botanical Inventory and Analysis - Fishleigh Drive
   - Michael Michalski Associates

2. 1987 Waterfront Erosion Control Site Report - Scarborough Sector
   - M.T.R.C.A.

3. Notice of Intent

4. Keith Philpott Consulting Ltd. - Letter/Report to homeowners
   -July 7, 1987

5. Memo - Archaeological Sites for Environmental Study Reports
   Fishleigh and Guildwood Erosion Control Sites - 1988.01.13

MICHAEL MICHALSKI ASSOCIATES

ENVIRONMENTAL PLANNING BIOPHYSICAL ANALYSIS LAKE CAPACITY ASSESSMENT RESOURCE MANAGEMENT

October 7, 1987

Mr. B. Hindley
Metropolitan Toronto and Region
Conservation Authority
5 Shoreham Drive
Downsview
Ontario
M3N 1S4

Attention: Mr. P. Wigham

Dear Mr. Hindley

Re: Fishleigh Crescent Botanical Inventory and Analysis

I am pleased to submit the final report presenting the results of the botanical inventory and analysis of the Fishleigh Crescent study area. Our work responds to the project requirements as specified in your terms of reference and consists of a brief introduction, a description of our methodology, a detailed presentation of the inventory results, and our conclusions and recommendations with respect to significant resources in the study area.

I trust you will find this information satisfactory. However, if you require any additional information or commentary, please do not hesitate to call me.

Yours truly,

Dan Gregory

Dan Gregory

(416) 241-4428 222 DIXON ROAD, SUITE 105 WESTON, ONTARIO M9P 3S5 9 SWINDON ROAD ISLINGTON, ONTARIO M9A 3Y8

TABLE OF CONTENTS

1. INTRODUCTION

The Metropolitan Toronto and Region Conservation Authority (MTRCA) has identified a number of specific localities in the region at which significant riverbank or lakeshore erosion (eg. shallow sloughing and slumping) is occurring. The erosion problems are, or potentially could be, serious enough to place adjacent properties in some jeopardy, and, consequently, require immediate remedial action. However, prior to undertaking any actions to stabilize these sites (eg. by implementing erosion control structures such as gabions or armouring, slope revegetation, etc.), the Authority is required to conduct a Class Environmental Assessment of each site in order to:

- determine the specific environmental characteristics of each area; and,
- pending the results of such an inventory, recommend appropriate remedial measures that recognize the particular qualities of these sites.

In this regard, the Authority has indicated a need for addressing the botanical inventory and analysis component of the Environmental Assessment, that is:

- to map the type and distribution of plant communities at and in the immediate vicinity of the erosion sites, including any areas that could potentially be used to develop access lanes for transporting equipment and materials to erosion sites ;
- to identify the dominant plant species in the various strata characterizing each community; and,
- to document the presence of significant/rare species.

The Authority also requires recommendations regarding measures that need to be taken in order to ensure the maintenance and integrity of any significant features identified during the surveys, as well as comments on or suggested amendments to any specific erosion control measures already proposed for these sites.

This report presents the results of a botanical inventory and analysis of the site identified by MTRCA as Fishleigh Drive. Fishleigh Drive is located immediately west of Bluffers Waterfront Park, and runs parallel to and just north of the Scarborough Bluffs. A total of 27 single family residences located on the tablelands along the south side of this road, as well as two additional houses at the southern end of adjacent Midland Avenue, are now at increasing risk due to severe erosion of the bluffs. Monitoring by MTRCA has revealed that, prior to 1980, the slopes were eroding at an average annual rate of <0.25 m, but that more recently the rate had increased to ≥ 0.5 m/yr. Additionally, the bluffs in this section are now near vertical and considerably over steepened. The problem appears to be linked directly to

erosion at the toe of the slope (i.e., there is little or no beach along this section of the bluffs to reduce the erosive force of wave action of Lake Ontario). Consequently, MTRCA proposes to import fill along the immediate shoreline of Lake Ontario to create a beach as a protective measure against continuing wave action. The only potential sites for developing access lanes for transporting equipment and materials down to the bottom of the bluffs appear to be two deep, V-shaped ravines located at either end of the eroding section. The western ravine has been identified as the most likely candidate for supporting the access lane. An abandoned filtration plant lies at the base of the bluffs directly at its mouth, and the vestiges of a former lane associated with the plant remain along part of the bottom. Conversely, the eastern ravine is in a relatively natural state. Nevertheless, MTRCA has indicated that both need to be assessed in order to make a decisions on as complete a data base as possible. Regardless, the access lane in either locality would be well in excess of 200 m long and would likely occupy the entire bottom and parts of the adjacent lower slopes.

The botanical analysis presented herein focuses on the plant communities and species occurring in the two ravines and on the lower slopes of the intervening shoreline of Lake Ontario. The study was conducted for the MTRCA by Dan Gregory, Plant Ecologist associated with Michael Michalski Associates.

2. APPROACH

2.1 Preliminary Aerial Photographic Interpretation

Following discussions with Mr. Brian Hindley and Mr. Peter Wigham of MTRCA regarding the study objectives and data requirements, preliminary aerial photographic interpretation was conducted of the entire study area in order to identify the distribution of plant communities and delineate their respective boundaries. This task was completed using black and white stereo pairs taken in 1978. Information was marked on mylar overlays at the scale of the photography (1:10,000), and was subsequently taken into the field for verification.

2.2 Field Inventory

The field inventory to assess the botanical resources in detail was conducted on September 24, 1987. The specific methodolgy used was as follows:

- an initial cursory examination of the study area was undertaken to become familiar with the specific types of plant communities present and to determine their precise distribution patterns;

- subsequently, a qualitative inventory of each plant community was conducted [Note: Areas that were obviously maintained, such as lawns, landscaped grounds, or highly cultivated were excluded from intensive study.] The dominant species (based on subjective assessments of relative abundance and biomass) in each defined stratum were recorded. Complete lists of overstorey and understorey plant species occurring within community boundaries were also compiled;

- observations on overall community quality, including notes on disturbances to and the general health of plant cover, were recorded;

- incidental wildlife sightings were documented; and,

- general physical site characteristics including soil cover and site drainage were noted.

No plant voucher specimens were collected during the inventory.

Plant nomenclature follows that of the following authorities:

All moncots except grasses - Voss (1972)
Grasses - Dore and McNeill (1980)
Shrubs - Soper and Heimburger(1982)
All others - Scoggan (1978)

Complete lists of plant species recorded during the survey are provided in the text, while incidental wildlife sightings are presented in the Appendix.

2.3 Data Mapping and Analysis

Specific information regarding data mapping and analysis to meet the study objectives is provided in relevant sections of the report.

3. INVENTORY RESULTS

3.1 Plant Community Mapping

A one-of-a-kind map was prepared showing the precise locations of the individual plant communities identified in the study area. The information was mapped on flood plain and fill regualtion line base maps provided by MTRCA. Plant communities were classified into broad types based on physiognomic, compositional and site characteristics, and were noted on the map according the following designations: old field (FLD), thicket (T), forest (F), cliff communities (CF), and wet meadow (MW). Distinct representative examples of each community type were identified by a number (eg. F1) consistent with the text descriptions.

3.2 Plant Community Descriptions

The specific characteristics used to classify communities according to the broad groups are those described generally by Curtis (1959) and are as follows:

- forest; communities characterized by a at least 50% coverage of and dominance by tree species.

- thicket; communities characterized by a dominant layer of tall shrubs, typically attaining canopy coverage of 50% or greater.

- wet meadow; communities dominated by a continuous coverage of grasses and/or sedges, with no or very low occurrence of woody species, and typically lying just above the permanent water table, but subject to periodic inundation.

- old field; communities typically dominated by native, naturalized, and weedy grass and forb species on secondary successional sites (eg. abandoned argicultural fields), with generally low cover by woody species.

- cliff; plant communities determined primarily according to geological characteristics, typically varying from early stages of primary succession to forest cover due to the diversity of site conditions afforded by slope aspect and %, and substrate stability and composition.

Five distinct communities were identified at this site, including two forest stands, one wet meadow, one old field/thicket complex, and one extensive cliff community. Specific descriptions of the respective physignomic and compositional characteristics (dominant plants) of all communities are presented below. Complete species lists for all communities are also provided.

3.2.1 Forest Stands (F)

F1: This stand is located entirely on the steep side slopes of the ravine at the western end of the study area. It has been disturbed at a number of localities, particularly along the tops of the western side slope where abundant grass clippings and debris have been thrown over the edge. Due to the presence of groundwater seepage zones, soil moisture conditions vary locally from dry to wet. The bottom of the ravine supports a small drainage channel that appears to flow permanently due to groundwater contribution.

Overstorey:

The canopy is generally continuous, although there are a few small openings along the top of the slopes where the vegetation gives way to parkland. The dominant species in this stand are white ash (Fraxinus americana) and white birch (Betula papyrifera), with Manitoba maple (Acer negundo) and crack willow (Salix fragilis) as conspicuous subdominants. White elm (Ulmus americana) and cottonwood (Populus deltoides) occur sporadically.

Understorey:

The understorey is relatively species-poor, consisting of a narrow mixture of native and introduced shrubs and herbaceous plants. The cover of both strata varies from sparse to moderately dense, but is primarily the latter. Neither layer is dominated by a particular species; rather, dominance appears to vary throughout depending on local conditions.

Shrubs

The tall shrub layer consists of the following species:

Acer spicatum	mountain maple
Cornus alternifolia	alternate-leaved dogwood
Lonicera tatarica	Tatarian honeysuckle
Rhus typhina	staghorn sumac
Ribes americanum	currant
Rubus idaeus	raspberry
Rubus odoratus	thimbleberry
Solanum dulcamara	deadly nightshade
Viburnum trilobum	highbush cranberry
Vitis riparia	wild grape

The ground cover is decidely weedy, and consists of:

Alliaria officinalis	garlic mustard
Arctium minus	burdock
Bromus inermis	awnless brome grass
Cirsium arvensis	thistle
Eupatorium rugosum	white snakeroot

Geum canadense	avens
Impatiens capensis	jewelweed
Leonurus cardiaca	motherwort
Mentha arvensis	mint
Solidago canadensis	Canada golderod
Taraxacum officinale	dandelion
Tussilago farfara	coltsfoot

F2: This stand is located on the side slopes of the eastern ravine, and covers only the northern half (the southern portion being exposed shore cliff). The canopy is continuous at the bottom of the ravine, but becomes more open near the tablelands. This stand has been similarly disturbed, particularly along the western edge where debris has been dumped over the sides. The bottom of the ravine serves as an overland drainage channel; however, unlike the course in the western ravine, it appears to be only intermittent.

Overstorey:

The tree canopy is dominated by crack willow (Salix fragilis), with cottonwood (Populus deltoides) and black walnut (Juglans nigra) as lesser elements.

Understorey:

The tall shrub layer is generally continuous; however, it is particularly dense toward the bottom along the intermittent channel. The dominant species is red-osier dogwood (Cornus stolonifera). Other species noted in this stratum include:

Lonicera tatarica	Tatarian honeysuckle
Polygonum cuspidatum	Japanese knotweed
Rosa sp.	rose (garden escape)
Rubus idaeus	raspberry
Solanum dulcamara	deadly nightshade
Vitis riparia	wild grape

As in stand F1, the ground cover is distinctly weedy. The stratum is somewhat patchy in its distribution, varying from bare substrate in some parts to moderately dense cover in others. The dominant species is Canada goldenrod (Solidago canadensis). Other species recorded for this community are:

Agrostis gigantea	black bentgrass
Arctium minus	burdock
Artemisia biennis	biennial wormwood
Glechoma hederacea	creeping Charlie
Hesperis matronalis	dame's rocket
Impatiens glandulifera	balsam
Leonurus cardiaca	motherwort
Oxalis europaea	wood sorrel

Phalaris arundinacea	reed canary grass
Poa pratensis	Kentucky bluegrass
Tussilago farfara	coltsfoot
Vicia cracca	vetch

3.2.2 Old Field/Thicket Complex (FLD/T)

The abandoned filtration plant at the base of the bluffs is surrounded by a small plant community complex exhibiting characteristics of both old fields and tall thickets (i.e., areas of dense grass and forb swards interspersed with clumps of tall shrubs and occasional trees). The thickets are dominated by a variety of species including:

Cornus stolonifera	red-osier dogwood
Rhus radicans	poison ivy
Rhus typhina	staghorn sumac
Rubus idaeus	raspberry
Salix eriocephala	willow
Salix exigua	willow
Salix petiolaris	slender willow
Salix purpurea	basket willow

Also occurring in lesser numbers are scattered trees including:

Acer negundo	Manitoba maple
Fraxinus americana	white ash
Populus deltoides	cottonwood

The ground covers associated with the patches of tall thickets are essentially continuous with and identical to the old field sections in terms of species composition. The primary species in this regard is awnless brome grass (Bromus inermis), with reed canary grass (Phalaris arundinacea) also growing in small, dense swards. Other species are more generally distributed, and include:

Apocynum cannabinum	Indian hemp
Ambrosia artemisiifolia	ragweed
Apios americana	groundnut
Artemisia biennis	biennial wormwood
Aster novae-angliae	New England aster
Cichorium intybus	chickory
Cirsium arvense	thistle
Daucus carota	Queen Anne's lace
Diplotaxus muralis	stinking wall-rocket
Equisetum arvense	field horsetail
Panicum capillare	witch grass
Phleum pratense	timothy
Potentilla anserina	silverweed
Solidago graminifolia	narrow-leaved goldenrod

Solidago canadensis	Canada goldenrod
Taraxacum officinale	dandelion
Tussilago farfara	coltsfoot
Verbascum thapsus	mullein
Vicia cracca	vetch

3.2.3 Cliff Community (CF)

The steep face of the Scarborough Bluffs supports a vegetation cover that varies locally in terms of species composition and density, reflecting both subtle and distinct variations in site characteristics. For example, dry stable slopes generally support more successionally advanced phases dominated by a more or less continuous cover of old field species, tall shrubs, and/or pioneer tree species, while eroding cliffs are essentially bare. Wet seepage zones similarly tend to harbour a distinctive flora. The respective phases of the shore cliff communities along this section of the bluffs tend to grade rapidly from one to another according to local site conditions, and are characterized by the following representative species compositions.

Stable Slopes

The plant cover generally consists of sparse to continuous tree canopies dominated by cottonwood (Populus deltoides) and Manitoba maple (Acer negundo), with sparse to dense tall shrub cover by:

Cornus stolonifera	red-osier dogwood
Rhus typhina	staghorn sumac
Salix eriocephala	willow
Salix petiolaris	slender willow
Solanum dulcamara	deadly nightshade
Vitis riparia	wild grape

The herbaceous ground cover consists primarily of typical old field species interspersed with plants that are more indicative of early primary or secondary successional sites, including:

Achillea millefolium	yarrow
Artemisia biennis	biennial wormwood
Aster ciliolatus	aster
Aster novae-angliae	New England aster
Cichorium intybus	chickory
Elymus canadensis	Canada wild rye
Equisetum arvense	field horsetail
Melilotus alba	white sweet clover
Melilotus officinalis	yellow sweet clover
Monarda fistulosa	wild bergamot
Muhlenbergia mexicana	muhly grass
Phleum pratense	timothy
Poa compressa	Canada bluegrass

Solidago canadensis	Canada goldenrod
Solidago graminifolia	narrow-leaved goldenrod
Tussilago farfara	coltsfoot

Wet Seepage Zones

A number of localities along the bluffs are characterized by conspicuous groundwater seepage that flows continuously and originates from specific strata of the bluffs (eg., permeable sands that overlie compact clays). The subtrate in these zones also appears to be slightly unstable. As noted above, the vegetation that is established on these sites is distinct from the other phases of the cliff community, and consists primarily of herbaceous species. The most characteristic and dominant plant in virtually all of the seepage zones observed in this area are coltsfoot (Tussilago farfara), which generally forms a continuous mat. Other prominent species include:

Echinochloa crusgalli	barnyard grass
Equisetum arvense	field horsetail
Panicum capillare	witch grass
Typha latifolia	cattail

Interspersed through the cover provided by these species are:

Eupatorium rugosum	white snakeroot
Polygonum lapathifolium	smartweed
Populus deltoides	cottonwood (seedlings)
Salix eriocephala	slender willow (seedlings)
Salsola kali	Russian thistle
Solidago canadensis	Canada goldenrod
Solidago graminifolia	narrow-leaved goldenrod

3.2.4 Wet Meadow (MW)

One small example of a wet meadow community was identified in the study area. This community is located on the lower reaches of the drainage channel that courses along the bottom of the western ravine. It extends from just north of the abandoned filtration plant to approximately halfway up the ravine. Although there is a distinct drainage channel carrying the bulk of the overland flow throughout this stretch, the substrate of the adjacent valley floor is also consistently wet and spongy. The meadow is restricted entirely to the valley floor, and is generally dense and continuous throughout, although taller at the southern end where it is exposed to full sunlight (in the interior sections, it is continuously shaded by trees on the adjacent side slopes of the ravine). The exclusive dominant is reed canary grass (Phalaris arundinacea). The only other species occurring in the sward are:

Impatiens capensis	jewelweed
Solanum dulcamara	deadly nightshade

Scattered along the edges of the meadow, and occasionally within, are crack willows (Salix fragilis).

4. ANALYSIS

In accordance with the terms of reference, an evaluation of the botanical resources was conducted in order to determine the presence of any regionally, provincially, or nationally significant species and/or communities occurring in the study area. In this regard, regional significance was based on Environmentally Significant Area (ESA) criteria, regionally rare plants species list, and descriptions of ESA's provided in Metropolitan Toronto and Region Conservation Authority (1982). Provincial and national significance was based on standard references, i.e., Atlas of the Rare Vascular Plants of Ontario (Argus and White, 1982) and A List of Rare or Endangered Species in the Canadian Flora - Vascular Plants (Kershaw et al., 1978). This analysis essentially consisted of a straightforward comparison of species lists and community descriptions for the study area with similar data provided in the above references. We note here, however, that due to the timing of the study, a distinct component of the flora (i.e., spring ephemerals) was absent , and hardwood forest stands such as occur at this locality are typical habitats for this group of species. Consequently, our analysis and conclusions regarding this site are potentially based on only a partial record of the botanical resources.

The section of the Scarborough Bluffs that runs between the base of Scarboro Crescent eastward to just south of Cudia Crescent has been identified as an Environmentally Significant Area (i.e., Scarborough Bluffs Sequence) by MTRCA and a Provincially Significant Area by the Ministry of Natural Resources. This designation is based on the geological values represented in the excellent sequence of exposed glacial materials through the profile. The associated vegetative cover has not been cited as a contributing factor in terms of meeting the ESA criteria. Regardless, although it is contiguous with this segment, the study area is not included in the ESA (i.e., the base of Scarboro Crescent represents the eastern limit of the study area and the western boundary of the ESA).

The results of this investigation confirm that the plant species and communities occurring in the study area are generally common, abundant, and well represented throughout this and adjacent regions. In addition, the dominant species are characteristic of their respective cover types. None of the plants recorded is on any of the lists of regionally, provincially, or nationally rare species. In essence, the forest stands, old fields and thickets, cliff communities, and wet meadows along this segment of the Scarborough Bluffs are typical of much of this landform in terms of both compositional and physiognomic characteristics.

5. CONCLUSIONS AND RECOMMENDATIONS

There is no basis, at least in terms of botanical values, for extending the existing boundaries of the Scarborough Bluffs Sequence ESA to include the study area. Nevertheless, it is clear that minimal disturbance to the existing vegetative cover and substrate, particularly in more geologically sensitive areas, is still a critical concern for MTRCA in terms of achieving the their basic objectives for this area (i.e., erosion control and slope stabilization). Given the extreme topographic constraints in this area, it is quite obvious that the ravines at either end of this segment represent the only feasible and practical alternatives for developing access lanes to the base of the bluffs. However, of the two, the western ravine south of the filtration plant is clearly the more appropriate option for the following basic reasons:

1. although development of an access lane in either ravine will primarily entail filling (rather than cutting into slopes) to provide appropriate grades for transporting equipment and materials, the ravine at the eastern end of this segment appears to be more sensitive to the general types of disturbances that are commonly associated with construction activities. Vegetative cover in the lower reaches of this ravine is generally sparse to bare, particularly on the eastern side slopes which are actively eroding in some localities. In addition, this ravine has a more pronounced "V" shape along the bottom and is likely to require considerably more fill. Conversely, the western ravine has already been disturbed to some extent in the past and supports the remains of a former lane or trail to the abandoned filtration plant. The side slopes of this ravine support closed canopy forests and appear to be relatively stable. Consequently, an access lane at this latter locality would not only be better screened from view, but would also be less likely to disrupt the site in general.

2. although not strictly included within the ESA, the eastern ravine directly abuts the Scarborough Sequence ESA and, in essence, represents its western boundary; consequently, extensive landfilling in this ravine, which is also adjacent to well-used public open space, might be perceived to constitute unwarranted physical disturbance and leave MTRCA open to public criticism, particularly when a more viable option was available.

As a result, we recommend that:

> the ravine to the south of the filtration plant on Fishleigh Crescent be selected by MTRCA as the site for developing the required access lane to the base of the Scarborough Bluffs.

Development of the access lane in the western ravine will necessitate disruption of the natural plant cover along much of its length, except for

the extreme lower reaches. However, although the vegetation is not considered to be significant with respect to the regional or provincial flora, it is still of some importance in terms of slope stabilization, as well as the general visual character of the ravine. As a result, we recommend that:

> tree clearance be limited to every extent possible in order to maintain the aesthetic and natural screening qualities of the plant cover in this ravine.

We are in agreement with the remedial measures proposed to stabilize the erosion areas, and have no additional comments other than to suggest the use of indigenous species for revegetation purposes wherever possible. We note, for example, that the newly created beach which will be developed to protect the toe of the bluffs from further erosion could be seeded with native grass species, such as reed canary grass (Phalaris arundinacea), or planted with indigenous shrubs, such as red-osier dogwood (Cornus stolonifera) or willows (Salix spp.), to complement the existing cover along adjacent stretches of the shoreline.

As noted in the general site descriptions, the drainage course located along the bottom of the ravine is permanently flowing. As well, groundwater seepage zones were observed in a number of localities along the side slopes. Consequently, we would also like to confirm that any development in the ravine should allow for internal drainage.

REFERENCES

Argus, G.W., and D.J. White.(eds). 1982/83/84. Atlas of the Rare Vascular Plants of Ontario. National Museums of Canada.

Curtis, J.T. 1959. The Vegetation of Wisconsin; An ordination of Plant Communities. University of Wisconsin Press, Madison, Wisconsin. 657 pp.

Dore, W.G., and J. McNeill. 1980. Grasses of Ontario. Agriculture Canada, Ottawa. 566 pp.

Kershaw, F., J.K. Morton, and J.M. Venn. 1976. A List of the Rare and Endangered Species in the Canadian Flora. University of Waterloo, Dept. of Biol., Waterloo, Ontario.

Metropolitan Toronto and Region Conservation Authority. 1982. Environmentally Significant Areas Study.

Scoggan, H.J. 1982. The Flora of Canada. National Museums of Canada, Ottawa. Publications in Botany.

Soper, J.H., and M.L. Heimburger. 1982. Shrubs of Ontario. Royal Ontario Museum, Miscellaneous Life Science Publication, Toronto. 495 pp.

Voss, E.G. 1972. Michigan Flora: Part 1; Gymnosperms and Monocts. Cranbrook Institute of Science and University of Michigan Herbarium. Bloomfield Hills, Michigan. 488 pp.

APPENDIX

LIST OF WILDLIFE SPECIES NOTED FOR THE STUDY AREA

Mammals

Sciurus carolinensis	grey squirrel

Birds

Branta canadensis	Canada goose
Cyanocitta cristata	blue jay
Larus delawarensis	ring-billed gull
Parus atricapillus	black-capped chickadee
Sturnus vulgaris	starling

1987 WATERFRONT
EROSION CONTROL SITE REPORT
SCARBOROUGH SECTOR
RESOURCE MANAGEMENT SECTION
METROPOLITAN TORONTO AND REGION CONSERVATION AUTHORITY

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1.0 INTRODUCTION

Severe erosion sites exist along the Lake Ontario shoreline within the Metropolitan Toronto and Region Conservation Authority's (MTRCA) jurisdiction. Remedial works to prevent erosion are implemented by the MTRCA where imminent risk of damage to property exists.

The remedial works planned for 1988 are concerned with bluff erosion, in the City of Scarborough. Bluff erosion typically exists along the Scarborough shoreline because of active slumping of the face. Slumping is caused by wave and water action eroding the toe of the slope, producing an over steepened slope that is susceptible to sheering. Remedial measures deal with the protection of the slope toe using various revetment structures.

This report deals with the effects of the remedial works on the nearshore environment.

2.0 SCOPE AND LOCATION

The 1987-1988 waterfront erosion control sites are found along the Scarborough bluffs in the vicinity of Fishleigh Drive, Kingsway Crescent and Guildwood Parkway. For the purposes of this report, the individual collections from the Scarborough waterfront have been combined to reflect the Scarborough sector.

The report will focus on four (4) aspects of the aquatic environment from the Scarborough sector:

1. Sediment Quality
2. Water Quality
3. Benthic Invertebrate Community
4. Fisheries Resource

The sensitivity of the aquatic environment to the proposed remedial works will be examined.

3.0 SEDIMENT QUALITY

The MTRCA conducted SCUBA reconnaissance surveys within the Scarborough sector, to determine the bottom substrate. The results of this survey indicate that the substrate of this area is predominately silty, with very fine to fine sands. Silt in the area was throught to be a temporary deposition which generally covered boulder, cobble, gravel, hard clay and bedrock (MTRCA 1983).

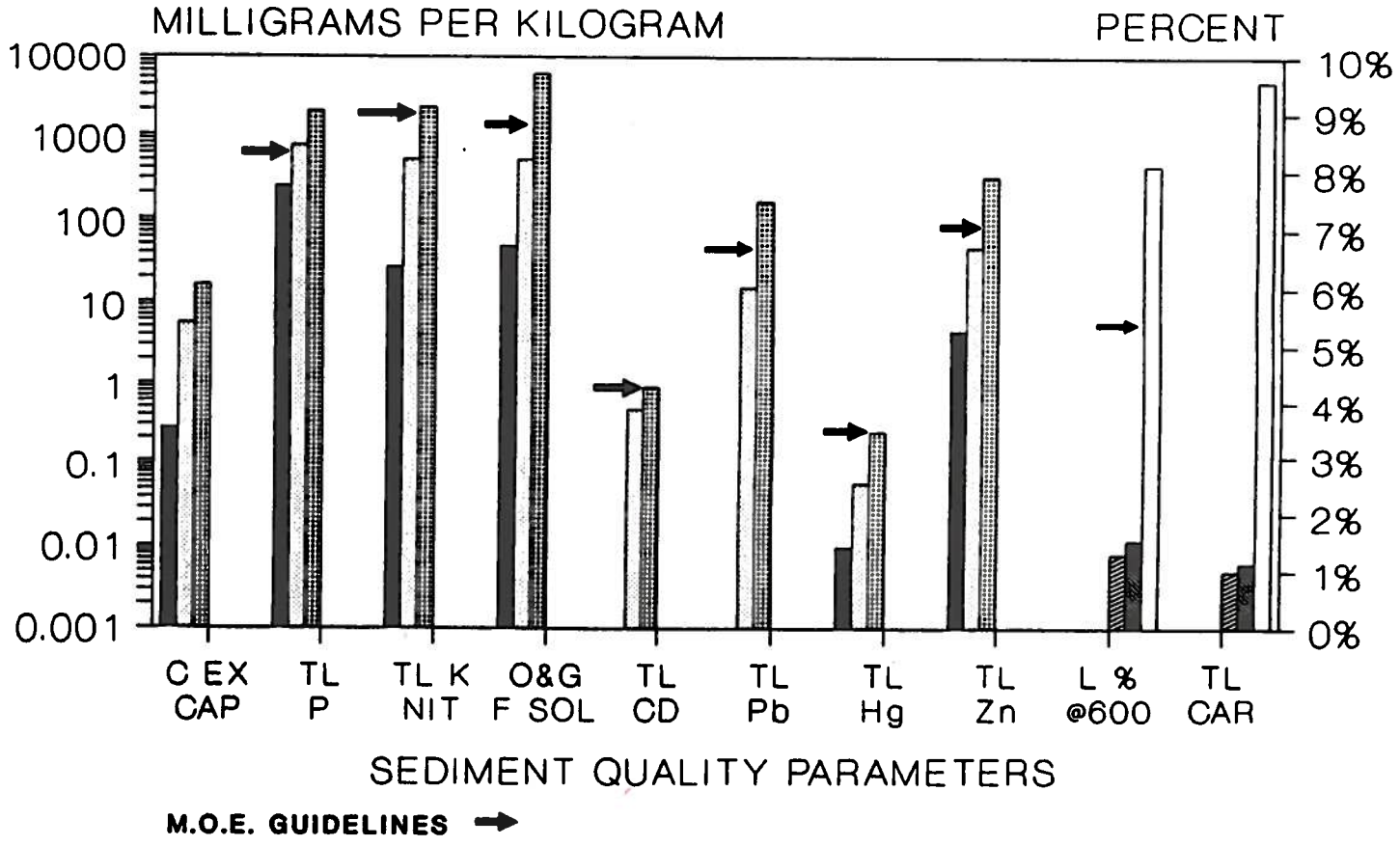
Two earlier investigations support this description of the substrate within the Scarborough sector. Lewis and Sly (1971) used seismic soundings to determine that the Scarborough sector is composed of sands, silty sands, and gravelly sands. Rukavina (1969) used more detailed methods to describe the substrate as recently deposited sediments composed of gravel, pebbly sand, sand silt, silt sand and silt clay, with the finer materials being more predominant. The dominance of a sand substrate reflects the impact of bluff erosion on the Scarborough Sector.

Sediment quality of the Scarborough sector was investigated by the MTRCA from 1982 to 1985. Sediments were analysed for the following parameters; cation exchange capacity, total phosphorus, total kejdhal nitrogen, oil and grease, cadmium, lead, mercury, zinc, loss on ignition @ 600°C, and total organic carbon. Results of the sediment samples (minimum, mean, maximum) and the MOE Guidelines for Open Water Disposal are shown in Figure 1. The results show that the average Scarborough sector sediment meets with (except phosphorus) the MOE objectives. Elevated phosphorus levels are common throughout the Toronto Waterfront (Proctor and Redfern 1979a). The maximum levels recorded for most of the four parameters were found at a station offshore from the mouth of the Highland Creek.

Overall the sediment quality of the Scarborough sector is good, There are however, areas of degraded sediment quality.

LAKE ONTARIO - AVERAGE SEDIMENT QUALITY

WATERFRONT EROSION CONTROL SITE
SCARBOROUGH SECTOR



M.O.E. GUIDELINES ➡

1982 TO 1985 (MTRCA DATA)
(MINIMUM MEAN MAXIMUM)

4.0 WATER QUALITY

The MTRCA collected water quality and water chemistry information from the Scarborough sector at East Point and Bluffers Park (1975-78) and at South Marine Drive (1982). The MOE collected water quality information offshore from Highland Creek from 1977-79 and 1980-83.

MTRCA water chemistry tests indicate that the Scarborough sector has good water clarity resulting from low turbidity levels (Proctor and Redfern 1979a). However, turbidity was found to increase adjacent to the shore at South Marine Drive (MTRCA 1983). This increase in turbidity is common along the shoreline of the Scarborough Sector. Phosphorus levels recorded from the Buffers Park area (1975-78) commonly exceeded the Provincial Water Quality Objectives (PWQO). Elevated phosphorus levels are common throughout the Toronto Waterfront (Proctor and Redfern 1979). The MOE recorded lower phosphorus levels at the station offshore from Highland Creek. Overall the MOE data set exhibited a downward trend in phosphorus levels with few incidents of PWQO violations. Levels of total kjeldahl, nitrogen, nitrite and nitrate remained constant from this data set. Mean ammonia concentrations showed a slight increase from the same data set (Beak et al 1986).

Unacceptable levels of bacterial densities are periodically and locally found within the Scarborough sector. Based on 1976 to 1978 data, trends in bacterial levels from the Scarborough sector generally met the criteria for the PWQO (Proctor and Redfern 1979a). In 1984 sampling methodology changed and bacteria sampling locations were moved closer inshore. From 1984 to 1986 there was a dramatic increase in the frequency and duration of bacterial levels greater than the PWQO (Beak et al 1986). Bacterial densities are generally unacceptable throughout the Scarborough sector after a major storm event.

The water quality of the Scarborough sector is negatively affected by the impacts of sewage treatment plant outfalls, storm sewers and river discharges. Except for bacterial densities, trends in water quality reflect a lower level of contamination for this area compared to the remainder of the Toronto Waterfront.

Overall the water quality is suitable to provide adequate protection to the aquatic life present.

5.0 BENTHIC INVERTEBRATE COMMUNITY

The benthic invertebrate community of nearshore Lake Ontario is limited by many environmental factors. Major limiting factors include substrate type, substrate contaminants, water quality, thermal stress, and scouring by wave and ice action (Beak et al 1986).

The MTRCA conducted a thorough investigation of the benthic community at South Marine Drive within the Scarborough sector. Typically the benthos was composed of few species (range 3 - 85) with low densities (range 210 - 5610/m^2) and dominated by chironomids. Cluster analysis indicates that there were no strong inter-relationships between the invertebrate community (MTRCA 1983a).

Significantly higher densities were sampled from within the Scarborough sector at transects offshore from Birchcliff Avenue and the Guildwood Inn (Integrated Exploration 1984). High benthos densities were also collected from within the Bluffers Park Yacht Basin (Proctor and Redfern 1979a, IEC Beak 1985).

Isolated areas of enriched sediment, permit the benthic invertebrate community to flourish (Proctor and Redfern 1979a). Waterfront park embayments often have high benthos densities due to the entrapment of organic pollution in the sediment (Proctor and Redfern 1979a, IEC Beak 1985). Cluster analysis of benthic samples from Bluffers Park indicate the presence of two distinct communities. The open water stations grouped separately from the samples collected from within the yacht basins (Beak 1985).

There are apparently three groupings of benthic invertebrate communities within the Scarborough sector. The open water zone with few species and low density resulting from nutrient poor sediment and harsh lake conditions. Isolated areas within the open water zone that have enriched sediment or optimum substrate that allows for good species diversity and higher densities. Waterfront park embayments with good species and high densities resulting from enriched sediment and protection from the harsh lake environment.

6.0 FISHERIES RESOURCE

A species list of the fish collected by the MTRCA from the Scarborough sector is provided in Table 1. The MTRCA collections consist of gill net and seine net inventories.

In the Scarborough sector, 36 gill net collections were conducted from 1979 to 1986 at Bluffers Park, Bellamy Ravine and East Point waterfront areas. The results of these collections are summarized in Figure 1. Gill net inventories reflect the structure of the fish community present in the near shore lake area. The five most abundant species are: alewife, white sucker, rainbow smelt, lake trout, and yellow perch. Lake trout, yellow perch and brown trout are the most prominent sport fish found in the area.

The ESA Study (MTRCA 1982) indicates that sea lamprey, lake whitefish, round whitefish, longnose sucker, white perch, white bass and trout-perch are considered regionally rare species. In light of recent collections the criteria for regionally rare species status has been surpassed for some of these species (MTRCA 1982-87). However, trout-perch and longnose sucker can still be considered regionally rare.

Seine net collections from the Scarborough sector were conducted at Bluffers Park on September 20, 21 and October 13-14, 1983. Twenty-one seine hauls captured 1452 fish composed of 21 species. Gizzard shad, spottail shiner, emerald shiner, yellow perch and rainbow smelt composed 85% of the total catch. One regionally rare species, trout-perch, was collected. The sampled portions of the Bluffers Park embayments were thought to provide habitat for young of the year fish (MTRCA 1983b).

Using the Scarborough sector sediment description and a sumamry of spawning requirements (Proctor and Redfern 1979b) the following species will find suitable spawning habitat:

- alewife
- gizzard shad
- emerald shiner
- spottail shiner
- rainbow smelt

TABLE 1 SPECIES LIST OF FISH COLLECTED FROM THE SCARBOROUGH SECTOR

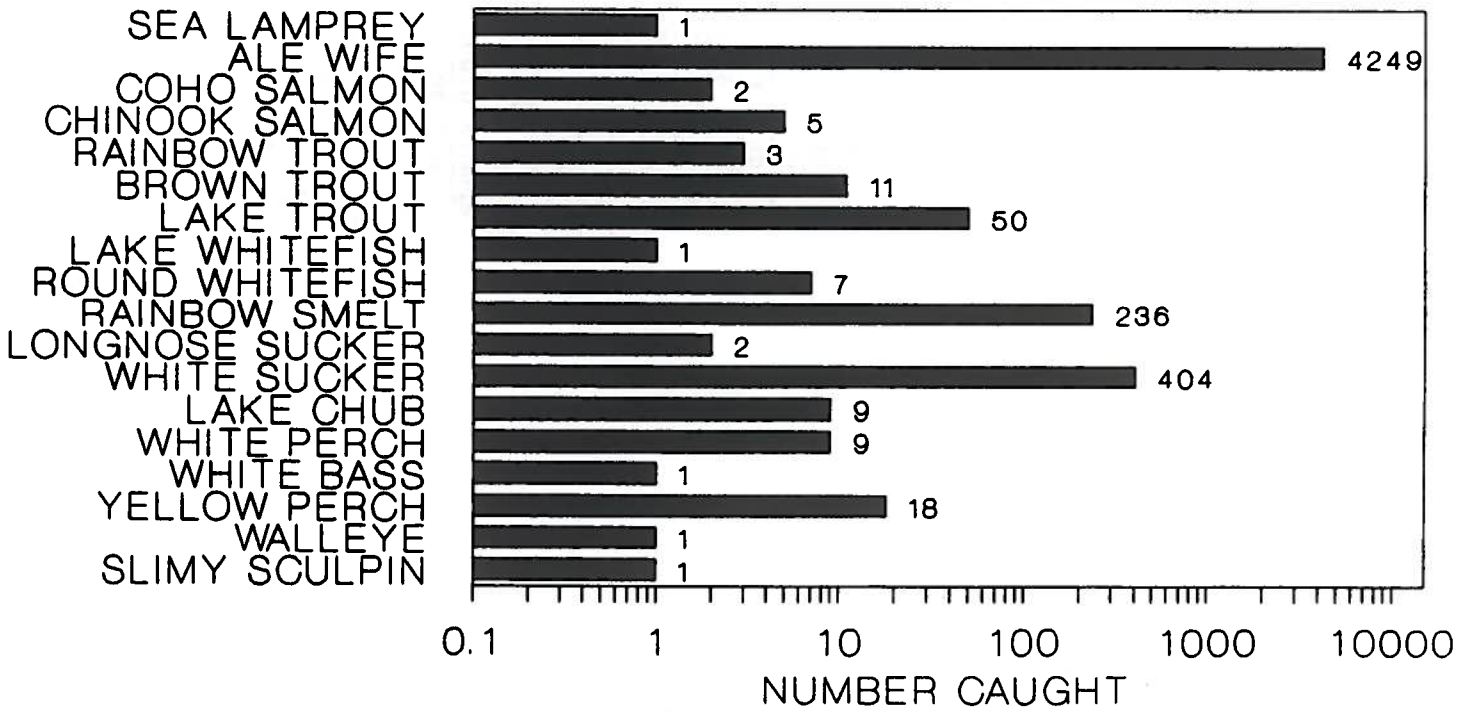
Sea lamprey	*Petromyzon marinus*
Bowfin	*Amia calva*
Alewife	*Alosa pseudoharengus*
Gizzard shad	*Dorosoma cepedianum*
Coho salmon	*Oncorhynchus kisutch*
Chinook salmon	*Oncorhynchus tshawytcha*
Rainbow trout	*Salmo gairdneri*
Brown trout	*Salmo trutta*
Lake trout	*Salvelinus namaycush*
Lake whitefish	*Coregonus clupeaformis*
Round whitefish	*Prosopium cylindraceum*
Rainbow smelt	*Osmerus mordax*
Northern pike	*Esox lucius*
Longnose sucker	*Catostomus catostomus*
White sucker	*Catostomus commersoni*
Lake chub	*Couesius plumbeus*
Common carp	*Cyprinus carpio*
Emerald shiner	*Notropis atherinoides*
Common shiner	*Notropis cornutus*
Spottail shiner	*Notropis hudsonius*
Sand shiner	*Notropis stramineus*
Bluntnose minnow	*Pimephales notatus*
Fathead minnow	*Pimephales promelas*
Longnose dace	*Rhinichthys cataractae*
Brown bullhead	*Ictalurus nebulosus*
Trout-perch	*Percopsis omiscomaycus*
White perch	*Morone americana*
White bass	*Morone chrysops*
Pumpkinseed	*Lepomis gibbosus*
Yellow perch	*Perca flavescens*
Walleye	*Stizostedion vitreum vitreum*
Logperch	*Percina caprodes*
Tessellated darter	*Etheostoma olmstedi*
Mottled sculpin	*Cottus bairdi*
Slimy sculpin	*Cottus cognatus*

Based on: - MTRCA Unpublished Gill Net Data (1979-1986)
- MTRCA 1982-1983 Lake Ontario Seine Net Inventory Unpublished Report

LAKE ONTARIO - GILLNET RESULTS

WATERFRONT EROSION CONTROL SITE
SCARBOROUGH SECTOR

SPECIES CAUGHT



1979 TO 1986 (MTRCA DATA)

NUMBER OF NETS: 36

Using the same criteria limited area of spawning habitat will be found for the following species:

lake trout
round whitefish
white perch
yellow perch

Although it is possible for all of these species to spawn in the sector, the only significant spawning activity is from alewife and rainbow smelt.

The fish community of the Scarborough sector is dominated by coarse and forage fish species.

7.0 NEARSHORE DESCRIPTION

The sediments within the Scarborough sector on the average meet the MOE guidelines for sediment quality. Isolated areas of degraded sediments are found within the sector, at waterfront park embayments and along the nearshore zone. Substrate of the nearshore area is dominated by fine materials deposited through bluff erosion. Isolated areas of coarser material exist and may provide for isolated areas of spawning habitat and benthic invertebrate habitat.

Water quality throughout the sector is good relative to other areas of the Toronto waterfront. Discharges after storm events from local sewage treatment plants, storm sewers and watercourses, can locally degrade water quality. Bacteria and phosphorus levels commonly exceed the provincial water quality objectives.

The benthic invertebrate community is typically composed of few species with low abundance. This sparse community structure is the result of nutrient poor sediment, unsuitable substrate and harsh Lake Ontario conditions. Benthic invertebrate communities from waterfront park embayments and isolated areas along the Scarborough sector have higher populations and more diverse species present.

The Scarborough sector is dominated by coarse and forage fish species. Important game fish such as salmonids and centrachids are infrequent inhabitants of the area. Spawning habitat is limited for most species other than alewife and rainbow smelt.

Nearly every aspect of the nearshore environment of the Scarborough sector is affected by the sediment load from the erosion of the Scarborough Bluffs. This sediment loading affects the water quality, sediment quality, spawning habitat for fish, and the establishment of benthic invertebrate communties.

8.0 COMMENTS

In the long-term almost every aspect of the nearshore ecosystem will benefit from the slope stabilization works. Lake filling related turbidity and sediment loading may change the nature of the biotic communities. However, any short-term alterations will be outweighed by the long-term benefits of a stable shoreline.

Some benefits include: the reduction in the amount of fine sediments available for transport and deposition; a reduction in nearshore turbidity; development of a more diverse substrate and associated benthic invertebrate community; habitat for fish created at the revetment structure Lake Ontario interface.

Overall the shoreline revetment structures once completed should provide the stability needed to promote a more diverse aquatic community.

REFERENCES

Acres Consulting Services Ltd. 1983. Keating Channel Environmental Assessment. Appendix E - Biological Studies.

Beak Consultants Ltd. Et Al. 1986. Toronto Eastern Waterfront Summary. Draft Report for the Toronto Remedial Action Plan Work Team.

Beak Consultants Ltd. 1985. Toronto Central Waterfront Summary. Draft Report for the Toronto Remedial Action Plan Work Team.

IEC Beak Consultants Ltd. 1985. A Review of the 1982 Waterfront Monitoring Program. Report for MTRCA.

Integrated Exploration. 1984. A Nearshore Benthic Survey of Lake Ontario. Report to MOE.

Lewis, C.F.M and P.G. Sly. 1971. Seismic Profiling and Geology of the Toronto Waterfront Area of Lake Ontario. Proc. 14th Conference Great Lakes Res. 303-354. International Association for Great Lakes Research.

Ministry of the Environment (MOE), 1984. Water Management; Goals, Policies, Objectives, and Implementation. Procedures of the Ministry of the Environment.

MOE. 1986a. Toronto Waterfront, General Water Quality 1976-1983, Great Lakes Section, Water Resources Branch. 80 pp.

MOE. 1986b. Effects of Lake Filling and Dredging in the Toronto Waterfront During 1984. Great Lakes Section, Water Resources Branch. 31 pp.

MOE. 1986c. Guidelines for the Management of Dredged Material in Ontario. Draft Report.

Metropolitan Toronto and Region Conservation Authority (MTRCA). 1982. Environmentally Significant Areas Study.

MTRCA. 1983a. An Application for Exemption Under the Environmental Assessment Act for South Marine Drive, a Shoreline Management Work.

MTRCA. 1983b. Lake Ontario Waterfront Seine Net - Fish Inventory. 1982-1983. Unpublihed Report.

MTRCA. 1987. Grain Size Analysis and Sediment Quality of the Toronto Waterfront Area. Unpublished Data.

MTRCA Gill Net collection Records from the Toronto Waterfront, 1978 to 1987. Unpublished Data.

Ontario Hydro 1984. J.K. Kwik. Report #84-135, Pockering GS "B" Pre-operational Biological Summary Report 1979-1982. Ontario Hydro Research Division.

Proctor and Redfern Ltd. 1979a. Review of the Waterfront Environemntal Program, Report for MTRCA. EO.79179.

Proctor and Redfern Ltd. 1979b. Survey of the Bottom Substrata and Fish Habitat, East Point Waterfront Area, Lake Ontario. Report for MTRCA. EO.79179.

Rukavina, N.A. 1969. Nearshore Sediment Survey of Western Lake Ontario, Methods and Preliminary Results. Proc. 12th Conference, Great Lakes Res. 317-324, International Association for Great Lake Research.

Scott, W.B. and E.J. Crossman. 1973 Freshwater Fishes of Canada. 2nd edition. Fish Res. Board of Canada. Bulletin No. 184.

P.O. Box 938, Thornhill
Ontario, Canada L3T 4A5
Telephone (416) 889-1976
Telex: 06-986766 Tor.

Keith Philpott
Consulting Limited
Coastal Engineers

July 7, 1987

Dear Homeowner,

Keith Philpott Consulting Limited was retained by the Metropolitan Toronto and Region Conservation Authority (MTRCA) to review erosion problems along the Fishleigh Drive sector of Scarborough Bluffs. The study was funded by the Ministry of Natural Resources under the Technical Advisory Service.

Shore protection works have been designed, details of which are contained in a report titled, "Fishleigh Drive Erosion Control Project". The recommendations of the report are summarized below.

Two methods of shore protection were considered.

i) artificial beaches retained by groynes

ii) an offshore revetment

The large volume of fill required to create and maintain beaches, and the uncertainty of rubble supply, make this option less attractive. A revetment requires significantly less material and minimal maintenance. It is therefore the recommended solution.

Both geotechnical and coastal process concerns were considered in selecting the final revetment design. The structure has been sited in a sufficient depth of water to arrest erosion of the foreshore while allowing the bluff to attain a naturally stable slope. Using 1987 equipment, material and labour rates provided by MTRCA, the project cost is estimated at $1.1 million, which includes 570 metres of revetment structure.

Various sites were examined for construction material access. Alternative access sites will be reviewed by MTRCA in conjunction with area residents and other involved agencies, after which a final site will be selected. The various options include;

i) reinstatement of the former access road down Fishleigh Ravine,

ii) construction of an access road westerly from Bluffer's Park,

iii) top dumping from Scarborough Heights Park,

iv) construction of a new access road down Midland Ravine.

It has been recommended that prior to construction a geotechnical firm review the revetment design to ensure that its position will enable the bluffs to form

...2

a stable slope. Furthermore, the Authority must complete an environmental study of the site, including an aquatic inventory. The MTRCA anticipates that subject to receiving all technical approvals, as well as funding from the Province of Ontario, construction of the access road and revetment can commence in 1988.

Those persons wishing to look at the technical report may contact Mr. Nigel Cowey at MTRCA (416 661-6600).

Yours very truly,

KEITH PHILPOTT CONSULTING LIMITED

F.J.L. Itamunoala, P.Eng.

the metropolitan toronto and region conservation authority

TO: Peter Wigham
DATE: 1988.01.13
RE: Archaeological Sites for Environmental Study Reports
- Fishleigh and Guildwood Erosion Control Sites

An archival search of MCC (Heritage Branch) archaeological site records indicated that there are no known sites in the area of the prposed 'Fishleigh Drive' and 'Guildwood' erosion control sites. Considering the environmental setting and previous alteration of these proposed sites, archaeological resources are not anticipated. Please be advised that archaeological sites may be encountered on the 'table land' in these areas.

Bob

Bob Burgar
Project Archaeologist
Field Operations

NOTICE OF INTENT

In accordance with the approved procedures contained in the Class Environmental Assessment for Water Management Structures of the Conservation Authorities of Ontario, the Metropolitan Toronto and Region Conservation Authority intends to proceed with the planning and design of the undertaking described below:

Name of Undertaking: Erosion Control and Slope Stabilization Study.

Location of Undertaking: Fishleigh Drive Sector, Scarborough Bluffs

Members of the public wishing to participate in the planning and design of the undertaking should so advise The Metropolitan Toronto and Region Conservation Authority in writing on or before June 26, 1987.

For additional information, please contact:
Name: N.B. Cowey
Title: Project Engineer
Telephone No. 661-6600, ext. 244
The Metropolitan Toronto and Region Conservation Authority
Address: 5 Shoreham Drive, Downsview, M3N 1S4

W.T. Foster
Chairman

W.A. McLean
General Manager

NOTE: Any person has the right to request the Minister of the Environment to require further environmental studies be carried out on any of the above projects. A request to the Minister must be made in writing to the address set out below and a copy must be sent to the Authority's address set out above before **June 26, 1987.**

Minister's Address:

The Honourable Jim Bradley
Minister of the Environment
135 St. Clair Avenue West
15th Floor
Toronto, Ontario
M4V 1P5

10. REFERENCES CITED

1. Erosion and Sediment Control Program - Watershed Plan
- M.T.R.C.A.

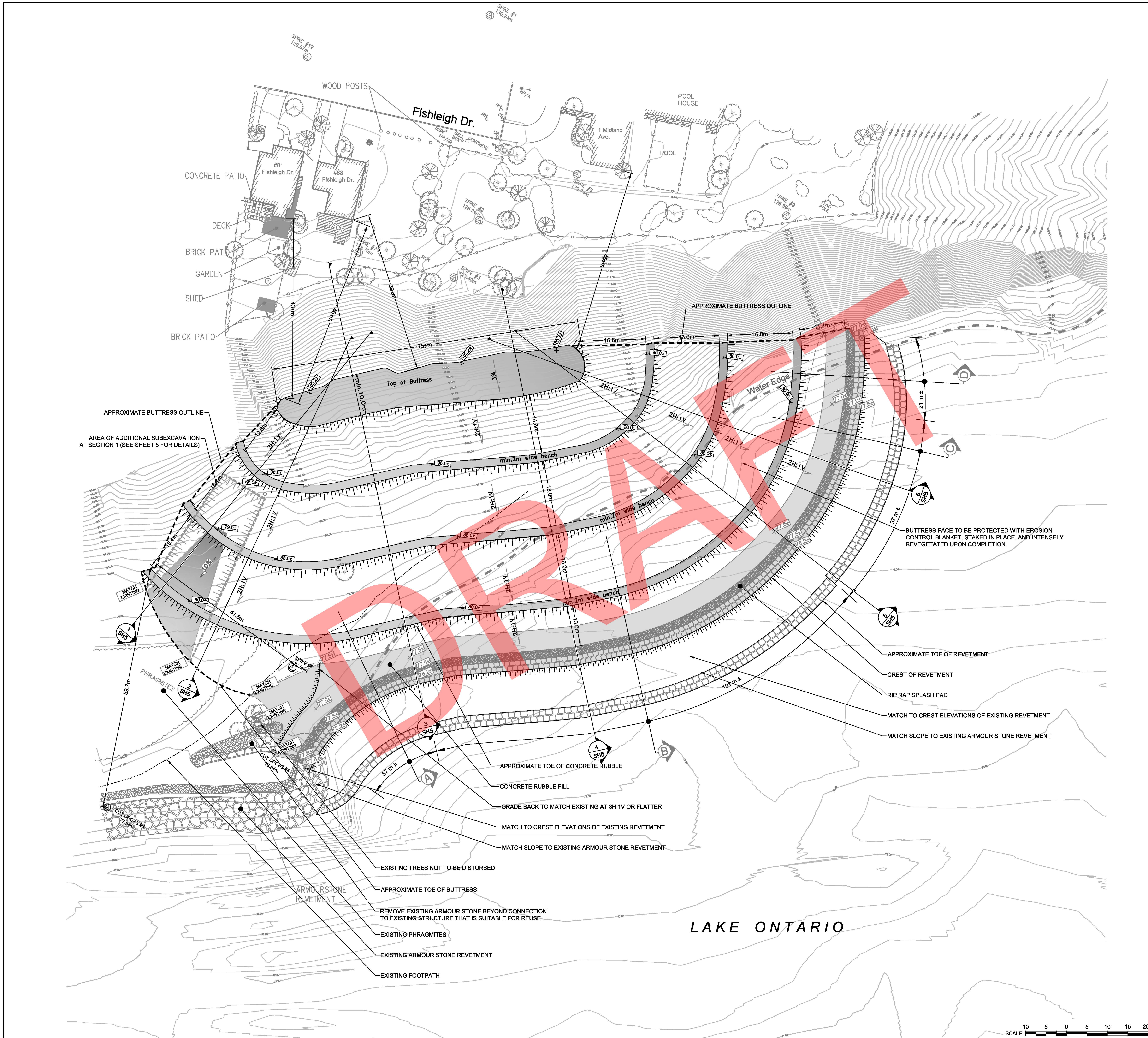
2. 1977-1981 Waterfront Project
- M.T.R.C.A.

3. Erosion Control Study - Scarborough Bluffs
- Geocon Inc. - 1980-1981

4. Class Environmental Assessment for Water Management Structures
- Conservation Authorities of Ontario, 1986

5. Geotechnical Investigation, Slope Stabilization Study,
Scarborough Bluffs - Fishleigh Drive
- Terraprobe Ltd.

APPENDIX C
Terraprobe Draft Design Drawings



REFERENCE
Toronto and Region Conservation
Drawing Title.: Existing Conditions
Drawing No: F1012
File No.: Autocad F1012.dwg
Updated Date: May 5, 2015

REFERENCE
Shoreplan Engineering Limited
Sheet Title.: Site Plan
Job No: 15-2224
File No.: 1

NO	DATE	REMARKS
0	Aug. 20, 2015	DRAFT, ISSUED FOR REVIEW

REVISIONS

LEGEND

- Existing Elevations (m)
- Proposed Elevations (m)
- Buttress Section
- Revetment Section

ALL DIMENSIONS ARE IN PLAN. CONTRACTOR MUST VERIFY ALL DIMENSIONS AND BE RESPONSIBLE FOR SAME REPORTING ANY DISCREPANCIES TO THE OWNER AND ENGINEER BEFORE COMMENCING THE WORK.

PRINTS ARE NOT TO BE SCALED. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED

DRAWINGS WITHOUT ENGINEER'S SIGNATURE SHALL BE CONSTRUED AS INCOMPLETE AND ARE FOR INFORMATION ONLY

Client

Toronto and Region Conservation
for The Living City
Member of Conservation Ontario
101 Exchange Avenue, Vaughan, ON L4K 5R6 (416) 661 6600

Job Title

FISHLEIGH & MIDLAND SLOPE
DETAILED DESIGN
CITY OF TORONTO

Sheet Title

REMEDIATION - PLAN

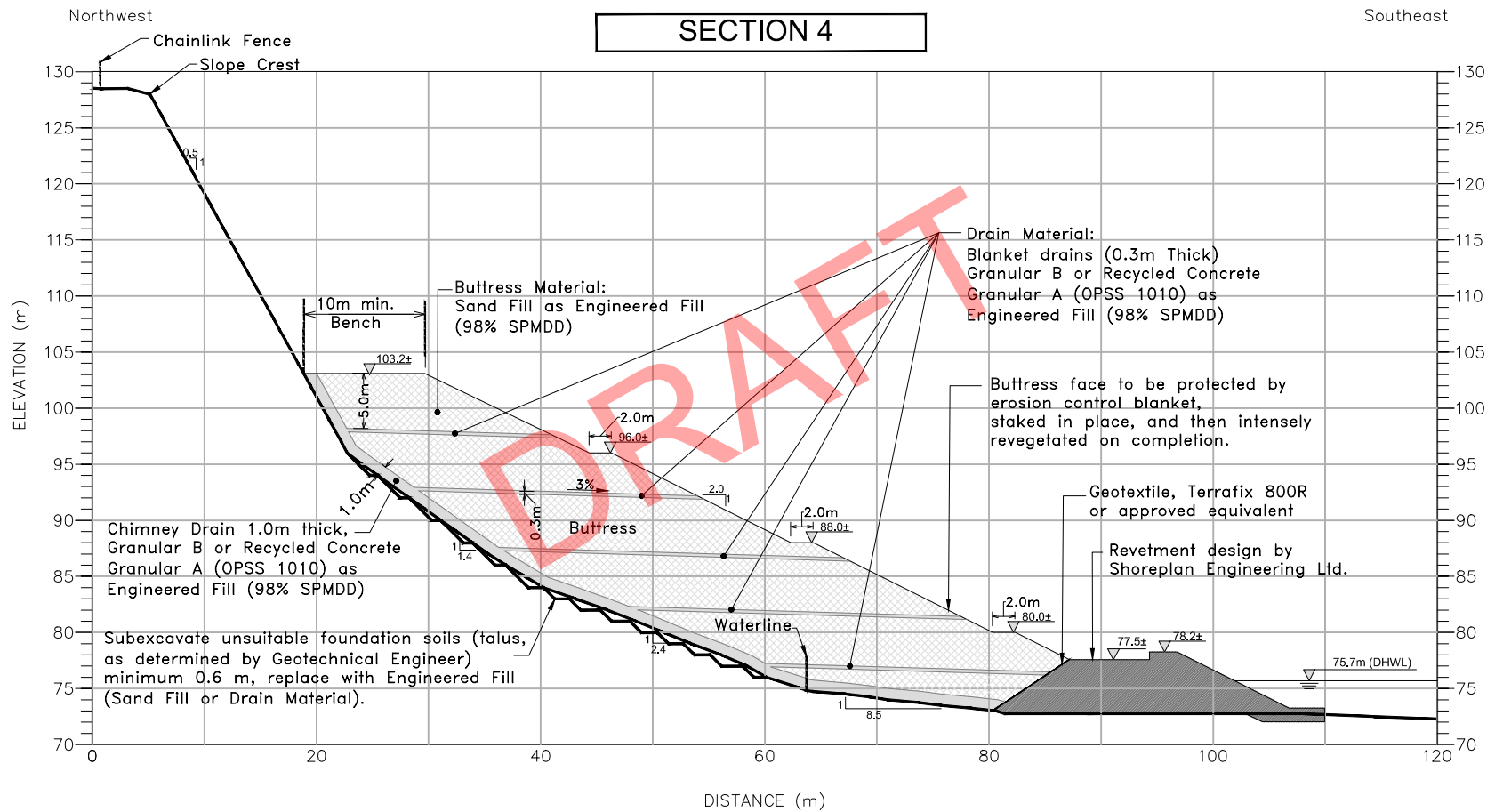
Seal

Construction North

Terraprobe Inc.
Engineering Solutions
11 Indell Lane
Brampton, ON L6T 3Y3
Tel: (905) 796-2650
Fax: (905) 796-2250

SHOREPLAN
Shoreplan Engineering Limited
20 Holly Street, Suite 202
Toronto, Ontario
M4S 3B1 Tel. (416) 487-4756

Scale: 1:600	Designed By: M.D
Drawn By: K.C	Reviewed By:
Job No: 1-15-0329-1	Sheet No: 1


SECTION 4
Northwest
Southeast
Chainlink Fence
Slope Crest
0.5
1
10m min.
Bench
Buttress Material:
Sand Fill as Engineered Fill
(98% SPMDD)
103.2±
5.0m
2.0m
96.0±
Drain Material:
Blanket drains (0.3m Thick)
Granular B or Recycled Concrete
Granular A (OPSS 1010) as
Engineered Fill (98% SPMDD)
Buttress face to be protected by
erosion control blanket,
staked in place, and then intensely
revegetated on completion.
1.0m
3%
2.0
0.3m
Buttress
2.0m
88.0±
Geotextile, Terrafix 800R
or approved equivalent
Chimney Drain 1.0m thick,
Granular B or Recycled Concrete
Granular A (OPSS 1010) as
Engineered Fill (98% SPMDD)
1.4
Revetment design by
Shoreplan Engineering Ltd.
2.0m
80.0±
Waterline
2.4
77.5±
78.2±
75.7m (DHWL)
Subexcavate unsuitable foundation soils (talus,
as determined by Geotechnical Engineer)
minimum 0.6 m, replace with Engineered Fill
(Sand Fill or Drain Material).
8.5
ELEVATION (m)
DISTANCE (m)
130
125
120
115
110
105
100
95
90
85
80
75
70
0
20
40
60
80
100
120
DRAFT

APPENDIX D

Marine Archaeological Assessment
Background Research and Snorkel Survey
for the Fishleigh Drive Revetment Project
City of Toronto – Scarlett Janusas Archeology Inc.

MARINE ARCHAEOLOGICAL ASSESSMENT BACKGROUND RESEARCH AND SNORKEL SURVEY FOR THE FISHLEIGH DRIVE REVETMENT PROJECT CITY OF TORONTO

Prepared for

Toronto and Region Conservation Authority
Mr. Jet Taylor, Environmental Technician
Restoration and Infrastructure Division
1 Eastville Avenue
Toronto, Ontario M1M 2N5

And

Ministry of Tourism, Culture and Sport

SCARLETT JANUSAS ARCHAEOLOGY INC.
269 Cameron Lake Road
Tobermory, Ontario N0H 2R0
phone 519-596-8243 mobile 519-374-1119
jscarlett@amtelecom.net
www.actionarchaeology.ca

License # 2015-14
August 22, 2015

Table of Contents

Project Personnel

Project Manager Principal Archaeologist, And Report Preparation	Scarlett Janusas (P027- Land License) 2015-14 (Underwater License) Patrick Folkes
Marine Historian	Patrick Folkes
Snorkel Team	Brian Horeczy Jordon MacArthur

Acknowledgments

Scarlett Janusas Archaeology Inc. extend our thanks to Mr. Jet Taylor, Toronto and Region Conservation Authority for providing data, maps and access to the project area.

Executive Summary

The Toronto and Region Conservation Authority (TRCA) retained the services of Scarlett Janusas Archaeology Inc. (SJAI) to conduct a snorkel survey of an area proposed to be an extension of an existing revetment structure along the Lake Ontario shoreline below the Scarborough Bluffs, more specifically below Fishleigh Drive. The proposed revetment is part of the erosion control measures being undertaken by TRCA.

The area has a maximum depth of approximately 1.5 metres and the area of the proposed revetment was subject to snorkel survey conducted in two metre or less intervals. The snorkel survey was conducted on July 29th, 2015 under excellent conditions. The temperature near the water was 24°C, it was sunny with little wind, and visibility in the water was in excess of two metres.

There were no cultural resources noted during the snorkel survey. It should be noted that stone from the existing revetment extended into the Project area obscuring bottom, and that the remaining Project area was undoubtedly representative of deposition of eroding bluff face materials. If there are any cultural resources in the Project area, they are deeply buried.

Based upon the background research, and the archaeological survey of the Project area and a buffer, the following is recommended:

- If there is no planned excavation into the bottom of the Project area for purposes of revetment construction, no further archaeological assessment is required (this area will then be considered to be capped);
- If construction of the revetment involves removal of bottom sediment, an archaeologist should screen those sediments as they are brought to the surface for possible deeply buried cultural resources;
- compliance regulations must be adhered to in the event that archaeological resources are located during the project development.

This report is submitted to the Minister of Tourism, Culture and Sport as a condition of licensing in accordance with part VI of the Ontario Heritage Act, R.S.O. 1990, c 0.18.

MARINE ARCHAEOLOGICAL ASSESSMENT BACKGROUND RESEARCH AND SNORKEL SURVEY FOR THE FISHLEIGH DRIVE REVETMENT PROJECT CITY OF TORONTO

1.0 INTRODUCTION

The Toronto and Region Conservation Authority (TRCA) retained the services of Scarlett Janusas Archaeology Inc. (SJAI) to conduct a snorkel survey of an area proposed for construction of an extension of an existing revetment structure along the Lake Ontario shoreline below the Scarborough Bluffs, more specifically below Fishleigh Drive (Figures 1 – 3). The proposed revetment is part of the continuing erosion control measures being undertaken by TRCA.

The area has a maximum water depth of approximately 1.5 metres and an area larger than the proposed revetment was subject to snorkel survey conducted in two metre or less intervals. The snorkel survey was conducted on July 29th, 2015 under excellent conditions. The air temperature was 24°C, it was sunny with little wind, and visibility in the water was in excess of two metres. The marine assessment was conducted under licence held by Scarlett Janusas (2015-14).

This report is submitted to the Minister of Tourism, Culture and Sport as a condition of licensing in accordance with part VI of the Ontario Heritage Act, R.S.O. 1990, c 0.18.

Figure 1 General Project Location

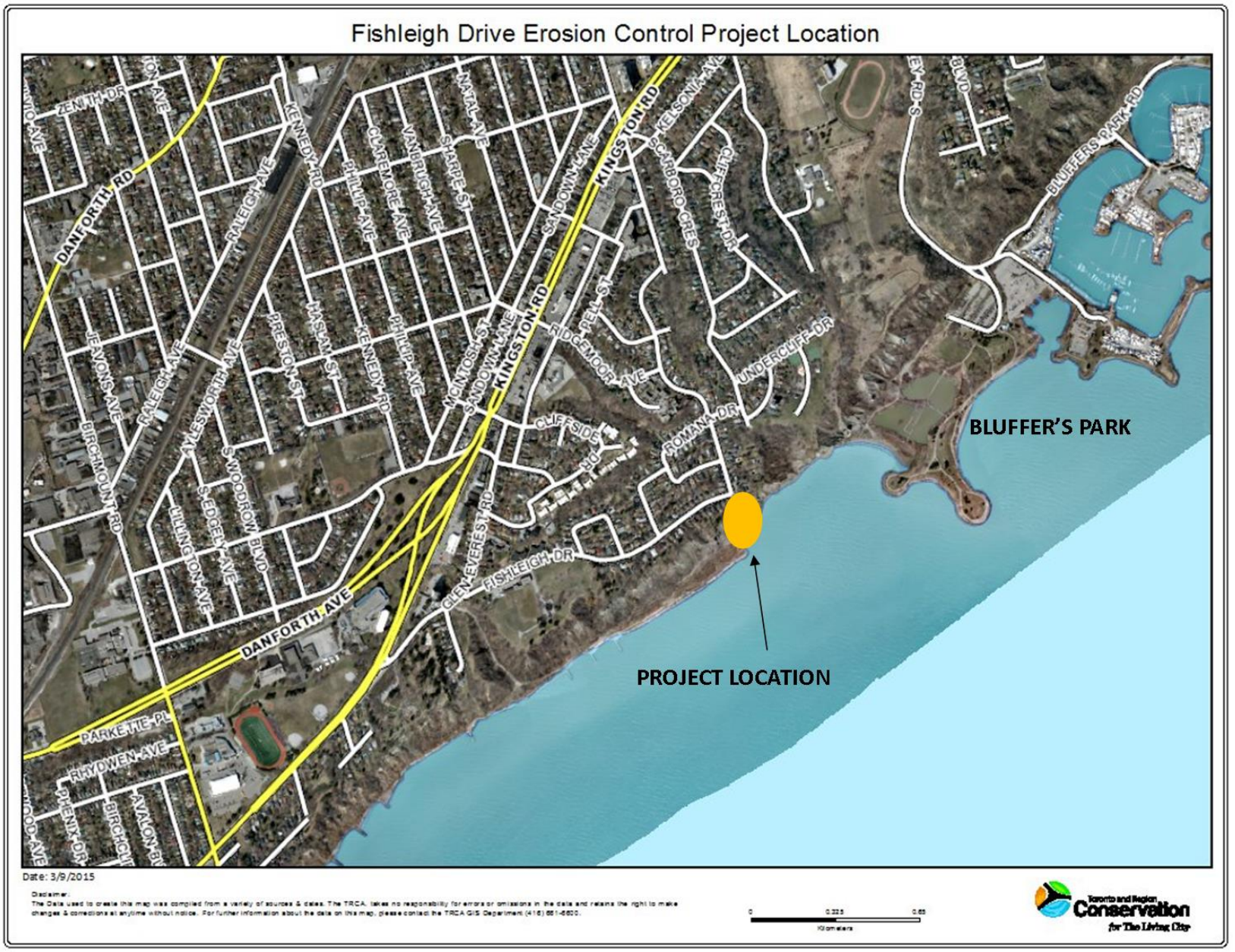


Figure 2 – Concept Plan

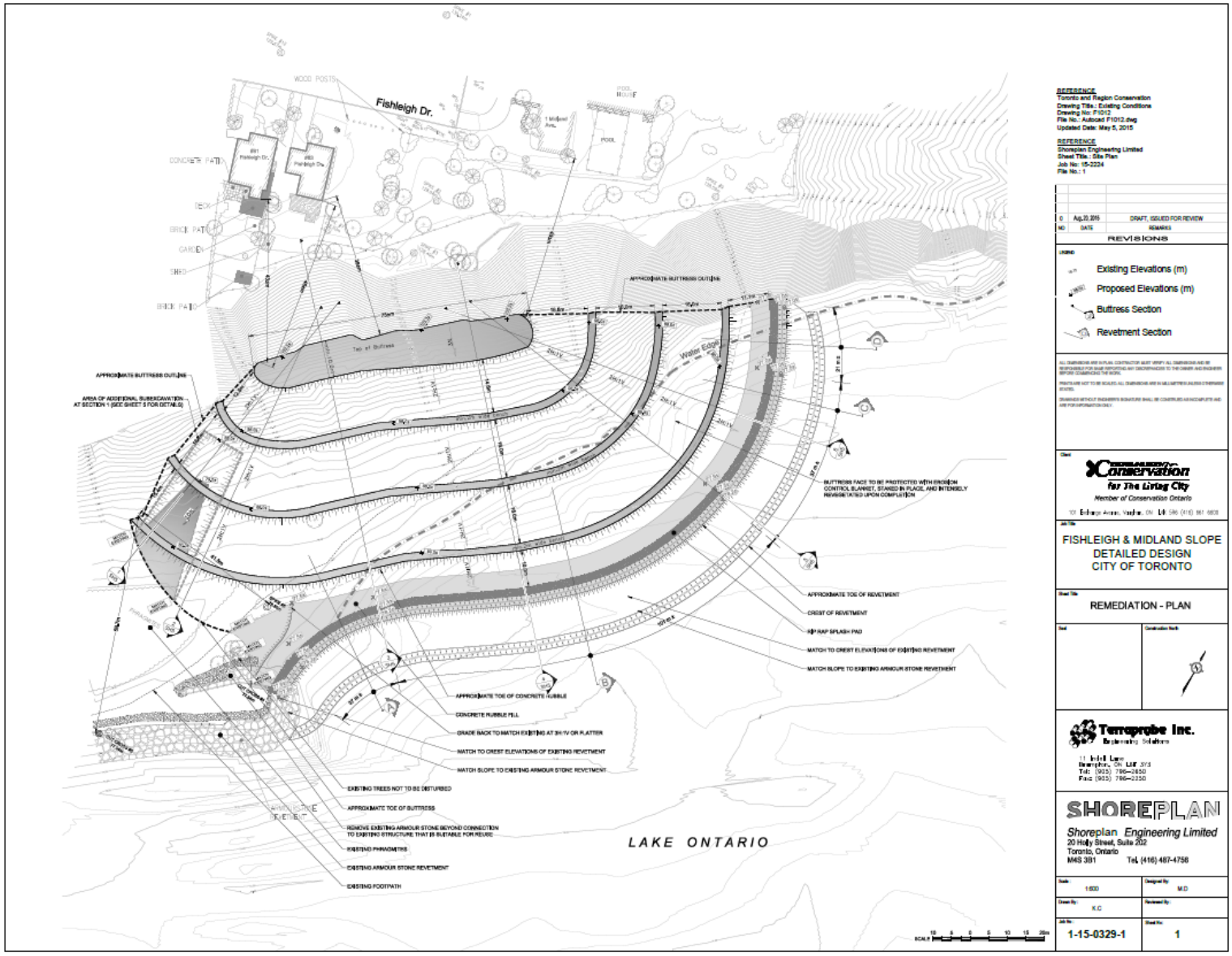


Figure 3 – Proposed Revetment Area

2.0 STUDY METHODS

2.1 Background Research

As part of the background research, an examination of the following was conducted:

- the Site Registration Database (maintained by the Ontario Ministry of Tourism, Culture and Sport) was examined for the presence of known archaeological sites in the project area and within a radius of one kilometer of the project area by contacting the data coordinator of the Ministry of Tourism, Culture and Sport;
- reports of previous archaeological fieldwork near the property;
- topographic maps at 1:10 000 (recent and historical) or the most detailed map available;
- historic settlement maps such as the historic atlases;
- Sessional papers;
- Surveyor's notes;
- Charts;
- available archaeological management/master plans or archaeological potential mapping;
- any other avenues that assist in determining archaeological potential were examined.

The detailed background research of the Fishleigh Drive Revetment Project was conducted for the area extending from the existing revetment to beyond the proposed revetment area along the shoreline of Lake Ontario.

A concurrent marine archaeological project (2015-09) is being conducted by SJAI from Bluffers Park (located north of the Project area) to Highland Creek.

2.2 Field Work

Field work was conducted by SJAI on July 29th, 2015. Air temperature was 25°C; the day was sunny with little wind. Water visibility was in excess of two metres. Snorkel survey was conducted by two archaeologists. Intervals between the individuals was two metres or less. A spotter was used on shore to ensure coverage of the area was conducted in the 2 m or less intervals.

3.0 RESULTS – Historic and Archaeological Context

3.1 Background Research

3.1.1 Current Environment

The Project (Figure 1) consists of some revetment work at the most southerly end of the area, some shoreline with vegetation, an area of minimal shoreline, and bluffs with no shoreline.

Prevailing winds in the area are from the southwest, and sometimes from the east (TRCA 2010: 26).

3.1.2 Prehistoric Shorelines

During the most recent glaciation, glacial Lake Iroquois was approximately 60 metres above current Lake Ontario elevations. There have been two prehistoric shorelines identified in the Project: the Iroquois Shoreline (closely approximates current shoreline) and the Toronto Scarp. The Toronto Scarp runs parallel to the existing shoreline, but some two to four kilometres offshore from Bluffer's Park to west of Hanlan's Point, forming an submerged bluff (Dillon 2015: 26).

Adjacent land areas will have potential for paleo sites, however, it is unlikely that any of the paleo sites will occur in the water portion of the Project.

3.1.3 Soils and Contributing Landscapes

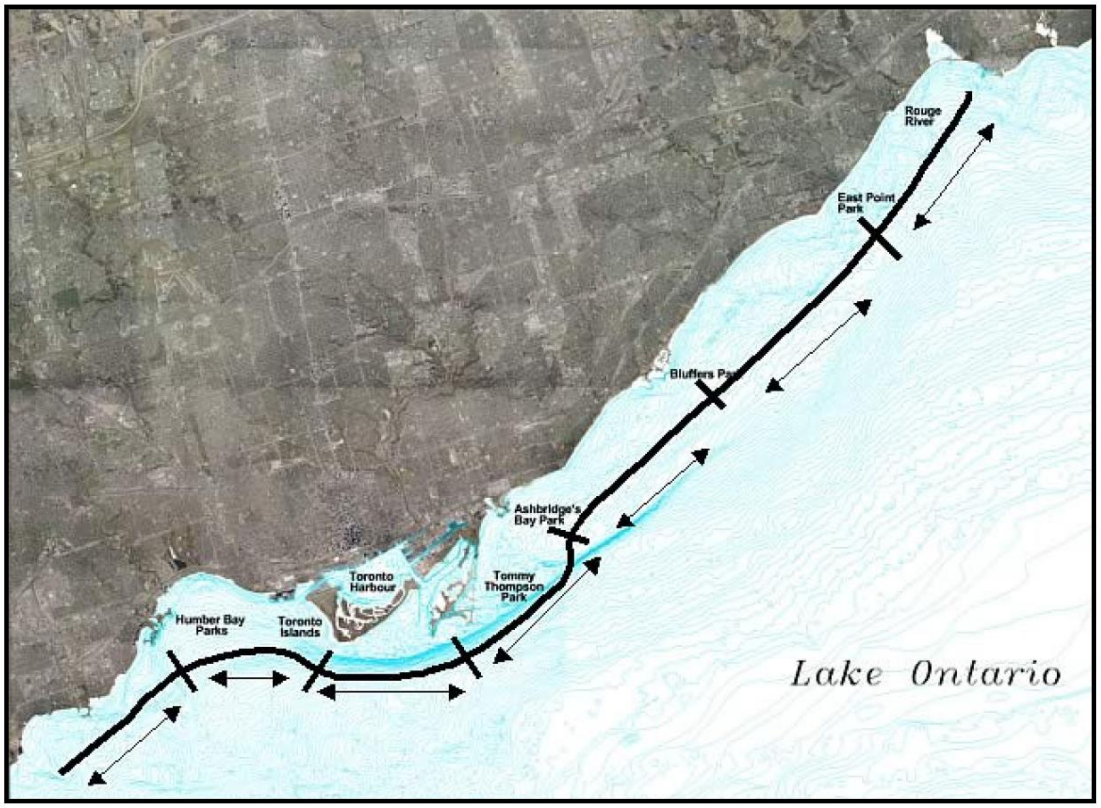
"Next to Niagara Falls, the Scarborough Bluffs are considered by many as Ontario's most extraordinary natural feature, and have been studied in detail over the years due to the geological insight they provide regarding past glacial events and climatic conditions. The Scarborough Bluffs extend from Victoria Park Avenue to Highland Creek for approximately 20 kilometers (km) along the Toronto waterfront. Sedimentary deposition formed the Scarborough Bluffs over the last 100,000 years. The bluffs range between 50 to 85 m above lake level. The bluffs are internationally recognized as an important heritage resource that is unique to Toronto.

The oldest and most dominant earth science feature is located near the base of the Bluffs. This feature is composed of deltaic clays, silts, and sands, which are known as the Scarborough Formation. It is divided into two separate layers: the overlying Scarborough Sand Formation and the underlying Scarborough Clay Formation. The Scarborough Sand Formation represents one of two aquifers systems along the Scarborough waterfront and the second provides an impermeable layer underneath the Scarborough Sand" (TRCA 2010: 16).

The shoreline is composed of sand and silty sand, derived from the erosion of the Scarborough bluffs. "Offshore bedrock occurs 12 to 19 m below lake level…" (TRCA 2010: 28).

The submerged bottom is heavily influenced by littoral cells (sections of shoreline defined by sediment transport) (Figure 4). The littoral drift direction within the Project Area is from east to west.

Figure 4 Littoral Cell Boundaries along Toronto Waterfront (TRCA 2004)



3.1.4 Historic Lake Levels

Lake levels are influenced by geological, atmospheric and anthropogenic influences. Figure 5 illustrates shorelines for 1878, 1932, 1959, 1993, and 2013. In 1878, the shoreline was located above the bluffs. In 1932, the shoreline extended beyond (lakeside) the current shoreline, indicating that the current water area of the Project area was once dry. In 1959, 1993 and 2013, the shoreline approximated the current shoreline.

Figure 5 Historical Shoreline

3.2 Potential for Aboriginal Archaeological Resources

The potential for discovery aboriginal archaeological resources in the marine assessed area are low to moderate based on the accessibility of the land and nearby river/creek mouths.

3.2.1 Prehistory of the Project Area

Prior to any human occupation, glaciers covered much of Southern Ontario. As these glaciers retreated, they left behind large meltwater lakes and streams and a landscape of barren tundra interspersed with open forests. This environment supported large mammals such as moose, elk and large herds of caribou and left the waters teeming with fish. The first human inhabitants probably moved into this region of Ontario approximately 11,000 years ago following the retreat of the Laurentide Ice Sheet. Nomadic Paleo-Indian hunters usually maintained a band level society while living in small camps, moving often as they followed the various herds across the area. Their population was small and they did not stay in the same place for long, making evidence of their existence somewhat scarce. However, some Paleo-Indian campsites have been found along the shorelines of glacial waters where a number of their stone tools and weapons have been found.

“At present [2010], there is no evidence of Palaeo-Indian occupations along the shoreline of the project area. This is likely due to the fact that water levels in Lake Ontario were slightly lower during Palaeo-Indian times than they are now. Once the glacial meltwaters had drained out of the Great Lakes, circa 11,400 years ago, Lake Ontario was approximately 80 metres below the present water level. Evidence of Aboriginal occupations dating from that time until circa 4,000 years ago have likely been destroyed by rising waters or, much more recently, by the dredging of the lake bottom by the ‘stone hookers’ in the mid-1800s. It is possible that many of these early sites may be preserved underwater,…” (TRCA 2010: 42). While it is possible that early sites exist in the marine Project Area, they are undoubtedly deeply buried under sediments caused from shoreline/bluff erosion. It is unlikely that if these sites are present that they will be located during routine archaeological investigation techniques.

People of the early and middle Archaic periods (7000BC-2500BC) lived similar lives to those of the Paleo-Indians. They remained in small nomadic groups, often moving further inland during the winters as they followed the caribou herds. However, their stone tools and weapons became more advanced as the level of their skill and craftsmanship progressed, often adding ornamentation and intricate carved details to their items. By the late Archaic period (2500BC-1000BC) they were involved in trade networks for sought after raw materials such as tobacco and also engaged in burial ceremonies.

Although daily life probably remained relatively the same, there were at least two changes earmarking the subsequent early Woodland period (1000-400BC). During this period, ceramics appear to have come into use and very elaborate burial practices made an appearance that included the burial of precious and ornate objects with the dead. The Middle Woodland period saw an increase in the trading of these objects and limited agricultural practices coupled with longer site occupations made an appearance during the transitional Woodland period (900-600AD).

"Due to the extreme difficulty of scaling the bluffs to reach the water's edge and the relatively low fisheries productivity associated with an exposed open coast environment, it is unlikely that aboriginal communities would have used the [Project Area] shoreline for collecting aquatic foodstuffs and resources (ibid).

During the Late Woodland or Iroquoian period (900AD-1650AD), there was a major shift to agriculture as well as the establishment of more permanent camps and villages. The social structure of communities also changed with the development of political systems based on families and the need for alliances with other groups of people. The early villages were small with a series of longhouses surrounded by wooden palisades. Later villages housed as many as two thousand people and had very entrenched political structure.

Prehistoric lake activities include the use of dugout canoes, and later birch bark canoes. The organic nature of these types of watercraft more often than not do not survive time unless buried in anaerobic environments. Fishing and hunting in Lake Ontario backwaters would also have been pursued (Janusas 2000: 5).

3.2.2 Native Historic Period

Native groups may have travelled through this area, but probably travelled across the top of the bluffs as the shoreline would have been very rough. However, travel by water along the shoreline likely was conducted along the Project Area.

3.2.3 Euro-Canadian Contact Period

During the late 16th and early 17th centuries, European explorers sailed along the north shore of Lake Ontario and likely camped in the area later to become Toronto and Eastern Scarborough, enroute to other locations. Étienne Brûlé was probably one of the first Europeans to see the Scarborough Bluffs.

3.3 Historic Marine Background Research

Lake Ontario has served both aboriginal people and Euro-Canadians. Lake Ontario is the direct extension of the St. Lawrence gateway to the Great Lakes area, and the lake was a vital artery for the French and British for well over two

centuries (Janusas 2000: 4). Water transportation was the most effective means of moving both people and goods.

“The schooner era on the Lakes has been extensively researched. Unfortunately, much less attention has bene given to the near shore water activities that were of enormous importance over a far greater span of time” (ibid: 5).

“Prior to major canal development between the lakes, lake schooners could be compared in importance, with the air services of today. But for every large schooner, or fur trade canoe, there were at least 100 bateaux and dozens of Durham boats operating shuttle services along the shore; serving functions similar to those of our major highways, and rail systems of today. In addition, bulk and passenger transport, the watercraft provided much of the communications for western New France and Upper Canada. In 1793, Elizabeth Simcoe, wife of the first Lieutenant Governor, was anxious to receive more regular mail to and from her family in England. As a result, a small postal service was initiated form Kingston to York (now Toronto).

The near shore routes were never easy ones. Propelling heavy-laden craft with oars or paddles, especially with any head wind, meant only about 15 to 30 miles progress per day. There was the need for stops at navigable rivers that serviced inland centres, or led to the upper lakes. Lake Ontario could be subject to changing weather conditions that could happen without any warning. For all the inshore transport services, “put-in havens” were essential to passenger, crew, mail and cargo survival. The mouths of every river, creek or other protected inlet provided for both overnight and emergency stopovers. Some of these havens would later evolve into the equivalent of service centres on highways, or bus and rail stations. Those well placed grew to become settlements…..

Small craft did occasionally venture across the lake; but from all the historical records researched it appears that offshore work was left to schooners and other larger vessels, while the small open boats generally took the long route, following the shoreline, around the western perimeter to reach Niagara” (ibid: 5).

Because of the building boom in Toronto, there was an acute shortage of foundation stone. Stone-hookers would unload rock by day and steal them by night for sale to builders in Toronto the next day.

These boats towed a low barge to carry the rocks that were “hooked” out of the shallow water with a grappling device. So prevalent was this practice that serious erosion problems occurred. An Act was passed by the Legislature forbidding stone hooking within three “perches” [a perch is 17 ½ feet] of the low water line. This act prevented stone hooking by day but it still went on by night (no author, n.d.: 74)” (Janusas 2000: 66-7).

3.3.1 Marine Disasters on the Shoreline of the Project Area

In order to ascertain the presence of historic shipwrecks on the shoreline of the Project area, a thorough examination was made of Great Lakes marine casualty summaries, usually compiled annually, from 1825 through to the 1950s. A detailed list of the sources is presented in Section 7.

No shipwrecks or abandoned vessels are listed for the Project Area.

3.4 Historic Research and Interpretation of Potential

Apart from the activities of the stonehookers – and perhaps the occasional shipwreck – there was no other significant alteration, such as the construction of major wharves, of the nearshore lakebed. The removal of stone from the shallows, effectively destroyed fish habitat, and therefore the possibility of any nearshore fisheries.

Prehistoric canoe spills or resource extraction may have occurred in the area, but any evidence of this is deeply buried beneath lakebed sediments which have built up through continual erosion of the bluffs.

4.0 FIELDWORK

The shallow nature of the Project area, and its nearshore location required that a snorkel survey be conducted with two archaeologists spaced two metres or less apart from each other. A spotter was used as a safety measure and also to ensure proper coverage of the Project Area. The entire Project Area and a buffer (Figure 3) were surveyed. Photographs were taken to record the snorkel survey (Photographs 1- 3). Water visibility was good, allowing for more than two metres of visibility.

Photograph 1 Snorkel Survey facing North

Photograph 2 Snorkel Survey facing North

4.1 Summary of Results

No cultural resources were located during the archaeological assessment. Based on the accumulated sediment from bluff erosion, it can be assumed that if there are any cultural resources present in the Project Area, they are deeply buried.

5.0 COMPLIANCE LEGISLATION

According to the 2011 Standards and Guidelines (Section 7.5.9) the following must be stated within this report:

This report is submitted to the Minister of Tourism, Culture and Sport as a condition of licensing in accordance with Part VI of the Ontario Heritage Act, R.S.O. 1990, c 0.18. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the Ministry of Tourism, Culture and Sport, a letter will be issued by the ministry stating that there are no further concerns with regard to alterations to archaeological sites by the proposed development.

It is an offence under Sections 48 and 69 of the Ontario Heritage Act for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed archaeological fieldwork on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeological Reports referred to in Section 65.1 of the Ontario Heritage Act.

Should previously undocumented archaeological resources be discovered, they may be an archaeological site and therefore subject to Section 48 (1) of the Ontario Heritage Act. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with sec. 48 (1) of the Ontario Heritage Act.

The Cemeteries Act, R.S.O. 1990 c. C.4 and the Funeral, Burial and Cremation Services Act, 2002, S.O. 2002, c.33 require that any person discovering human remains must notify the police or coroner and the Registrar of Cemeteries at the Ministry of Consumer Services.

Archaeological sites recommended for further archaeological fieldwork or protection remain subject to Section 48 (1) of the Ontario Heritage Act and may not be altered, or have artifacts removed from them, except by a person holding an archaeological license.

6.0 RECOMMENDATIONS

There were no cultural resources located during the snorkel survey. It should be noted that stone from the existing revetment extended into the Project area obscuring bottom, and that the remaining Project area was undoubtedly representative of accumulated deposition of eroding bluff face materials. If there are any cultural resources in the Project area, they are deeply buried.

Based upon the background research, and the archaeological survey of the Project area and a buffer, the following is recommended:

- If there is no planned excavation into the bottom of the Project area for purposes of revetment construction, no further archaeological assessment is required (this area will then be considered to be capped);
- If construction of the revetment involves removal of bottom sediment, an archaeologist should screen those sediments as they are brought to the surface for possible deeply buried cultural resources;
- compliance regulations must be adhered to in the event that archaeological resources are located during the project development.

This report is submitted to the Minister of Tourism, Culture and Sport as a condition of licensing in accordance with part VI of the Ontario Heritage Act, R.S.O. 1990, c 0.18.

7.0 REFERENCES CITED AND CONSULTED

Beers, J.H. (editors-publishers)
1877 **The Illustrated Atlas of Ontario County.**

Beeson, Harvey C.
1916 "Vessels Lost. Season of 1915." **Beeson's Marine Directory of the Northwestern Lakes.** Chicago.

Canadian Hydrographic Service
1958 **Great Lakes Pilot: Lake Ontario, Lake Erie, and Lake St. Clair (Kingston Harbour to Sarnia)**, Volume 1. 4th edition. Ottawa.

1967 **Great Lakes Pilot: Lake Ontario, Lake Erie, and Lake St. Clair Including Lake Simcoe, the Trent-Severn, and Rideau Waterways.** Volume 1, 6th edition. Ottawa.

Chapelle, Howard I.
1951 **American Small Sailing Craft: Their Design, Development and Construction.** W.W. Norton and Company, London.

Corps of Engineers
1951 **Great Lakes Pilot, Bulletin No. 60.** U.S. Lake Survey, April, Detroit.

Department of Marine and Fisheries
1936+ "Statement of Wrecks and Casualties that have happened on the Lakes and Inland Waters of the Dominion.." Title varies. Printed annually as appendices in Canada, **Sessional Papers**, by the Department of Marine & Fisheries from 1868, and after 1936 by Department of Transport.

Dillon Consulting Ltd.
2015 Scarborough Waterfront Project: Draft Environmental Assessment Terms of Reference From Bluffer's Park to East Point Park in the City of Toronto. On line: http://trca.on.ca/trca-user-uploads/SWPDraftToRandAppendices.pdf Accessed May 2015.

Ellis, Chris J. and Neal Ferris (editors)
1990 **The Archaeology of Southern Ontario to A.D. 1650.** Occasional Publications of the London Chapter, Ontario Archaeological Society Inc., Publication No. 5, London.

Green, Carleton
1917 **Wharves and Piers, Their Design, Construction, and Equipment.** McGraw-Hill, New York.

Government of Ontario
1990a **The Ontario Heritage Act R.S.O. 1990.** Ontario Regulation 9/06, made under the Ontario Heritage Act. Criteria for Determining Cultural Heritage Value or Interest. Queen's Printer, Toronto.

1990b **The Environmental Assessment Act. R.S.O. 1990, C. E18.**

Hall, Captain J. W.
1870 **Marine Disasters on the Western Lakes During 1869.** Detroit.

1872 **Marine Disasters on the Western Lakes During the Navigation of 1871.** Detroit.

Heyl, Erik
1852 Marine Disasters on the Great Lakes, 1847-1852. Compiled from newspaper reports by historian Erik Heyl. Manuscript in Buffalo & Erie County Historical Society, Buffalo, New York.

Janusas, Scarlett
2000 Archaeological Resource Assessment, Beach and Submerged Lake Ontario Frontage, Port Union Node, City of Scarborough, Prepared for Toronto and Region Conservation Authority.

Mansfield, J.B.
1899 **History of the Great Lakes.** Volume 1, J.H. Beers and Co., Chicago; reprint edition, Freshwater Press Inc. 1972, Cleveland.

Maxwell, Jim
1996 A Report on the Development of Port Union. Prepared for Arts & Heritage Division, Scarborough Recreation, Parks and Culture.

Ministry of Tourism and Culture
2011 **Standards and Guidelines for Consulting Archaeologists.** Ministry of Tourism and Culture.

2015 Archaeological Data Base Files. Heritage Branch, Ministry of Tourism and Culture, Toronto.

Metropolitan Toronto and Region Conservation Authority
1994 Environmental Study Report for Sylvan Avenue Shoreline Regeneration Project.

No author
n.d. Port Union: The Compleat Community.

1799 **A short topographical description of His Majesty's province of Upper Canada in North America; to which is annexed a provincial gazetteer.** W. Faden, London.

1834a **Papers Relative to the Aboriginal Tribes in British Possessions** (House of Commons, Papers, No. 617, Great Britain.

1869 **Thompson's Coast Pilot for the Upper Lakes.** Detroit.

1875 **Annual Report of the Board of Steamboat Inspection.** Ottawa.

1878a **Supplement No. 5 to the Tenth Annual Report of the Minister of Marine and Fisheries for the Year 1877, Report of the Commissioner of Fisheries for the Year Ending 31st December, 1877**. Ottawa.

1878b"Statement of Wrecks and Casualties…for 1878", **Annual Report of the Department of Marine and Fisheries.** Ottawa.

1880 "Statement of Wrecks and Casualties…for 1880," **Annual Report of the Department of Marine and Fisheries.** Ottawa.

1881 "Statement of Wrecks and Casualties…for 1881," **Annual Report of the Department of Marine and Fisheries.** Ottawa.

1891 **Canada, Indian Treaties and Surrenders.** Volume 1, reprint edition, Coles Publishing Company, Toronto, 1971.

1906 **Scott's New Coast Pilot for the Lakes.** 7th edition, George Scott, Detroit.

1914 **Mercantile Marine Engines, Steam Turbines, Naval Marine Engines, Express-Steamship Machinery, Paddle Engines, Marine Valve Gears, Marine Condensers, Marine-Engine Repairs, Propulsion of Vessels.** International Correspondence Schools, Ltd., London.

1921 **List of Merchant Vessels of the United States…1921**.

1998 Port Union Shoreline Heritage Study.

Port of Hamilton
1874 Port of Hamilton Shipping Register, 1846 – 1874. Volume 362. Library and Archives Canada, RG 42, Microfilm Reel C-2465.

Reeves, Wayne
1992 Regional Heritage Features on the Metropolitan Toronto Waterfront. A report to the Metropolitan Toronto Planning Department, Toronto.

Robertson, J. Ross (ed.)
1911 **The Diary of Mrs. John Graves Simcoe.** William Briggs, Toronto; 2001, reprint edition, Prospero Books, Toronto.

Robinson, Percy J.
1933 **Toronto During the French Regime, A History of the Toronto Region From Brule to Simcoe, 1615-1793.** The Ryerson Press, Toronto; 2nd edition, University of Toronto Press, 1965, Toronto.

Scarlett Janusas Archaeological and Heritage Consulting and Education
2002 Archaeological Assessment, Stage 2, Port Union/Lake Ontario, Lakeshore Trail Construction Project, Underwater Assessment of Old Wharf/Breakwall and Offshore Area, City of Scarborough, Ontario (License 2001-114).

Sellinger, Cynthia E., and Frank H. Quinn (editors)
1999 **Proceedings of the Great Lakes Paleo-Levels Workshop: The Last 4000 Years.** Great Lakes Environmental Research Laboratory, Ann Arbor, Michigan.

Shoreline Engineering Limited
1998 Port Union Shoreline Improvements. On file with the Toronto and Region conservation Authority.

Smith. W.H.
1846 **Smith's Canadian Gazetteer.** W.H. Smith, Toronto.

1851 **Canada: Past, Present and Future.** Two volumes, Thomas Maclear, Toronto.

Snider, C.H. J.
1942 Port's Beacon. **Evening Telegram.** May 16th.

1942 Good Times in Port Union: 3-tree Town. **Evening Telegram**, Toronto, June 6.

Toronto and Region Conservation Authority
2004 Environmental Study Report. The Guild Inn Shoreline Regeneration Project, City of Toronto.

2010 Environmental Study Report, Meadowcliffe Drive Erosion Control Project. TRCA, Downsview.

2015 Archaeological Assessment (Stage 1) in the City of Toronto: Scarborough Waterfront Project, Lots 18 to 27 Concession B, Lots 11 to 23 Concession C, and Lots 3 to 17 Concession D, Historic Scarborough Township, York County. DRAFT. PIF# P338-0101-2014.

nd Scarborough Waterfront Project, Stormwater Outfall Locations.

Townsend, Robert B. (ed.)
1995 **Tales from the Great Lakes, Based on C.H.J. Snider's "Schooner Days".** Dundern Press, Toronto.

United States Coast Guard
1873 "Marine Causalities on the Great Lakes, 1863-1873". Manuscript RG 26, Records of the United States Coast Guard, Mfm No. T-729, National Archives, Washington, D.C.

Newspapers/Periodicals

Daily Courier, "Lake Disasters in 1847", March 17th, Buffalo.

Morning Express, "Marine Disasters and Loss of Life and Property on the Lakes in 1852". December 25th, Buffalo.

Express, "Marine Disasters and Loss of Life and Property on the Lakes in 1853". January 2, 1854, Buffalo.

Democracy, "Marine Disasters and Loss of Life and Property on the Lakes for the year 1854", February 28, 1855, Buffalo.

Daily News, "Marine Disasters", November 25th, 1856, Kingston.

Commercial Advertiser, "Lake Disasters for 1856", January 31, 1857, Buffalo.

Commercial Advertiser, "Marine Disasters and Loss of Life and Property on the Lakes for 1857". January 28, 1858, Buffalo.

Commercial Advertiser, "Lake Disasters – 1858", January 15, 1859, Buffalo.

Commercial Advertiser, "Marine Disasters and Loss of Life and Property on the Lakes for 1860", March 11, 1861, Buffalo.

Commercial Advertiser, "Marine Disasters, 1861", January 22, 1862, Buffalo.

Commercial Advertiser, "Marine Disasters and Loss of Life and Property on the Lakes, 1862", January 26, 1863, Buffalo.

Commercial Advertiser, "Marine Disasters and Loss of Life and Property on the Lakes, 1863", January 20th, 1864, Buffalo.

Inter Ocean, "Our Lake Marine. Resume of the Disasters During the Season of 1874". December 25, 1874, Chicago.

Inter Ocean, "Tonnage Lost I 1878", December 17, 1878, Chicago.

Inter Ocean, “List of Vessel Losses for1891”, December 7 1891, Chicago.

Globe, “The Season’s Navigation, A List of the Wrecks and Casualties of the Year”. November 30th, 1880, Toronto.

Globe, “Corrected List of Losses”, December 5, 1881, Toronto.

Globe, “Wrecks and Casualties of the Season of 1883”, December 4, 1883, Toronto.

Marine Record, “The Merchant Marine. Lake Marine of 1883…Lost Tonnage”, December 27, 1883, Cleveland.

Marine Record, “Lake Wreck Report”, December 25, 1884, Cleveland.

Marine Record, “Vessels Lost During 1893”, December 14, 1893, Cleveland.

Marine Record, “Vessels Totally Lost in 1893”, January 11, 1894, Cleveland.

Marine Record, “List of Casualties and Total Wrecks on the Great Lakes During Season of 1894”, January 3, 1895.

Marine Record, “Lake Disasters of 1895”, January 2 1896, Cleveland.

Marine Record, “Wreck and Casualty Report for the Season of 1898”, January 5, 1899, Cleveland.

Marine Review, “Lakes Vessels that Passed Out of Existence in 1894”, January 10, 1895, Cleveland.

Marine Review, “Vessels Lost During 1895”, January 2, 1896, Cleveland.

Marine Review, “Vessels Lost During 1896”, December 10, 1896, Cleveland.

Marine Review, “Vessel Losses on the Lakes”, December 23, 1897, Cleveland.

Marine Review, “The Season [sic] Total Losses”, December 30, 1897, Cleveland.

Marine Review, “Total :Losses on the Great Lakes During 1898 – Ships that Actually Passed Out of Existence”, January 5, 1899.

Marine Review, “Vessel Losses on the Great Lakes, Season of 1899 – List Includes Only Total Losses, Vessels that Actually Passed Out of Existence”, December 21, 1899, Cleveland.

Marine Review, “Vessel Losses During 1900”, December 27, 1900, Cleveland.

APPENDIX E
Ecological Impacts

MEMO – Re. Fishleigh Drive Botanical Inventory 2 October 2015

Jet Taylor
Environmental Technician, Engineering Projects
Restoration and Infrastructure Division
1 Eastville Avenue
Scarborough ON
M1M 2N5

Dear Jet:

In follow-up to our site visit of 11 August 2015, we noted that the site was generally disturbed with just a couple of concerns regarding vegetation during construction.

The toe-of-slope fill area is comprised of weedy savannah with black locust, Siberian elm, white sweet clover, tall goldenrod, etc. These species are either mildly invasive or sturdy natives in the case of the goldenrod.

The bluff, which may receive marginal impact from the work has a very sparse cover of black locust, eastern cottonwood, narrow heart-leaved willow, staghorn sumach, Manitoba maple, Siberian elm, coltsfoot and tall goldenrod,

There is no evidence of flora species at risk in the vicinity of the project area. However, there is some Canada wild rye, which is considered to be of local conservation concern in the urban setting (L4). This rye population should be resilient in the face of disturbance, though effort should be made to avoid it.

The main issue observed was the presence of ***Phragmites*** reed at the western margin of the site. This is a serious invasive species which is widespread across the Scarborough Bluffs area and which is readily spread by means of root bits attached to construction equipment.

Therefore my main recommendation is that extra care be taken to avoid transporting root fragments on any construction equipment or vehicles. Treads, etc. should be inspected thoroughly prior to and upon the completion of this project, Furthermore, it is a good idea to do this for any project given the abundance of ***Phragmites*** reed and other invasive species with similar dispersal mechanisms such as Japanese knotweed within the TRCA jurisdiction.

Best regards,

Gavin Miller
Flora Biologist, Terrestrial Monitoring Group
Restoration and Infrastructure Division

Re: Fishleigh Drive Erosion Control Project addendum - Bank Swallows

Paul Prior to: Jet Taylor 08/26/2015 01:51 PM

History: This message has been replied to and forwarded.

Jet,
sorry to have delayed so much on this but things got lost over the weekend. Anyway, I've perused the dropbox drawings and it has to be said that the project is happening extremely close by the colony. However, there are a few considerations that really take the pressure off somewhat. Bank Swallows are going to be absent from now until next May. I don't know how long the construction period is expected to be but you're OK for the next few months. As you pointed out, much of the work is being conducted at the toe of the slope and as such will not have any direct impact on the upper section of the cliff - the area most favoured by the swallows - the birds will nest on the most vertical portion of the cliff.

Bank Swallows seem to be extremely tolerant of disturbance close to the colony, opting to nest in active sandpits and construction sites, especially if the "disturbance " is not novel - i.e. if the heavy work is ongoing at the time of the swallow's arrival rather than commencing half-way through the nest season, the chances are that the swallows will not be unduly disturbed since they've already made the choice to nest alongside ongoing disturbance. Obviously, ideally the heavy work would be completed by the time the birds return next May. By their very nature, Bank Swallows nest in environments that are already pretty dynamic, and certainly there are several opportunities along these cliffs for the birds to establish colonies. Field-work indicated that the main colony was located at the extreme eastern end of Bluffers in 2011 - at least 700 cavities, a substantial colony. This latter colony is well-removed from the impacts that may be associated with the Fishleigh Drive work.

I hope these points help, and certainly get in touch if I can be any further help.
All the best

Paul Prior
Field Biologist - Fauna
Environmental Monitoring and Data Management Section
Restoration and Infrastructure Division
Toronto & Region Conservation
5 Shoreham Drive
Toronto, ON
M3N 1S4
Phone (416) 661.6600 x 5328
Fax (416) 661.6898
Email pprior@trca.on.ca
@TRCA_Monitoring

Jet Taylor | Hi Paul, We received the design drawings for the... | 08/21/2015 03:22:05 PM

From: Jet Taylor/TRCA
To: Paul Prior/MTRCA@MTRCA,
Date: 08/21/2015 03:22 PM
Subject: Re: Fishleigh Drive Erosion Control Project addendum - Bank Swallows

Hi Paul,

We received the design drawings for the slope buttress and revetment structure this morning. It is larger than we had anticipated. I believe it is still low enough that suitable habitat for returning Swallows will not be adversely affected but I will leave that determination to you.

Since the file is nearly as large as the buttress itself, I have made it available via Dropbox and you can

access it at the following link:
https://www.dropbox.com/sh/b5xhwdtgzbnsjjc/AAA-LYzWSea2So0WN3NQj98ja?dl=0

Let me know what you think and feel free to ask any questions you may have.

Thank you and enjoy your weekend,

Jet

Jet Taylor, Environmental Technician| Engineering Projects | Restoration & Infrastructure Division | **Toronto and Region Conservation Authority** |1 Eastville Avenue, Toronto, ON | M1M 2N5 | ☎ 416.688.7627 | 🖷 416.392.9726 | ✉ jtaylor@trca.on.ca

Paul Prior | Hello Paul, | 08/20/2015 12:36:10 PM

From: Paul Prior/MTRCA
To: Jet Taylor/TRCA@mtrca,
Cc: Patricia Newland/TRCA@mtrca
Date: 08/20/2015 12:36 PM
Subject: Re: Fishleigh Drive Erosion Control Project addendum - Bank Swallows

Jet,
Thanks for this. I'm working from home today and will be better able to look at the design plans etc tomorrow when I get to the office. However, given the timing window you have described there really should be no issue. Bank Swallows have finished nesting and in fact should be heading south any day soon! My concern then would simply be that the cliffs where the swallow are nesting are not impacted to the extent that the returning Swallows would be unable to excavate burrows next May.
Cheers
Paul

Sent from my BlackBerry 10 smartphone on the Rogers network.

From: Jet Taylor
Sent: Thursday, August 20, 2015 10:48 AM
To: Paul Prior
Cc: Patricia Newland
Subject: Fishleigh Drive Erosion Control Project addendum - Bank Swallows

Hello Paul,

TRCA has initiated an addendum to the Fishleigh Drive Erosion Control Project to provide protection in the form of a vegetated slope buttress and associated shoreline protection to the properties at 81 and 83 Fishleigh Drive (directly west of Bluffer's Park). In searching for fauna records I saw that you noted bank swallows between our site and Bluffer's Park in 2011. I also checked www.ebird.com for public sightings and found consistent ones below Rosetta McClain Gardens (west of our site) and at Bluffer's Park (east of our site).

Part of the addendum report process entails outlining potential environmental effects and mitigation methods for negative effects. I have attached a project limits map including your 2011

sighting and the location of the consistent sightings found on ebird. I should also have draft detailed designs for the buttress and shoreline protection from our consulting firm later today that I can supply you with.

I was hoping you could provide advice and direction regarding the existence of bank swallow in the vicinity of our project area. I don't believe our buttressing and shoreline protection will result in killing or harming of the species but may result in harassing them depending on their nesting distance from our site and our timing window. We plan on going to construction this fall/winter.

Thank you,

Jet
(See attached file: Bank Swallow locations.jpg)

Jet Taylor, Environmental Technician| Engineering Projects | Restoration & Infrastructure Division | **Toronto and Region Conservation Authority** **|**1 Eastville Avenue, Toronto, ON | M1M 2N5 | ☎ 416.688.7627 | 🖷 416.392.9726 | ✉ jtaylor@trca.on.ca