The Corporation of the City of North Vancouver
Engineering, Parks & Environment Department

May 24, 2007

Mosquito Creek Ravine - FAQs

What area of the City is being studied in the Phase 2 Detailed Geotechnical Assessment?
The study includes the eastern bank of the Mosquito Creek Ravine, from West 17th Street north to Highway 1.

Which specific properties are involved in the Phase 2 Detailed Geotechnical Assessment?
The eastern part of Mosquito Creek Park
City Street ends (W. 19th, W. 22nd and W. 23rd).
710 West 17th Street
711 West 18th Street
1805, 1815, 1821 and 1845 Bewicke Avenue
626 West 19th Street
1931, 1935, 1945, 1957 Westview Drive
2009, 2015, 2017, 2041, 2049, 2059 and 2069 Westview Drive
2101, 2103, 2117 and 2121 Westview Drive
625, 626 and 622 West 22nd Street
625 and 632 West 23rd Street

Why was the Phase 2 Detailed Geotechnical Assessment completed?
The Mosquito Creek Ravine has steep slopes and has experienced small scale slides over the previous decades. Many of these small events were assessed by geotechnical engineers, and no large scale instability was identified. However, based on advice from the City's geotechnical consultants, the City decided to take a proactive measure and conduct a broad overview assessment of the entire east bank ravine.

In 2006 the City completed an overview risk assessment (phase 1) of the east bank of the Mosquito Creek Ravine. The phase 1 assessment identified a relatively high risk of landslides occurring along the ravine bank, and recommended that a more detailed assessment be completed. Based on the preliminary findings of that overview study, the City undertook a more detailed phase 2 assessment to refine the risk assessment for the 27 private properties within the study area.

How many properties are impacted?
27 private properties are included in the study area. However each property has recommendations and risk assessments specific to the property.

What were the recommendations in the Phase 1 Overview Assessment?

- Further detailed assessment of individual properties. These were paid for by the City with the owners consent.
- Further review of all underground municipal infrastructures (storm sewer, water, and sanitary sewer) within the study area
- All rock-pits and drain outlets discharging onto the ravine slope must be abandoned. All properties must either be connected to the City storm sewer system or storm water must be conveyed via solid pipe to an approved outfall at the base of the slope.
- Remove any existing in-ground sprinklers in rear yards adjacent to the ravine.

- Remove any fill, yard waste, or refuse that is suppressing the natural vegetation and restore the area with appropriate native plant species that will enhance slope stability. Enhanced education and enforcement of the no-dumping provisions in the Parks Regulation Bylaw may be required.

- Any new retaining walls constructed as part of existing developments must be designed and inspected by a professional engineer.

- Closure of the informal trail north of W. 19th along the east Creek bank

What does the Phase 2 Detailed Geotechnical Assessment report say and what does it recommend?
The report confirms that there is a relatively high risk of a landslide occurring along the east bank of the Mosquito Creek ravine. The report assesses the risk that a slide would present to each of the 27 properties in the study area, and provides specific recommendations to mitigate the risk on each individual site. Of the 27 properties, 5 have homes that are considered to be at a high risk, 3 at a very high risk, and 1 at extreme risk.

Where the risk to a home is high, the owners should proceed with those mitigative measures that can be readily implemented. Houses with a risk rating of very high or extreme under static conditions warrant immediate attention. It is recommended that affected properties owners review the information in the report, and implement the remedial work specific to their property.

While the City emphasizes the need for affected homeowners to proceed with mitigative measures where their home is at risk, we highly recommend all affected property owners to mitigate the potential for land slide affecting their property as explained in the Phase 2 report. The City will have to relocate an existing sanitary sewer in the 2000 Block of Westview Drive, and upgrade an existing storm sewer in the lane north of West 22nd Street.

How does the risk along Mosquito Creek compare to the risk assessment used in the District of North Vancouver and Hong Kong?
The District's study addresses the risk to an individual; City of North Vancouver's study addresses the risk to the structure. The District's study adopts a quantitative approach; the City's is a qualitative approach. The Phase 2 Detailed Geotechnical Assessment for Mosquito Creek identifies the likelihood of a landslide occurring, the potential for the landslide to interact with a structure, and then estimates the vulnerability of the structure based on available information.

How does this situation compare to the Blueridge slide area in the District?
The most significant difference from the Blueridge situation is at this point, no slide has occurred that has damaged a home. Also, there are no homes downslope of the slide area that could be impacted by a slide from above.

Who is the consultant who conducted the Mosquito Creek Ravine Assessment?
The study was conducted by Westrek Geotechnical Services Ltd., and the professionals involved were Tim Smith, P.Geo, Senior Engineering Geologist and Eric McQuarrie, P.Eng, Senior Geotechnical Engineer.

What should impacted property owners do?
Property owners should review the information provided by the City. They should attend the information session on May 24, 2007. They should work with the City to implement the report recommendations.

What is the City doing about this matter?
The first step was to provide the best available information to the affected property owners as soon as possible and to personally follow up with each property owner to initiate communications. The City will then host a resident information session on May 24 to discuss next steps. Individual meetings with City staff and the geotechnical consultant will also be arranged, upon request.

What steps is the City taking to mitigate the risk in the area?
The City will work with affected property owners to help them implement the remedial actions recommended in the phase 2 detailed assessment.

The City will also be responsible for implementing recommendations that relate to public lands, such as the relocation of a sanitary sewer in the 2000 Block of Westview Drive, and an upgrade to a storm sewer north of West 22nd Street.

Where can property owners find out more about their particular property and related risks?
The current engineering report provides specific information on each of the 27 properties within the study area. In August 2006, the City also provided property owners with copies of all of the City records pertaining to their respective properties. For additional information, affected property owners should contact the City of North Vancouver to arrange a meeting with City staff and the City's geotechnical consultant.

Does this report mean that all houses identified in the report are not safe to inhabit?
Many of the houses are 30 to 40 years old, and the risk has been present throughout that time, and presumably has been acceptable to the occupants up to this point. Of the 27 properties , 5 have homes that are considered to be at a high risk, 3 at a very high risk, and 1 at extreme risk.

Where the risk to a home is high, the owners should proceed with those mitigative measures that can be readily implemented.

Houses with a risk rating of very high or extreme, under static conditions, warrant immediate attention. The decision to continue to occupy these houses during the winter months when the probability of a landslide is at its highest without completing work to mitigate the risk of land slide is not recommended. It is therefore important that remedial work at these properties be completed by October 2007.

Who is supposed to pay for the remediation work to the homes?
The City will pay for work on public land, including pipe connections and work on public pipes located in rights-of-ways across private land if applicable.

The costs of remedial work on private properties will be the responsibility of the respective property owners, however the City will waive all permit fees.

What kind of cost will this be to the homeowners?
Detailed cost estimates can only be completed once property owners have reviewed the remediation options with a geotechnical engineer, and then decided on the best options for their specific property.

What is the timeframe for this work to be done?
Properties with an assessed risk to the home of high of greater should implement the recommended remedial work by October 2007. Slope stabilization and building upgrades on lower risk properties can be implemented over a longer term.

How will the City assist impacted property owners with this process?

The City will continue to assist property owners by providing project coordination services to help residents implement mutually beneficial remedial works. While much of the remedial work will be site specific, the Westrek report identifies opportunities for groups of property owners to work together on joint projects. The City will also work with residents to try and secure senior government assistance, if available, to implement the report recommendations. City permit fees for all remediation work will be waived.

Why are some homes not connected to the storm sewer?
Many homes within the study area are 30 to 40 years old, and one is over 70 years old. Standards and awareness changes over time. As the City became aware of slope concerns and drainage issues, builders were directed to pipe storm water to the bottom of the slope or connect to the City storm system.

Can people place fill in their yards without permit?
Through the City's new Riparian Areas Strategy, all properties adjacent to watercourses, including ravines with steep slopes, now require a Development Permit. As a result, the City now regulates the placement of fill or any other significant work on theses properties.

How is the City monitoring the situation?
Based on historic experience, the City's practice has been to visually inspect the steep slope areas during prolonged wet weather during late fall and winter, supplemented by visual inspection by contracted geo-technical consultants when City staff were of the opinion that it was warranted. Residents are advised to contact the City immediately if they notice any change in the slope conditions.

Where can property owners get more information?
Property owners can get more information by contacting us, and attending the residents' information meeting being held at 7:00pm on May 24, 2007 at City Hall (141 West 14th Street).

What if property owners refuse to take the required action?
Our hope is that owners appreciate the seriousness of the situation and voluntarily take action for their own benefit. We don't frivolously inform people that they are at risk. The City is sufficiently concerned for the safety of the owners at risk that the City is prepared to exercise its authority under the Community Charter to invoke an enforcement order requiring owners to take the required action.

Some property owners are suggesting that the risk is exaggerated and they should not have to do anything. Is the City being overly cautious?
The City has relied on the advice of Professional Geo-technical Engineers experienced in slope stability to provide us with advice on the nature and degree of risk.

The City has tried to seek reasonable balance between life safety concerns, and economic impact and stress that news such as this will cause to affected residents. For example, strictly applying present day standards onto existing homes implies that homes with a partial risk of moderate or greater should be remediated until the risk is reduced to low or better.

However, to be reasonable, the City is only requiring homes with a partial risk of high or greater to be remediated. This is not to say that all other homes are safe. It just sets the partial risk threshold at high or greater where the City is so concerned for safety that we feel we must require action to be taken. We would also like all other home owners to be mindful of the information provided to them about their properties and voluntarily do any recommended work.

Why is there a problem if the City approved the building permits for these houses? Has the situation changed?
Over time, some property owners may have even inadvertently worsened the situation by seemingly innocent practices such as dumping fill and garden waste over the bank. In some cases, placing fill near the top of the slope or constructing unapproved retaining walls out of timber have also contributed to the problem. Inadequate maintenance of drainage systems to keep water away from the slope, and installation of things such as underground sprinkler systems that add water to the slope can contribute to the problem.

I have a limited income. How can I be expected to pay for the required work?
Minimizing the risk to life and property is the City's main focus at this time. City staff will work with property owners to help identify options in this regard. The City is not in a position to comment on the financial circumstances of individual property owners. We will provide whatever assistance our staff resources are reasonably able to provide so that individuals can fully appreciate options available to them as well as the seriousness of the risk.

Who can I speak with in the Engineering Department at City Hall about this situation?

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