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Date: 3/16/2020

To: Transportation Energy and Utilities Committee

C.C. Chapin Spencer, Director of Public Works
Tiki Archambeau, Public Works Commission Chair

From: Norman J. Baldwin, P.E.
City Engineer/Ass't Director of Public Works

Subject: City's effort to Monitor Existing Conditions and Slope Stability

In response to the instability of elevated slopes along Manhattan Drive, Riverside Avenue and North shore, Engineering-Technical Services had procured a local Engineering Consultant to perform slope stability assessments. In early October the City executed a contract with Hoyle Tanner, with a sub-consultant Terracon.

Hoyle Tanner's scope of work was structured to formalize the City's process to document year to year the existing condition of slopes and noting areas of high risk.

While this work was underway, the department received a complaint from a member of the public on Thursday, October 10, 2019 regarding a potential Dangerous Condition located at #411 Riverside Avenue. It was communicated that there was soil brought to the site as fill to the high bank of the property. Riverside Avenue is positioned on the high bank to the Winooski River.

The complaint received was an email originally composed from a member of the public concerned about the stability of the slope, questioning the safety to the in-fill activities and environmental impact to the river ecology downslope. The original communication was forwarded to my attention through a series of state and local officials. Included in the original email were a series of 12 pictures.

These pictures depict surficial cracking on the top of the slope, which suggests some measure of instability of the slope. Which triggered a response from both myself and the Building Inspector to take immediate action and investigate the complaint.

Prior to reaching out to the owner I called Bill Ward who serves at the Director of Permitting and Inspection to determine if the reference in-fill activity at #411 Riverside Avenue was permitting under our local zoning. In reviewing the property file there weren't any permits on file that permit the regrading and in-fill activities identified in the complaint. Mr. Ward provided me with the contact information for the owner of the property.

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I then placed a call to the owner, identifying myself as the City Engineer alerting him to the complaint and requesting to visit the site to investigate the condition. I shared I would be visiting the site shortly with our Building Inspector, Brad Biggie.

Arriving at the 411 Riverside Avenue at around 12:20 p.m. Friday, I made contact with the owner, I introduced Brad Biggie the Building Inspector and introduced the complaint we received was for in filling his property on the northern edge of his property.

Visually, I had identified a 60'-80' tall, steep slope terraced at the base of the slope in the direction of the river. At the base of the slope and a third of the way up the slope were a number of large growth cut timbers laying in various orientations and overlapping. Large Stumps near the top of the slope, material of the high bank was primarily wood chips, ground was spongy and there was steam rolling out of the bank in isolated areas from the wood chips, it was evident there was heat being released as a result of the decomposition of the wood chips as organic material.

I shared with the owner of 411 Riverside Avenue that he should no longer be infilling his property until he acquires all of the necessary permits and has consulted with a Geotechnical Engineer. I further noted that the steam from the bank was the decomposition of the wood chips and that this material could possibly combust. That we would likely be issuing a Dangerous Building Order for him to remediate the existing condition.

Leaving 411 Riverside Avenue I visited the adjacent properties at 389, 365 Riverside Avenue and attempted to make contact with the property owners. I was unsuccessful in making contact with either of the two owners. I visually confirmed infill activity on these two properties as well.

Returning from the site visit I had prepared a Draft Dangerous Building Order for 411 Riverside Avenue. That same day Friday, October 11, I shared the draft order with our City Attorney's Office for review. This order would serve as the sample order for all three properties.

As a result of the City Attorney's Office's review it was determined that under the authorities described in **8-45 Obligations of owners of dangerous structures and buildings**; as the City Engineer, neither myself, nor Brad Biggie as the Building Inspector have the authority to order the remediation of the slope, given the slope is not a structure or building.

This issue was then referred to the Permitting and Inspection team for their review and determination if under the existing zoning regulation the property owner could be compelled to remediate the existing condition.

Shortly after on the evening of October 31st, 2019 the City experiences a severe rain storm event that impacted the stability of these infill areas.

The rain storm saturated the illegal infill at 365 Riverside Avenue, causing a flow failure that impacted the Rivertrail. causing that segment of the trail to be rerouted by the Winooski Valley Park District.

Since the slope failure at 365 Riverside Avenue, City staff continues our work address this individual slope failure as well as take important next steps to prevent against similar slope failures.

- . Permitting and Inspections Department has issues a Notice of Violations to the three Riverside Avenue Property Owners.
- . DPW's Consultant Hoyle Tanner has completed most of their field work on Manhattan Drive and North shore for properties under the direct control of the City.
- . Our work to assess the existing condition along Riverside Avenue will require the cooperation of private land owners to gain access to their properties to assess the existing condition.
- . Alternative methods of assessment are being considered if we are not able to gain access to private property to assess the existing condition
- . Field Inspection and associated Field Reports record the existing condition and will be used to compare against previous annual inspection reports to identified locations of instability or locations of imminent failure.

As the City Engineer, I continue to have conversations with the City Attorney's Office, to further expand both mine and the Building Inspectors authorities to address slope stability issues under similar authorities described in the Burlington Code of Ordinances 8-45. In addition the consultants work to assess all high slopes is not complete and addition field inspections will resume once slopes are free of snow and ice pack for visual inspection.

Please feel free to call me if you have questions.

Thank you.