

Draper Slope Stability

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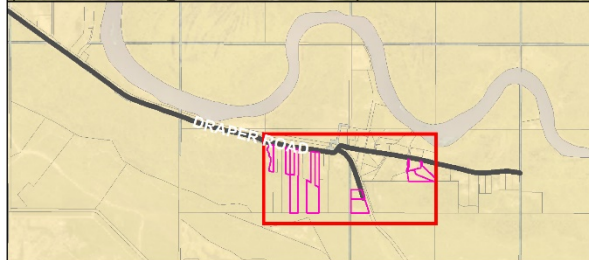
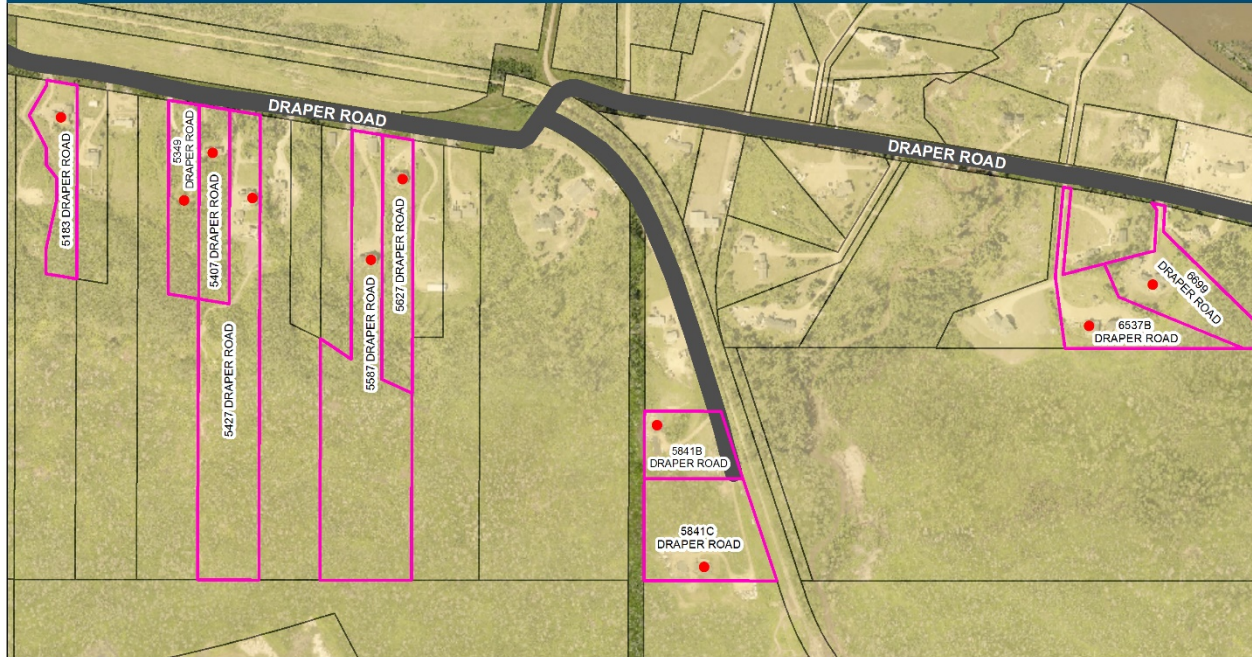
Department: Engineering/Planning and Development

Meeting Date: January 26, 2021



Introduction

- There are currently 10 properties affected by slope stability issues in Draper.
- Today's presentation will provide the following information:
 - Planning process
 - Historical reports commissioned
 - Observations from Administration and residents
 - Next steps



DRAPER PROPERTIES WITH LOCALIZED SLOPE FAILURE

- Addresses
- Lots With Localized Slope Failure
- ▬ Roads
- ▭ Title Parcels



1 in = 417 ft



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Subdivision Process

- These ten (10) properties were subdivided as early as 1999 and as recent as 2011, but most were created in 2004.
- In 1999, as part of Clearwater River Valley ASP, a geotechnical report was completed by Terracon Geotechnique.

Permit Process

- Following subdivision, each property required a Development Permit (DP) for the home and certain accessory structures.
- Land Use Bylaw provides the Development Authority with the option of requesting additional information, such as a geotechnical report.
- Once a DP has been issued, further technical studies can be requested to support the issuance of Safety Codes permits.

Current Situation

- Nine (9) out of ten (10) properties have geotechnical references:
 - on certificate of title by way of covenants,
 - development applications submitted, or
 - conditions of approvals.

Geotechnical Analysis

The Municipality completed three (3) geotechnical reports that addressed Slope Stability in Draper

1. 1999 Terracon Report - Slope Stability Study
2. 2017 Thurber Report - Draper Slope Stability
3. 2020 Stantec Report - Draper Slope Stability Review

Purpose of Studies

1. Terracon Report supported Highway 69 Area Structure Plan (ASP) and provided guidelines for development along the Clearwater Valley including the slope in Draper.
2. Thurber Report provided assessment of slope stability in Draper after the 2016 Horse River Wildfire.
3. Stantec Report examined the slope stability challenges for the delivery of Rural Water Sewer Servicing (RWSS) in Draper.

Slope Stability Challenges

The slope in Draper has two (2) types of slope instability:

1. Large scale instability: Caused as a result of landslides and soil composition. It extends along the Draper slope. It is worsened by grading, lack of vegetation, and excess of water.
2. Localized shallow slope instability: Caused by lot development on the slope area due to grading, ground disturbance, and drainage issues.

Report Findings

1. Through field observations, Reports found evidence of slope instability on multiple private properties.
2. Through geotechnical studies and field investigation, the Reports confirmed that the slope moves, given the existing soil layers and composition.
3. Two (2) of the Reports provided high-level guidelines for development on the slope.
4. For lot specific information, the Reports advised the engagement of a licensed geotechnical Engineer.

Current Status

The excess rainfall in 2020 added to the slope instability causing more residents' inquiries.

Administration met with residents and common observations were:

- Noticeable subsidence typically near the rear yards.
- Evidence of cracks and sloughing.
- Ground deformation & swelling at the toe of the slope.
- Some retaining and block walls were pushed and appeared to be uneven due to soil pressure from hilltops.

Residents' Questions

The common questions by residents were whether the Municipality:

- has any plans for the Residents on the slope in Draper;
- can provide any type of lot-specific geotechnical assessment; and
- would consider buying out property owners.

Next Steps

- Draper is being added to the RMWB Slope Monitoring Program.
- Once locations for monitoring are determined, Engineering will coordinate with property owners as monitoring is likely to occur on private property and permission to access property is required.

Next Steps – cont'd

- Administration will continue to review, adjust, and manage our slope monitoring program to meet changing conditions.
- If property owners would like to obtain file information regarding their property; please contact Pulse and ask to be directed to Planning & Development Department.

Questions?