



**GEOTECHNICAL ASSESSMENT  
PROPOSED RESIDENTIAL DEVELOPMENT  
19963 MCNEIL ROAD, PITT MEADOWS, BC**

Document Type: Version 2

Date: January 30, 2025

Project No.: **K-211145-00**

Submitted to:

**1344317 BC LTD**

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Submitted by:

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**EGBC Permit to Practice #1000925**

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*TP22-01 to TP22-03*

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## 1.0 INTRODUCTION

As requested, Kontur Geotechnical Consultants Inc. (“Kontur”) has completed a *Geotechnical Assessment* of the proposed residential development located in Pitt Meadows, BC. The purpose of the assessment was to characterize the site from a geotechnical point-of-view, identify potential naturally occurring geologic hazards, and to provide potential mitigation strategies or measures to address any identified geological hazards. Kontur’s assessment of potential naturally-occurring geologic hazards has been completed in accordance with widely accepted standards and the guideline published by Engineers and Geoscientists of British Columbia (“EGBC”) titled “Landslide Assessments in British Columbia” dated March 1, 2023.

As the City of Pitt Meadows provides guidance for acceptability of geologic hazard level of safety. The City of Pitt Meadows guidelines are:

- A 0.5% probability of failure in a 50-year period (return period of 1:10,000) for development; and
- A 2% probability of failure occurring in a 50-year period (return period of 1:2475) for building permit applications.

Specifically, this assessment focused on the following naturally occurring geologic hazard events including locations of the potential hazards, opinions as to the nature of the hazard, consequences, and influence areas of the identified potential hazards:

- Slope instabilities;
- Rock falls/topples/slides; and/or,
- Debris flows/torrents.

It is understood that flooding hazards presented by the North Alouette River and Fenton Road Slough have been addressed by others.

Attachments to this report include a Site Plan, Test Pit Location Map and Record of Test Pit sheets, and a Landslide Assurance Statement (see Appendix D).

## 2.0 UNDERSTANDING OF PROJECT

The subject property consists of the following lot:

- 19963 McNeil Road, Pitt Meadows;

A site plan of the subject property is attached to this report (see Appendix B).

Based on a review of the *Key Plan* prepared by Creus Engineering (“Creus”) dated 2024-07-15 the proposed development generally consists of 5 single-family residential lots and associated roads.

## 3.0 SOURCES OF INFORMATION

This geotechnical assessment is based on the following information:



- Historic aerial photographs extending back over a time frame of over about 70 years, specifically aerial photographs for the years 1940, 1949, 1959, 1963, 1969, 1974, 1978, 1981, 1986, 1991, 1996, 2004, and 2013 were reviewed;
- Topographic mapping of the subject property provided by Vis-Eng Consulting Ltd.;
- Drawings prepared by Vis-Eng Consulting Ltd. dated 2024-07-15;
- Previous experience by Kontur personnel in the vicinity of the proposed development;
- Site reconnaissance by senior Kontur personnel to observe, record, and photograph features of geotechnical significance; and,
- Test pit exploration carried out as part of Kontur's geotechnical assessment.

## 4.0 SITE DESCRIPTION

### 4.1 General

The subject property was located north of the North Alouette River, on the north side of McNeil Road about 1.6km east of the intersection of McNeil Road and Harris Road. The property was irregular in shape. The western boundary is generally oriented in a north-south direction, spanning approximately 390m. The northern boundary is orientated in an east-west direction and spans approximately 130m. The eastern boundary is generally oriented in a north-south direction and spans approximately 390m. The south boundary is generally oriented in an east-west direction and spans approximately 90m. To the south of the subject property is McNeil Road, followed by agricultural and rural residential properties. To the west, north, and east of the subject property is agricultural and rural residential properties. To the north-east of the subject property is undeveloped forested land.

Anthropogenic development within the subject property included an abandoned residential building in the central portion of the subject site. An unpaved roadway accessing the building was observed connecting to McNeil Road.

### 4.2 Surface Conditions

Topography within the subject property consisted of the ground surface being generally flat lying in approximately the southern 100m. A bedrock knoll was located about mid point of the western boundary this lot with a height of about 15m with near vertical slopes on the north and west sides and inclined at about 5H:1V on the south side.

The northern portion generally consists of south facing slopes with inclinations of about 3.5H:1V transitioning to a west facing slope with inclinations ranging from about 1.5H:1V to 3.0H:1V (Horizontal: Vertical) with localized areas as steep as 0.6H:1V to the west.

Angular boulders up to about 2m diameter were noted at the base of bedrock bluffs associated with the knoll on the west property boundary. These boulders likely originate as a result of rocks dislodging from the bedrock bluffs.

The closest section of the North Alouette River is located about 300m south-east of the property boundary. The Fenton Road Slough is located as close as about 65m from the western property boundary.



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No significant watercourses were noted within the subject property.

### **4.3 Soil Conditions**

Based on a review of information provided in Surficial Geology Map 1484A New Westminster published by the Geological Survey of Canada, the north-west portion of the subject property is underlain with Mesozoic Bedrock, where not outcropping is overlain with glacial deposits and colluvium. The surficial geology map indicates that the flat lying areas in the southern portion of the subject property are underlain by Fraser River Sediments consisting of deltaic and distributary channel fill sediments overlying cutting estuarine sediments and overlain in part of the area by overbank sediments. Overbank soils include sandy to silt loam up to 2m thick.

Bedrock outcrops were commonly observed in the subject property. Bedrock exposed in bluffs appeared to consist of granitic with widely spaced jointing, often with the rock fragments separating from the bedrock bluff face.

Three (3) test pits were excavated by means of an excavator to assess near surface soil conditions in the lower lying flatter areas of the subject property. The test pits were excavated to depths ranging from about 2.0m to 2.3m with locations as shown on the attached *Vicinity Map & Test Pit Locations* attached to this report. Test pits were located, supervised, sampled, and logged by Kontur personnel with samples being returned to Kontur's laboratory for moisture content determination and further visual classification. In general, the test pits encountered a topsoil layer of silty sand with trace gravel up to about 0.3m thick overlying soft clayey silt to silty clay to the bottom of the test pits. Record of Test Pit sheets are included Appendix C to this report.

The observed subsurface conditions on site are in general conformance with information provided in the published surficial geology map referenced above.

### **4.4 Groundwater Conditions**

No significant seepage was noted on the hill and the test pits excavated in the lower flatter areas did not encounter groundwater to depths of about 2.3m.

### **4.5 Subsurface Variability**

It is important to note that the subsurface conditions described above and encountered in each test pit are representative of the specific conditions in the immediate vicinity of each test pit and those based on a desktop review of available geotechnical information within close proximity of the subject site and site reconnaissance. Extrapolation and interpretation of the subsurface profile is formulated based on an assumed horizontal continuity of subsurface conditions across the site. Therefore, the conditions or units described above are generalized and based on the available testhole information only. Variation in stratigraphic conditions should always be expected.

It is important to note that. Therefore, the subsurface conditions described above are generalized and based on the available information described above only. Variation in stratigraphic conditions should always be expected.



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## **5.0 GEOTECHNICAL ENGINEERING COMMENTS AND RECOMMENDATIONS**

### **5.1 General**

The subject property is located in an area with topography ranging from flat lying to steep (near vertical) bedrock slopes and subsurface conditions ranging from clayey silt/silty clay to from bedrock, respectively. The areas underlain by bedrock or thin overburden soils overlying bedrock are generally considered suitable for construction of residential buildings with adequate bearing capacity and settlements within typical tolerances for such buildings. Areas (flat lowland areas) underlain by soft clayey silt/silty clay will likely consolidate when subjected to increased loading resulting in post-construction settlement and require further geotechnical exploration to better characterize these soils and develop suitable recommendations for subgrade preparations and foundation design.

The sections below provide geotechnical engineering comments and recommendations with regards to potential naturally occurring geologic hazards within and adjacent to the subject property that could influence proposed developments.

### **5.2 Blasting**

Kontur will be providing recommendations related to excavation of bedrock to accommodate construction in the proposed subdivision. The method of bedrock excavation will depend on the rock strength and presence and nature of discontinuities within the bedrock. Based on observations of bedrock during site reconnaissance, bedrock conditions are expected to vary across the property and a variety of methods may be employed for bedrock excavation. As such, an allowance for blasting is recommended. If blasting is required, the blasting design should take into account measures to prevent damage to nearby structures due to vibration or flying debris.

Temporary slopes can be excavated at an inclination of about 1H: 4V provided the cut face is thoroughly scaled of loose rock and significant adversely oriented discontinuities are not present within the cut slope. Temporary cuts within soils overlying the bedrock should be inclined no steeper than 1H:1V and should be scaled of larger rocks which could become dislodged and create an unsafe workspace. Excavation guidelines provided by WorkSafe BC must be followed.

### **5.3 Geologic Hazards**

As previously discussed, the subject property is located in an area with varied terrain including steep bedrock slopes and flat lying terrain adjacent to nearby watercourses, therefore, the potential for such natural events as slope stability, rockfall, and subsidence to influence the proposed development should be considered.

Based on observations and interpretations during site reconnaissance and historical aerial photographs review, Kontur has developed a geotechnical characterization of the subject property, hill slopes, and drainage basins within and adjacent to the subject property. This characterization forms the basis from which Kontur's opinions are provided regarding the likelihood of naturally occurring geologic events influencing proposed developments.



### 5.3.1 Flood

Based on review of *City of Pitt Meadows Floodplain Designation and Construction Control* (Bylaw No. 2384 and amendments thereto) adopted August 12, 2008, the lower flat-lying portions of the subject property lie within the area shown as Designated Floodplain on Schedule A. Part II– Regulations 4 (a) of the referenced bylaw indicates that the Designated Flood Levels for Rural Floodplain on Schedule A is 1.85m Geodetic Survey of Canada Datum. The elevation requirements provide in Part II 5 (a) indicates that no building, manufactured home or unit, modular home or structure or any part thereof with the underside of a wooden floor system or top of a concrete slab of any area used for habitation, business, or storage of goods damageable by floodwaters, or in the case of a manufactured home or unit the ground level or top of the concrete or asphalt pad on which it is located lower than (i) 2.45 m Geodetic Survey of Canada Datum for locations in the Schedule A Rural Floodplain (flood elevation plus freeboard of 0.6m).

### 5.3.2 Slope Stability

The subject property are occupied by some slopes which are generally bedrock controlled and with localized areas overlain with relatively thin veneers or mantles of soil. The global stability of the bedrock-controlled slopes is considered adequate for static and seismic conditions. No significant indications of deep seated or surficial slope movement or surficial (curved or leaning trees, undulating ground surface, etc.) were noted during the site reconnaissance; however, some surficial soil movement may occur in areas where the bedrock has soil overburden steeper than about 1.5H: 1V.

The presence of the separated bedrock blocks in some steeper areas present a potential for dislodgement of rock from the crest of slopes. Though not considered a global slope stability issue, structures located close to the slope crest could become undermined as rock fragment/blocks are dislodged through freeze/thaw action.

Areas where dislodgment of rock at the crest of slopes present a potential geologic hazard are shown on the attached key Hazard Map and are identified as area A. Mitigative measures for potential stability issues include setbacks from slope crest and where not practical or desirable, stabilization of the slope crest with the use of mitigation measures including, but not limited to rock anchors and/or shotcrete may be utilized to reduce the hazard. Setbacks and stabilization measures should be developed on a site-specific basis by a qualified Geotechnical Engineer.

The probability of global slope instabilities influencing the property is considered to be very low. Within the areas noted to contain a slope stability hazard at the crest of bedrock slopes the probability of those instabilities influencing structures near the crest of the bedrock slopes is considered to be high. However, provided the recommendations for site-specific mitigation measures for slope stabilization within the areas noted on the key plan are developed by a qualified Geotechnical Engineer, it is considered that the probability of slope instabilities influencing structures constructed on the lots can be reduced to very low.

The general areas of recommended covenants indicating site specific review by a geotechnical engineer are shown on the attached Figure 2. The attached Vis-Eng Consulting Engineering drawing “*Key Plan - Slope Analysis*” indicates there is sufficient space for construction of a residential building outside of areas with slope inclinations no steeper than 30% on each proposed lot.



### **5.3.3 Debris Flows/Debris Floods**

No significant indications of previous debris events within the subject property were noted during the site reconnaissance, desktop reviews, or geotechnical exploration. Watercourses are located near south-east property boundaries (North Alouette River) and near the western boundary (Fenton Road Slough). The watercourses are located on gently inclined topography which would not typically be a source for debris flows/floods. In addition, the North Alouette River is wide and does not have any structures upstream (culverts, etc.) that could become obstructed resulting in debris type flows influencing the subject property. The Fenton Road Slough passed through a culvert under Richardson Road; however, were the culvert to become obstructed the overflow over Richardson Road would likely be diverted from the subject property by the hilly topography between the slough and the subject property.

The probability of debris flows/flood influencing the subject property is considered to be very low.

### **5.3.4 Rockfall**

Large rock boulders up to about 1.5m diameter were noted within the subject property, typically near the toe of bedrock bluffs. The rock boulders are likely the result of rocks dislodging from the bedrock bluffs and falling to the ground surface below. Areas of rockfall are shown on the attached key plan and are identified as area A. The area identified as containing potential rockfall hazards may influence proposed residential lots.

Mitigative measures for potential rockfall include setbacks from the toe of slopes and where not practical or desirable, stabilization of the slope crest with the use of mitigation measures such as, but not limited to rockfall barriers, rock anchors, slope mesh, shotcrete may be utilized to reduce the hazard. Setbacks, rockfall barriers and stabilization measures should be developed on a site-specific basis by a qualified Geotechnical Engineer. The general areas of recommended covenants indicating site specific review by a qualified Geotechnical Engineer are shown on the attached Figure 2.

### **5.3.5 Subsidence**

As discussed above, the flat lying areas in the southern portion of the proposed subdivision are generally underlain by soft clayey silt to silty clay to the bottom of the test pits. These soils are typically susceptible to consolidation when subjected to increased loading resulting in settlement. The placement of buildings and proposed increases in grades would subject these soft compressible soils to such increased loading. Further study of these soft subgrade conditions is considered to be appropriate. Further study could consist of hollow stem auger test holes with Standard Penetration Tests (SPTs) and Seismic Cone Penetrometer testing to better characterize these soft soils with respect settlement and seismic analyses depending on the proposed structures. Areas considered to be susceptible to subsidence are shown on attached Figure 2.

## **6.0 CLOSURE**

The above-noted and attached information presents Kontur's understanding of the proposed development, interpretations of site conditions and opinions as to the existence of naturally occurring geologic hazards, within and adjacent to the subject property, and the influence areas that could affect the proposed development. The lack of comprehensive historical records with respect to naturally



occurring geologic hazards within or adjacent to the subject property limits the ability of Kontur to complete a quantitative assessment of specifically identified hazards. Therefore, Kontur has provided a qualitative assessment based on Kontur’s experience and interpretations of existing site conditions. Some understanding of terminology and associated ranges of annual probability of occurrence connected with this approach is provided in a reference prepared by the Resource Inventory Committee, Government of British Columbia, Slope Stability Task Force (1996), as shown in Table A below.

**TABLE A**  
**Relative Terms and Ranges of Annual Probability of Hazard Occurrence**  
**(Resource Inventory Committee, 1996)**

<b>Relative Term of Probability</b>	<b>Range of Annual Probability of Occurrence (Pa)</b>	<b>Comments</b>
Very High	>1/20	Indicates the hazard is imminent and well within the lifetime a person or typical structure. Events occurring with a return interval of 1/20 or less generally have clear and relatively fresh signs of disturbance.
High	1/100 to 1/20	Indicates that the hazard can happen within the approximate lifetime of a person or typical structure. Events are clearly identifiable from deposits and vegetation but may not appear fresh.
Moderate	1/500 to 1/100	Indicates that the hazard, within a given lifetime, is not likely but possible. Signs of previous events, such as vegetation damage may not be easily noted.
Low	1/2500 to 1/500	Indicates the hazard is of uncertain significance
Very Low	<1/2500	

The subject property is considered “safe” for the intended purpose, that being the construction of a single-family residential building. The term “safe” specifically refers to the ability of the subsurface soils to support the proposed building within typically tolerable settlement for such buildings and global slope stability to be adequate for static and seismic conditions. Provided the recommendations of this report are implemented the probability of failure is considered to be less than 0.5% in a 50-year period (return period of 1:10,000).

This report has been prepared for the exclusive use of the 1344317 BC Ltd and/or the City of Pitt Meadows, and/or their designated agents or consultants. Any use of the information contained in this letter for other than its intended purpose or by any other party must first be verified in writing by Kontur. Kontur does not accept any responsibility or damages because of any other party relying on or using the information, interpretations, opinions, comments, and/or recommendations that are contained in this report.



Kontur trusts that the information described above meets your current requirements. If you should have any concerns or questions, please do not hesitate to contact the undersigned.

Sincerely,

**Kontur Geotechnical Consultants Inc.**  
**EGBC Permit to Practice #1000925**

Per:

Reviewed by:

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Principal | Geotechnical Engineer

Brian L.J. Mylleville, Ph.D., P.Eng.  
Senior Geotechnical Engineer



January 30, 2025 (Version 2)  
Project No.: **K-211145-00**

Geotechnical Assessment  
Proposed Residential Subdivision  
19963 McNeil Road, Pitt Meadows, BC

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**APPENDIX A** ■  
Interpretation and Use of Study and Report Document



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## INTERPRETATION AND USE OF STUDY AND REPORT DOCUMENT

### 1.0 STANDARD OF CARE

This study and Report have been prepared in accordance with generally accepted engineering consulting practices in this area. No other warranty, expressed or implied, is made. Engineering studies and reports do not include environmental engineering or consulting.

### 2.0 COMPLETE REPORT

All documents, records, data and files, whether electronic or otherwise, generated as part of this assignment are a part of the Report which is of a summary nature and is not intended to stand alone without reference to the instructions given to us by the Client, communications between us and the Client, and to any other reports, writings, proposals or documents prepared by us for the Client relative to the specific site described herein, all of which constitute the Report.

IN ORDER TO PROPERLY UNDERSTAND THE SUGGESTIONS, RECOMMENDATIONS AND OPINIONS EXPRESSED HEREIN, REFERENCE MUST BE MADE TO THE WHOLE OF THE REPORT. WE CANNOT BE RESPONSIBLE FOR USE BY ANY PARTY OF PORTIONS OF THE REPORT WITHOUT REFERENCE TO THE WHOLE REPORT.

### 3.0 BASIS OF THE REPORT

The Report has been prepared for the specific site, development, building, design or building assessment objectives and purpose that were described to us by the Client. The applicability and reliability of any of the findings, recommendations, suggestions, or opinions expressed in the document are only valid to the extent that there has been no material alteration to or variation from any of the said descriptions provided to us unless we are specifically requested by the Client to review and revise the Report in light of such alteration or variation.

### 4.0 USE OF THE REPORT

The information and opinions expressed in the Report, or any document forming the Report, are for the sole benefit of the Client. NO OTHER PARTY MAY USE OR RELY UPON THE REPORT OR ANY PORTION THEREOF WITHOUT OUR WRITTEN CONSENT. WE WILL CONSENT TO ANY REASONABLE REQUEST BY THE CLIENT TO APPROVE THE USE OF THIS REPORT BY OTHER PARTIES AS "APPROVED USERS". The contents of the Report remain our copyright property and we authorise only the Client and Approved Users to make copies of the Report only in such quantities as are reasonably necessary for the use of the Report by those parties. The Client and Approved Users may not give, lend, sell or otherwise make the Report, or any portion thereof, available to any party without our written permission. Any use which a third party makes of the Report, or any portion of the Report, are the sole responsibility of such third parties. We accept no responsibility for damages suffered by any third party resulting from unauthorised use of the Report.

### 5.0 INTERPRETATION OF THE REPORT

Nature and Exactness of Descriptions: Classification and identification of soils, rocks, geological units, contaminant materials, building envelope assessments, and engineering estimates have been based on investigations performed in accordance with the standards set out in Paragraph 1. Classification and identification of these factors are judgmental in nature and even comprehensive sampling and testing programs, implemented with the appropriate equipment by experienced personnel, may fail to locate some conditions. All investigations, or building envelope descriptions, utilizing the standards of Paragraph 1 will involve an inherent risk that some conditions will not be detected and all documents or records summarising such investigations will be based on assumptions of what exists between the actual points sampled. Actual conditions may vary significantly between the points investigated and all persons making use of such documents or records should be aware of, and accept, this risk. Some conditions are subject to change over time and those making use of the Report should be aware of this possibility and understand that the Report only presents the conditions at the sampled points at the time of sampling. Where special concerns exist, or the Client has special considerations or requirements, the Client should disclose them so that additional or special investigations may be undertaken which would not otherwise be within the scope of investigations made for the purposes of the Report.

Reliance on Provided information: The evaluation and conclusions contained in the Report have been prepared on the basis of conditions in evidence at the time of site inspections and on the basis of information provided to us. We have relied in good faith upon representations, information and instructions provided by the Client and others concerning the site. Accordingly, we cannot accept responsibility for any deficiency, misstatement or inaccuracy contained in the report as a result of misstatements, omissions, misrepresentations or fraudulent acts of persons providing information.

To avoid misunderstandings, KONTUR should be retained to work with the other design professionals to explain relevant engineering findings and to review their plans, drawings, and specifications relative to engineering issues pertaining to consulting services provided by KONTUR. Further, KONTUR should be retained to provide field reviews during the construction, consistent with building codes guidelines and generally accepted practices. Where applicable, the field services recommended for the project are the minimum necessary to ascertain that the Contractor's work is being carried out in general conformity with KONTUR's recommendations. Any reduction from the level of services normally recommended will result in KONTUR providing qualified opinions regarding adequacy of the work.

### 6.0 ALTERNATE REPORT FORMAT

When KONTUR submits both electronic file and hard copies of reports, drawings and other documents and deliverables (KONTUR's instruments of professional service), the Client agrees that only the signed and sealed hard copy versions shall be considered final and legally binding. The hard copy versions submitted by KONTUR shall be the original documents for record and working purposes, and, in the event of a dispute or discrepancy, the hard copy versions shall govern over the electronic versions. Furthermore, the Client agrees and waives all future right of dispute that the original hard copy signed version archived by KONTUR shall be deemed to be the overall original for the Project.

The Client agrees that both electronic file and hard copy versions of KONTUR's instruments of professional service shall not, under any circumstances, no matter who owns or uses them, be altered by any party except KONTUR. The Client warrants that KONTUR's instruments of professional service will be used only and exactly as submitted by KONTUR.

The Client recognizes and agrees that electronic files submitted by KONTUR have been prepared and submitted using specific software and hardware systems. KONTUR makes no representation about the compatibility of these files with the Client's current or future software and hardware systems.



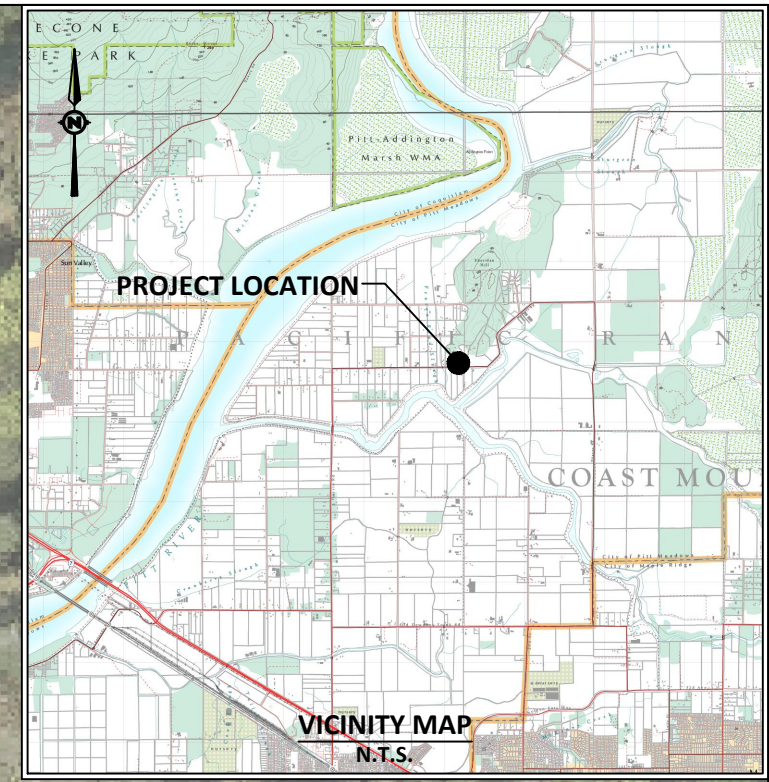
January 30, 2025 (Version 2)  
Project No.: K-211145-00

Geotechnical Assessment  
Proposed Residential Subdivision  
19963 McNeil Road, Pitt Meadows, BC

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
**APPENDIX B**  
Figures





**SITE PLAN - SITE 1**  
1:1250

**LEGEND**

 HAND AUGER TESTHOLE LOCATION

**REFERENCES:**

- VICINITY MAP: PROVINCE OF BRITISH COLUMBIA. "MAP92G027." SCALE 1:20,000 "BC MAPS & ORTHOS"  
<<https://a100.gov.bc.ca/ext/mtec/public/products/mapsheet>> [accessed July 27, 2022]



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SEAL

**VERSIONS**

NO	DESCRIPTION	DATE
0	ISSUED FOR REVIEW	2024-08-19
1	ISSUED FOR REPORT	2025-01-29

TITLE

FIGURE 1 - VICINITY MAP & TESTPIT LOCATIONS

CLIENT

BC STAR DEVELOPMENT CORPORATION

PROJECT LOCATION

19963 MCNEIL ROAD, PITT MEADOWS, B.C.

PROJECT NO.:

K-211145-00

DATE:

2024-08-19

SCALE:

1:1250

DWG NO.:

FIGURE 1

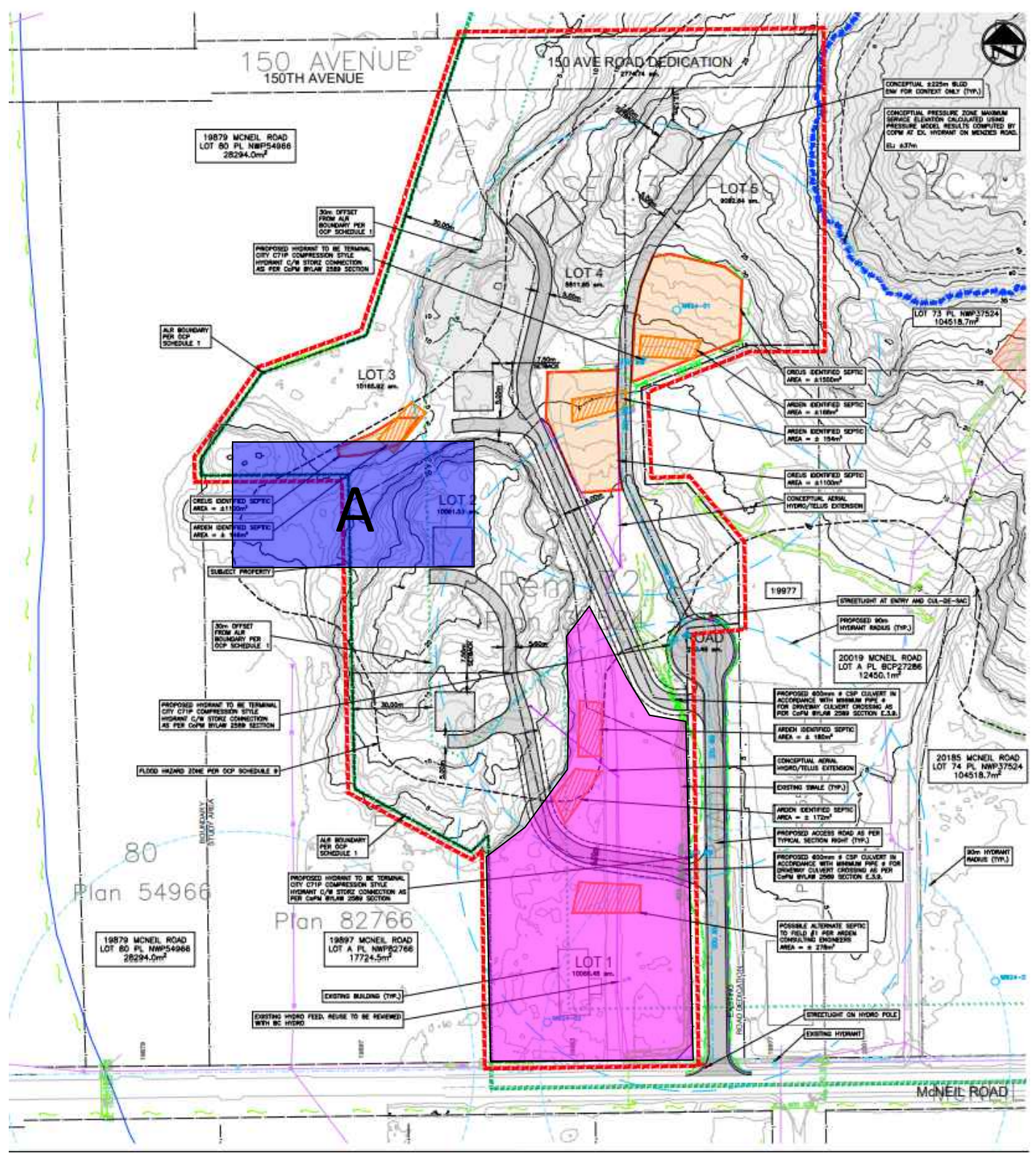
DRAFT:

LM

DESIGN:

CHECK:

EGS



- ROCKFALL / SLOPE STABILITY HAZARD ZONE (SEE REPORT TEXT) - GENERAL COVENANT AREA
- SUBSIDENCE HAZARD (SEE REPORT TEXT)

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SEAL

VERSIONS		
NO	DESCRIPTION	DATE
0	ISSUED FOR REVIEW	2024-08-19
1	ISSUED FOR REPORT	2025-01-29

TITLE	FIGURE 2 - KEY HAZARD MAP
CLIENT	BC STAR DEVELOPMENT CORPORATION
PROJECT LOCATION	19963 MCNEIL ROAD, PITT MEADOWS, B.C.

PROJECT NO.:	K-211145-00		
DATE:	2024-08-19	SCALE:	NTS
DRAFT:	LM	DESIGN:	
DWG NO.:	FIGURE 2	CHECK:	EGS

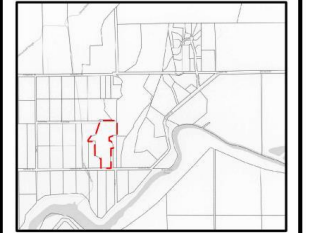


LEGEND	
0-20%	<span style="color: green;">■</span>
20-30%	<span style="color: yellow;">■</span>
30-40%	<span style="color: orange;">■</span>
40% +	<span style="color: red;">■</span>

# VIS-ENG CONSULTING LTD.

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PERMIT TO PRACTICE # 1005639



### SITE MAP

### DRAWING LEGEND

	EXISTING	PROP.	TO BE REMOVED
LEGAL LINE	---	---	---
EASEMENT	---	---	---
SECTION	---	---	---
CONVEY	---	---	---
STORY	---	---	---
WALL	---	---	---
TO	---	---	---
STREETLIGHT	---	---	---
DOG	---	---	---
FIRE HYDRANT	---	---	---
DATE VALVE	---	---	---
REGULATED	---	---	---
PROTECTION CHAMBER	---	---	---
CATCHER (150/20)	---	---	---
CAF	---	---	---
MANHOLE	---	---	---
TRUNK PIPE	---	---	---
STREETLIGHT	---	---	---

approved

client  
1344317 BC LTD.

project  
19963 MCNEIL 5 LOT  
PITT MEADOWS, BC

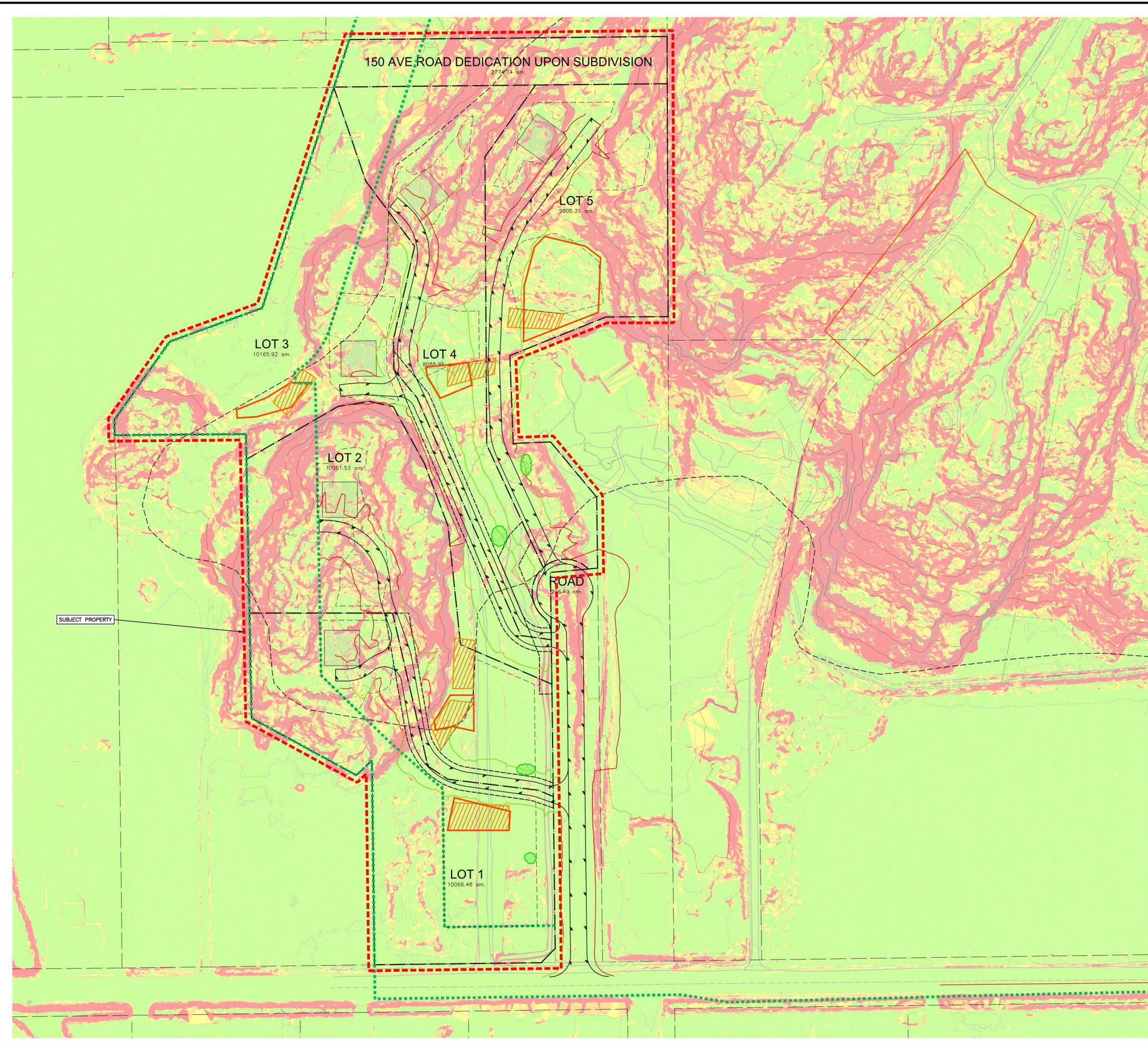
title  
KEYPLAN  
SLOPE ANALYSIS

NO.	DATE	DESCRIPTION	BY
4	25-09-20	ISSUED FOR TEAM REVIEW	CLW
3	24-09-20	CONSIDERED FOR REZONING	CHD
2	24-09-20	ISSUED FOR TEAM MEETING	CHD
1	24-07-15	UPDATED FOR REZONING APPLICATION	CHD

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engineer of record	KBH	scale	1:750	sheet	4
designed by	KBH	file no.	23345		
drawn by	CHD	drawing no.	KEY-4		
date	2020 02 12				

NOT FOR CONSTRUCTION





January 30, 2025 (Version 2)  
Project No.: **K-211145-00**

Geotechnical Assessment  
Proposed Residential Subdivision  
19963 McNeil Road, Pitt Meadows, BC

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**APPENDIX C**  
Test Pit Logs





Kontur Geotechnical Consultants Inc.  
 Unit 107, 2071 Kingsway Avenue  
 Port Coquitlam, B.C. V3C 6N2  
 Telephone: (778) 730-1747

# RECORD OF TESTPIT : TP22-01

CLIENT BC Starr Development Corporation  
 PROJECT NAME Sheridan, Pitt Meadows - Percolation  
 EXCAVATION DATE 2022-07-26  
 EXCAVATION METHOD Test Pit  
 EXCAVATION CONTRACTOR N/A  
 EQUIPMENT TYPE Excavator

PROJECT NUMBER K-211145-00  
 PROJECT LOCATION 19963 McNeil Road, Pitt Meadows, B.C.  
 TEST PIT LOCATION N: 5457850.097 E: 524181.6168  
 ELEVATION 9.0m (approximate)  
 ▽ GROUNDWATER DEPTH AT TIME OF EXCAVATION \_\_\_\_\_  
 LOGGED BY LK CHECKED BY EGS

DEPTH (m)	STRATA	SOIL DESCRIPTION	ELEV. DEPTH (m)	SAMPLES			SPT 'N' VALUE BLOWS/0.3m	POCKET PEN. (kPa)	FINES CONTENT (%)	GROUNDWATER
				NUMBER	TYPE	RECOVERY %	▲	⊙	□	
							20 40 60 80	100 200 300 400	20 40 60 80	
						DYNAMIC CONE BLOWS/0.3m	TORVANE (kPa)	PLASTIC & LIQUID LIMIT WATER CONTENT		
						20 40 60 80	100 200 300 400	PL MC LL		
						20 40 60 80	100 200 300 400	20 40 60 80		
		(TOPSOIL) SILTY SAND, trace gravel, brown, dry to damp, (loose to compact), sand is fine to medium grained	8.8							
		CLAYEY SILT to SILTY CLAY, trace rootlets, mottled grey and orange, moist, (soft)	0.3	S2	GB			47		
				S1	GB			45		
2			7.0							

Bottom of test pit at 2.0m.



Kontur Geotechnical Consultants Inc.  
 Unit 107, 2071 Kingsway Avenue  
 Port Coquitlam, B.C. V3C 6N2  
 Telephone: (778) 730-1747

# RECORD OF TESTPIT : TP22-02

**CLIENT** BC Starr Development Corporation  
**PROJECT NAME** Sheridan, Pitt Meadows - Percolation  
**EXCAVATION DATE** 2022-07-26  
**EXCAVATION METHOD** Test Pit  
**EXCAVATION CONTRACTOR** N/A  
**EQUIPMENT TYPE** Excavator

**PROJECT NUMBER** K-211145-00  
**PROJECT LOCATION** 19963 McNeil Road, Pitt Meadows, B.C.  
**TEST PIT LOCATION** N: 5457794.41 E: 524158.5835  
**ELEVATION** 6.0m (approximate)  
**GROUNDWATER DEPTH AT TIME OF EXCAVATION** \_\_\_\_\_  
**LOGGED BY** LK **CHECKED BY** EGS

DEPTH (m)	STRATA	SOIL DESCRIPTION	ELEV. DEPTH (m)	SAMPLES			SPT 'N' VALUE BLOWS/0.3m	POCKET PEN. (kPa)	FINES CONTENT (%)	GROUNDWATER
				NUMBER	TYPE	RECOVERY %	▲	⊙	□	
							20 40 60 80	100 200 300 400	20 40 60 80	
				DYNAMIC CONE BLOWS/0.3m	TORVANE (kPa)	PLASTIC & LIQUID LIMIT WATER CONTENT				
				20 40 60 80	100 200 300 400	PL MC LL 20 40 60 80				
		(TOPSOIL) SILTY SAND, trace gravel, brown, dry to damp, (loose to compact), sand is fine to medium grained	5.9							
		CLAYEY SILT to SILTY CLAY, trace rootlets, mottled grey and orange, moist, (soft)	0.2							
1										
2				S3	GB			37		
			3.8							

Bottom of test pit at 2.2m.



Kontur Geotechnical Consultants Inc.  
 Unit 107, 2071 Kingsway Avenue  
 Port Coquitlam, B.C. V3C 6N2  
 Telephone: (778) 730-1747

# RECORD OF TESTPIT : TP22-03

**CLIENT** BC Starr Development Corporation  
**PROJECT NAME** Sheridan, Pitt Meadows - Percolation  
**EXCAVATION DATE** 2022-07-26  
**EXCAVATION METHOD** Test Pit  
**EXCAVATION CONTRACTOR** N/A  
**EQUIPMENT TYPE** Excavator

**PROJECT NUMBER** K-211145-00  
**PROJECT LOCATION** 19963 McNeil Road, Pitt Meadows, B.C.  
**TEST PIT LOCATION** N: 5457753.417 E: 524190.7712  
**ELEVATION** 5.0m (approximate)  
**GROUNDWATER DEPTH AT TIME OF EXCAVATION** \_\_\_\_\_  
**LOGGED BY** LK **CHECKED BY** EGS

DEPTH (m)	STRATA	SOIL DESCRIPTION	ELEV. DEPTH (m)	SAMPLES			SPT 'N' VALUE BLOWS/0.3m	POCKET PEN. (kPa)	FINES CONTENT (%)	GROUNDWATER
				NUMBER	TYPE	RECOVERY %	▲	⊙	□	
							20 40 60 80	100 200 300 400	20 40 60 80	
				DYNAMIC CONE BLOWS/0.3m	TORVANE (kPa)	PLASTIC & LIQUID LIMIT WATER CONTENT				
				■	⊗	PL MC LL				
				20 40 60 80	100 200 300 400	20 40 60 80				
0.0 - 0.1		(TOPSOIL) SILTY SAND, trace gravel, brown, dry to damp, (loose to compact), sand is fine to medium grained	4.9							
0.1 - 2.7		CLAYEY SILT to SILTY CLAY, trace rootlets, mottled grey and orange, moist, (soft)	0.1	S4	GB			45 △		
2.7			2.7							

Bottom of test pit at 2.3m.



January 30, 2025 (Version 2)  
Project No.: **K-211145-00**

Geotechnical Assessment  
Proposed Residential Subdivision  
19963 McNeil Road, Pitt Meadows, BC

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**APPENDIX D** ■  
Appendix D: Landslide Assessment Assurance Statement

# APPENDIX D: LANDSLIDE ASSESSMENT ASSURANCE STATEMENT

Note: This Statement is to be read and completed in conjunction with the "APEGBC Guidelines for Legislated Landslide Assessments for Proposed Residential Development in British Columbia", March 2006/Revised September 2008 ("APEGBC Guidelines") and the "2006 BC Building Code (BCBC 2006)" and is to be provided for *landslide assessments* (not floods or flood controls) for the purposes of the Land Title Act, Community Charter or the Local Government Act. Italicized words are defined in the APEGBC Guidelines.

To: The Approving Authority  
City of Pitt Meadows

Date: January 30, 2025

12007 Harris Road, Pitt Meadows, BC V3Y 2B5

Jurisdiction and address

With reference to (check one):

- Land Title Act (Section 86) – Subdivision Approval
- Local Government Act (Sections 919.1 and 920) – Development Permit
- Community Charter (Section 56) – Building Permit
- Local Government Act (Section 910) – Flood Plain Bylaw Variance
- Local Government Act (Section 910) – Flood Plain Bylaw Exemption
- British Columbia Building Code 2006 sentences 4.1.8.16 (8) and 9.4 4.4.(2) (Refer to BC Building and Safety Policy Branch Information Bulletin B10-01 issued January 18, 2010)

For the Property:

19963 McNeil Road (Lot 72, NE Section, Township 40, Plan 37524, NWD)

Legal description and civic address of the Property

The undersigned hereby gives assurance that he/she is a *Qualified Professional* and is a *Professional Engineer* or *Professional Geoscientist*.

I have signed, sealed and dated, and thereby certified, the attached *landslide assessment* report on the Property in accordance with the *APEGBC Guidelines*. That report must be read in conjunction with this Statement. In preparing that report I have:

Check to the left of applicable items

- 1. Collected and reviewed appropriate background information
- 2. Reviewed the proposed *residential development* on the Property
- 3. Conducted field work on and, if required, beyond the Property
- 4. Reported on the results of the field work on and, if required, beyond the Property
- 5. Considered any changed conditions on and, if required, beyond the Property
- 6. For a *landslide hazard analysis* or *landslide risk analysis* I have:
  - 6.1 reviewed and characterized, if appropriate, any *landslide* that may affect the Property
  - 6.2 estimated the *landslide hazard*
  - 6.3 identified existing and anticipated future *elements at risk* on and, if required, beyond the Property
  - 6.4 estimated the potential *consequences* to those *elements at risk*
- 7. Where the *Approving Authority* has adopted a *level of landslide safety* I have:
  - 7.1 compared the *level of landslide safety* adopted by the *Approving Authority* with the findings of my investigation
  - 7.2 made a finding on the *level of landslide safety* on the Property based on the comparison
  - 7.3 made recommendations to reduce *landslide hazards* and/or *landslide risks*
- 8. Where the *Approving Authority* has **not** adopted a *level of landslide safety* I have:

- 8.1 described the method of *landslide hazard analysis* or *landslide risk analysis* used
- 8.2 referred to an appropriate and identified provincial, national or international guideline for *level of landslide safety*
- 8.3 compared this guideline with the findings of my investigation
- 8.4 made a finding on the *level of landslide safety* on the Property based on the comparison
- 8.5 made recommendations to reduce *landslide hazards* and/or *landslide risks*
- 9. Reported on the requirements for future inspections of the Property and recommended who should conduct those inspections.

Based on my comparison between

Check one

- the findings from the investigation and the adopted *level of landslide safety* (item 7.2 above)
- the appropriate and identified provincial, national or international guideline for *level of landslide safety* (item 8.4 above)

I hereby give my assurance that, based on the conditions<sup>[1]</sup> contained in the attached *landslide assessment* report,

Check one

- for subdivision approval, as required by the Land Title Act (Section 86), “that the land may be used safely for the use intended”

x

Check one

- with one or more recommended registered covenants.
- without any registered covenant.

- for a development permit, as required by the Local Government Act (Sections 919.1 and 920), my report will “assist the local government in determining what conditions or requirements under [Section 920] subsection (7.1) it will impose in the permit”.

- for a building permit, as required by the Community Charter (Section 56), “the land may be used safely for the use intended”

Check one

- with one or more recommended registered covenants.
- without any registered covenant.

- for flood plain bylaw variance, as required by the “Flood Hazard Area Land Use Management Guidelines” associated with the Local Government Act (Section 910), “the development may occur safely”.

- for flood plain bylaw exemption, as required by the Local Government Act (Section 910), “the land may be used safely for the use intended”.

Evan Sykes, P.Eng.

January 30, 2025

Name (print)

Date

Signature

<sup>[1]</sup> When seismic slope stability assessments are involved, *level of landslide safety* is considered to be a “life safety” criteria as described in the National Building Code of Canada (NBCC 2005), Commentary on Design for Seismic Effects in the User’s Guide, Structural Commentaries, Part 4 of Division B. This states:

*“The primary objective of seismic design is to provide an acceptable level of safety for building occupants and the general public as the building responds to strong ground motion; in other words, to minimize loss of life. This implies that, although there will likely be extensive structural and non-structural damage, during the DGM (design ground motion), there is a reasonable degree of confidence that the building will not collapse nor will its attachments break off and fall on people near the building. This performance level is termed ‘extensive damage’ because, although the structure may be heavily damaged and may have lost a substantial amount of its initial strength and stiffness, it retains some margin of resistance against collapse”.*

37768 Second Avenue

Address

Squamish, BC, V8B 0S8

604-773-0220

Telephone

(Affix Professional seal here)

If the *Qualified Professional* is a member of a firm, complete the following.

I am a member of the firm Kontur Geotechnical Consultants Inc.

and I sign this letter on behalf of the firm.

(Print name of firm)