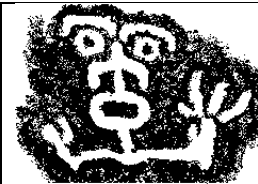


**BRITISH COLUMBIA  
ARCHAEOLOGICAL IMPACT ASSESSMENT  
INTERIM REPORT FORM**



## 1. REPORT TITLE

2021-0151	Archaeological Impact Assessment of 620 Dalglish Drive
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## 2. MANAGEMENT SUMMARY

2.1	<i>Protected HCA Sites:</i>	None
2.2	<i>Brief Overview of Study:</i>	
	<p>Tk'emlúps te Secwépemc (TteS) Natural Resource Department conducted an Archaeological Impact Assessment (AIA) at 620 Dalglish Road, in Kamloops, BC, on behalf of Thompson Rivers University (Figure 1). Thompson Rivers University (the proponent) plans to develop two student housing buildings and a walkway overpass at the 620 Dalglish property in 2022\2023. The assessment was conducted in April of 2022 under the direction of a TteS Field Director in accordance with the conditions outlined in the Heritage Inspection Permit (HIP) 2021-0151.</p> <p>One area of high archaeological potential was identified and subject to subsurface testing. All test results were negative, and no artifacts or archaeological features were encountered during the investigation.</p>	
2.3	<i>Results:</i>	
	<p>Fieldwork was conducted on April 11-12, 2022 and consisted of surface inspection and subsurface testing. A total of seventy-two (72) auger tests were excavated on a terrace landform overlooking Guerin Creek to the north. All tests were negative for archaeological materials.</p> <p>This report is without prejudice to Aboriginal Rights and Title and therefore is not considered consultation or accommodation for the purpose of defining or limiting the Aboriginal Rights and Title of the Tk'emlúps te Secwepemc or any First Nation.</p>	
2.4	<i>Management Recommendations:</i>	
	<p>No further work is recommended for the assessed auger test area; should excavation in the project area exceed the depth of imported fill materials further archaeological work may be required.</p>	

### 3. ADMINISTRATIVE INFORMATION

3.1	<i>Permit Holder:</i>	Heleana Moore	3.2	<i>Permit Holder Affiliation:</i>	Tk'emlúps te Secwepemc
3.3	<i>Proponent Contact:</i>	Matt Milovick T: (250) 819-6316 E: mmilovick@tru.ca	3.4	<i>Proponent Affiliation:</i>	Thompson Rivers University, 805 TRU Way, Kamloops, BC V2C 0C8
3.5	<i>Interim Report Author(s):</i>	Robyn Oxley, B.A. (TteS NRD)			
3.6	<i>Interim Report Date &amp; Version:</i>	January 24, 2023 V1			
3.7	<i>Notification of Work Date:</i>	January 19, 2022			

### 4. PROPOSED DEVELOPMENT

4.1	<i>Description:</i>	Residential development
4.2	<i>Location:</i>	Thompson River University, Kamloops, BC
4.3	<i>NTS Mapsheet</i>	921/09

### 5. FIELD CREW

Table 1. Field Crew

<i>Date (dd/mm/yy)</i>	<i>Field Director (on site? Y/N)</i>	<i>Field Supervisor</i>	<i>Other Field Personnel</i>
11/04/22	Y	Robyn Oxley	Daren Thomas, Lanny Billy, Megan Anderson, Alexis Paul
12/04/22	Y	Robyn Oxley	Cade Hawkins-Bara, Alexis Paul, Daren Thomas, Hank Bennett

### 6. ARCHAEOLOGICAL METHODS & RESULTS

#### 6.1. Pre-field Methodology

- Archaeological potential and sites are indicated on the Study Area Map
- An AOA and /or archaeological predictive model exists for the study area

Details:

- Previous field studies influenced this assessment

Details: No previous archaeological studies have directly overlapped with the location, however nearby studies include BC Hydro SI-KAM-001 WKA Substation Duct Bank Egress DY0959 AIA, conducted by Ursus Heritage Consulting (HIP 2018-0025), and Thompson Rivers University 800 University Drive Archaeological Impact Assessment and McGill Corridor Phase 1 Archaeological Impact Assessment conducted by Tk'emlúps under HIP 2021-0151 in July 2021.

- Review of Provincial Heritage Register

Date Accessed: January 13, 2022

- Other

Details:

**Table 2. Archaeological Sites in the Vicinity of the Study Area**

<i>Borden No.</i>	<i>Distance &amp; Direction from the Proposed Development</i>	<i>Site Type</i>	<i>Permit No. of Previous Visits</i>	<i>Site in Conflict (Y/N)</i>
EeRc-43	656 m N	Historic Chinese Cemetery	Non-permit	N
EeRc-58	820 m N	Subsurface artifacts, worked fauna; ancestral burial	1997-0004	N
EeRc-134	635 m N	Subsurface lithics	2018-0025	N
EeRc-135	730 m NNW	Subsurface lithics	2018-0025	N

## 6.2. In-field Methodology

- Auger tests measuring a minimum of 41cm diameter

Date Assessed: April 11-12, 2022

Describe if other: A 41 cm diameter auger bit was used to excavate subsurface tests spaced on a 10 m grid; test sediments were screened through 6mm mesh. All materials were returned into the drilled holes after screening occurred.

6.2.1	<i>Number of Crew Members:</i>	5-6	6.2.2	<i>Crew Spacing:</i>	<i>Not applicable</i>
6.2.3	<i>Other:</i>	See above			

## 6.3. In-field Observations

Prior to fieldwork, the project area was subject to a desktop-based review. The office review determined that the project location (Figure 1) displays moderate to high archaeological potential due to the close proximity of previously recorded archaeological sites (4 sites within

1 km) and a major hydrological feature (Guerin Creek) that runs southwest to north-northeast, adjacent to the northwestern extent of the project area. A review of satellite imagery (Google Earth) revealed the southern extent of the footprint has been developed and paved over, but the northern half is an open field. Aerial photography (City of Kamloops Map Series Through the Years, 1928-2020) shows impacts to project area with the development of Summit Drive to the west of the project footprint, and university housing developments to the east and south. The aerial imagery also indicates major changes in the project area between 1982 and 1994, however due to resolution it was not clear at the time if sediments had been imported or if the location had been levelled off, and to what extent.

Fieldwork commenced on April 11-12, 2022, with a pedestrian survey to inspect the project surface area. One auger test area was identified in the northern half of the project footprint in a level to gently sloping field overlooking Guerin Creek to the north. The remaining terrain within the footprint is heavily disturbed and capped with cement or pavement.

Previous disturbances in the auger test area included utilities that are concentrated to the south and southwestern sides, a fence line that runs along the north and eastern edge, and trails that run through the field. A BC One Call (conducted March 24, 2022) revealed that BC Hydro, Fortis, and Zayo Canada have utilities in the area, and ensuing locates were obtained so that the crew could avoid any impacts to highly dangerous lines.

Vegetation consisted of abundant sage brush, crested wheat grass, and rabbit brush. Non-native plants for lawns and gardens line the existing student housing to the southeast.

Tests were laid out at 10 m or less intervals, using both grid and judgmental placing as per the discretion of the Field Director. Several tests were relocated to avoid utilities marked by the locator. Sediments consisted mainly of medium grey-brown silts and sands with little to no inclusions. Sediments were screened through a 6 mm mesh and all tests were negative for cultural material.

## 6.4. Results

**Table 3. Assessment Results**

Subsurface Testing	Description	Location (UTM)	Dimensions (L x W)	Subsurface tests		
				Total	Pos	Neg
Subsurface Test Area (STA) 1	STA 1 is a level to gently sloping terrace overlooking Guerin Creek to the north. 54 tests were laid were laid out in a 10 m grid, with some tests moved judgementally to avoid utilities. 18 tests were excavated to delineate two potential positive	10 U E686676.7, N5616625.5 (AT 24)	85 m N-S X 50 m E-W	72	0	72

	tests which were later deemed to be negative.					
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A total of 72 tests were excavated within the proposed development, of which none were positive for cultural materials (Appendix A). No protected archaeological sites or resources were identified within the areas of the proposed development that were accessible to archaeological investigation.

Upon completion of field work, a geotechnical report (Telford Geotechnical 2022) indicated that sediments had been imported from the local area and laid down within the project area (Appendix B). Intact sediments including the original topsoil were observed within the geotechnical tests 3.8 to 5.8 m below the current surface. Currently the extent of excavation for the proposed project will not reach intact sediments. If the extent of excavation should increase to impact these sediments, additional archaeological work is recommended.

The remainder of the project area is capped by cement and pavement and will not be impacted by the development, therefore no further archaeological work is required if the development does not exceed the imported fill deposits.

The lack of archaeological materials identified during the field assessments is not an indication of the absence of Secwépemc people on the landscape. Although this archaeological investigation did not impact intact sediments, displaced local sediments also have the potential to contain archaeological deposits. Therefore, in the event that cultural materials are discovered over the course of the future proposed construction activities, all work should stop in the vicinity of the find and the Archaeology Branch and Tk'emlúps te Secwépemc Natural Resource Department be notified immediately.

## 7. DISCLOSURE STATEMENT & SIGNATURE

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*This report has been prepared using Archaeology Branch Interim Permit Reporting Procedures (issued 23 March 2004), as well as the BCAPA Standards of Reporting for Interim Archaeological Impact Assessment Reports.*

*Archaeological sites (physical evidence of past human activity) on provincial lands in British Columbia are protected and managed by the following provincial legislation:*

*Heritage Conservation Act (RSBC 1996, c.187): Archaeological sites are protected and managed by this Act, which states that an archaeological site is automatically protected and requires management if it: (1) predates AD 1846, (2) is of indeterminate origin and may predate AD 1846, (3) is rock art or a burial place of archaeological/historic significance, (4) is a heritage ship or aircraft wreck, or (5) has been designated as a Provincial Heritage site.*

*Protected archaeological sites may not be altered or disturbed in any manner without a permit issued under Sections 12 or 14 of the Heritage Conservation Act. In addition, heritage sites of*

*Aboriginal origin not automatically protected by the HCA may still be an interest which a First Nation wishes to discuss in the engagement process.*

*Users of this report should be aware that even the most thorough investigation may fail to reveal all archaeological remains, including sites protected by the Heritage Conservation Act, which may exist within a development location. Readers should be aware that: (1) archaeological remains in BC are protected from disturbance, intentional or inadvertent; (2) in the event that archaeological remains are encountered, ground disturbance in the immediate vicinity must be suspended at once; (3) it is the individual's responsibility to inform the Archaeology Branch, as soon as possible, about the location of the archaeological remains and the nature of the disturbance; and (4) the HCA can impose heavy fines and imprisonment for failing to comply with these regulations.*

*Tk'emlúps te Secwepemc  
Natural Resources Department*

*Prepared by:*



*Robyn Oxley  
Archaeologist  
robyn.oxley@ttes.ca*

*Senior reviewer:*



*Leslie LeBourdais  
Assistant Manager, NRD  
Leslie.lebourdais@ttes.ca*

## 8. REFERENCES CITED

City of Kamloops

2022 Kamloops Through the Years 1928-2020 Map Series. *Kamloops.maps.arcgis.com*,  
[kamloops.maps.arcgis.com/apps/MapSeries/index.html?appid=1b003d8208e844188a3939e895b86489](http://kamloops.maps.arcgis.com/apps/MapSeries/index.html?appid=1b003d8208e844188a3939e895b86489).

Teford Geotechnical

2022 Geotechnical Investigation Report – TRU East Village Student Housing 620 Dalgleish Drive, Kamloops, BC.

Tk'emlúps te Secwepemc

2021 AIA of Thompson Rivers University 800 University Drive Proposed Commercial and Residential Development, Kamloops, Permit #2021-0151.

Tk'emlúps te Secwepemc

2021 AIA of Thompson Rivers University McGill Corridor Phase 1 Proposed Residential Development, Kamloops, Permit #2021-0151.

Ursus Heritage

2018 AIA of BC Hydro SI-KAM-001 WKA Substation Duct Bank Egress DY0959, Kamloops, Permit #2018-0025.

## 9. SHAPE FILES

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- Study area shape files have been sent to [archsiteform@gov.bc.ca](mailto:archsiteform@gov.bc.ca)

## 10. APPENDICES

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### Required:

- General Area Map
- Study Area Map
- Photo Plate(s)

### If Applicable:

- Detailed Development Map
- Subsurface Test Log
- Site Forms, Site Maps and Related Documents
- Other Details: *Telford Geotechnical Investigation Report*



Photo 1: view south-southwest across auger test area. Tests marked out with pink flags.



Photo 2: view north-northwest across auger test area. Geotechnical pads visible in frame (light brown silty patches on surface).



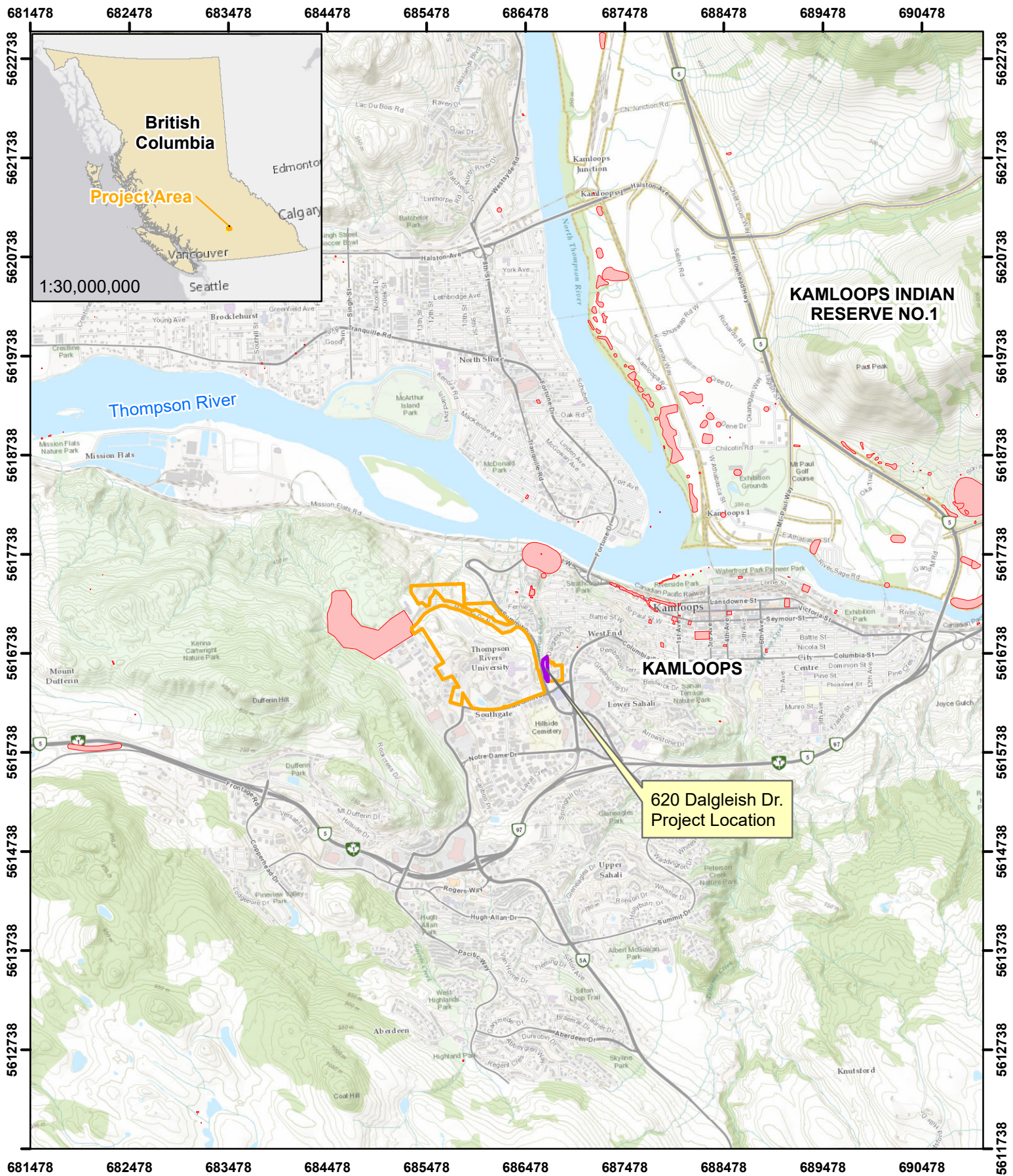


Photo 3: view to stratigraphy in AT 10.



Photo 4: view to stratigraphy in AT 43.





**Figure 1. Permit Area Overview Map**  
**Project: Archaeological Impact Assessment**  
**620 Dalglish Drive**

**Client: Thompson Rivers University**  
**General Location: Kamloops, BC**  
**Mapsheet #: 921.069**  
**HCA Permit #: 2021-0151**


**Legend**

- Permit Area
- Project Location
- Previously Recorded Archaeological Site Boundary

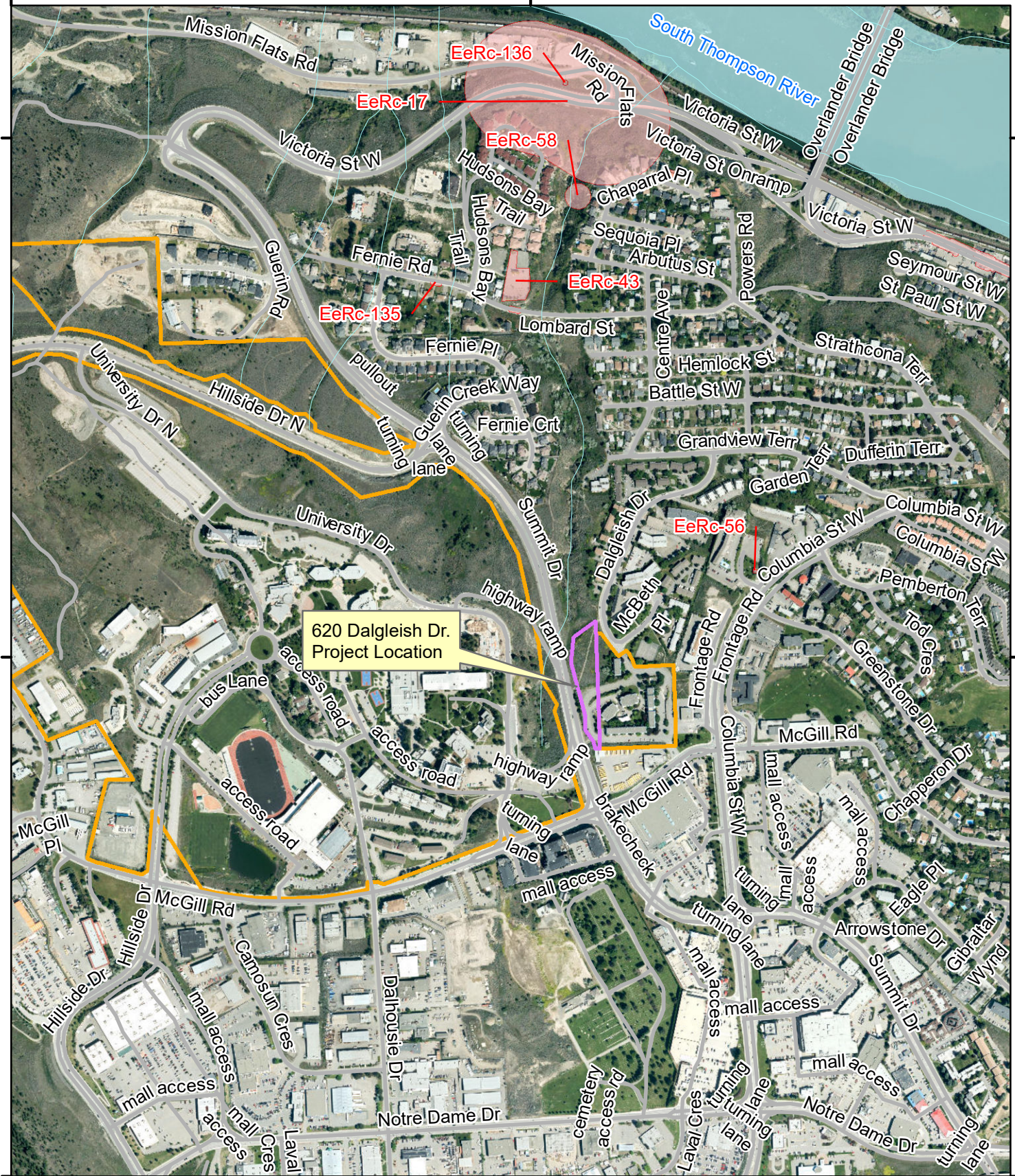
Data Source: TteS NRD, MFLNR, GeoBC, TRU  
 BC Archaeology Branch, ESRI Topographic Basemap  
 Coordinate System: NAD 83  
 UTM Zone 10N

0    0.5    1  
 Kilometers

1:50,000

  
 Date: 2022-12-11





**Figure 2. Midrange Location Map**  
**Project: Archaeological Impact Assessment**  
**620 Dalglish Drive**

**Client: Thompson Rivers University**  
**General Location: Kamloops, BC**  
**NTS Mapsheet #: 921/09**  
**HCA Permit #: 2021-0151**

**Legend**

- Permit Area
- Project Location
- Previously Recorded Archaeological Site Boundary
- Road
- Stream
- River

Data Source: TteS NRD, MFLNRO, GeoBC, TRU  
 BC Archaeology Branch, ESRI Basemap  
 Coordinate System: NAD 83  
 UTM Zone 10N

0 125 250 Meters

1:10,000

Date: 2022-12-11



686570

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5616548

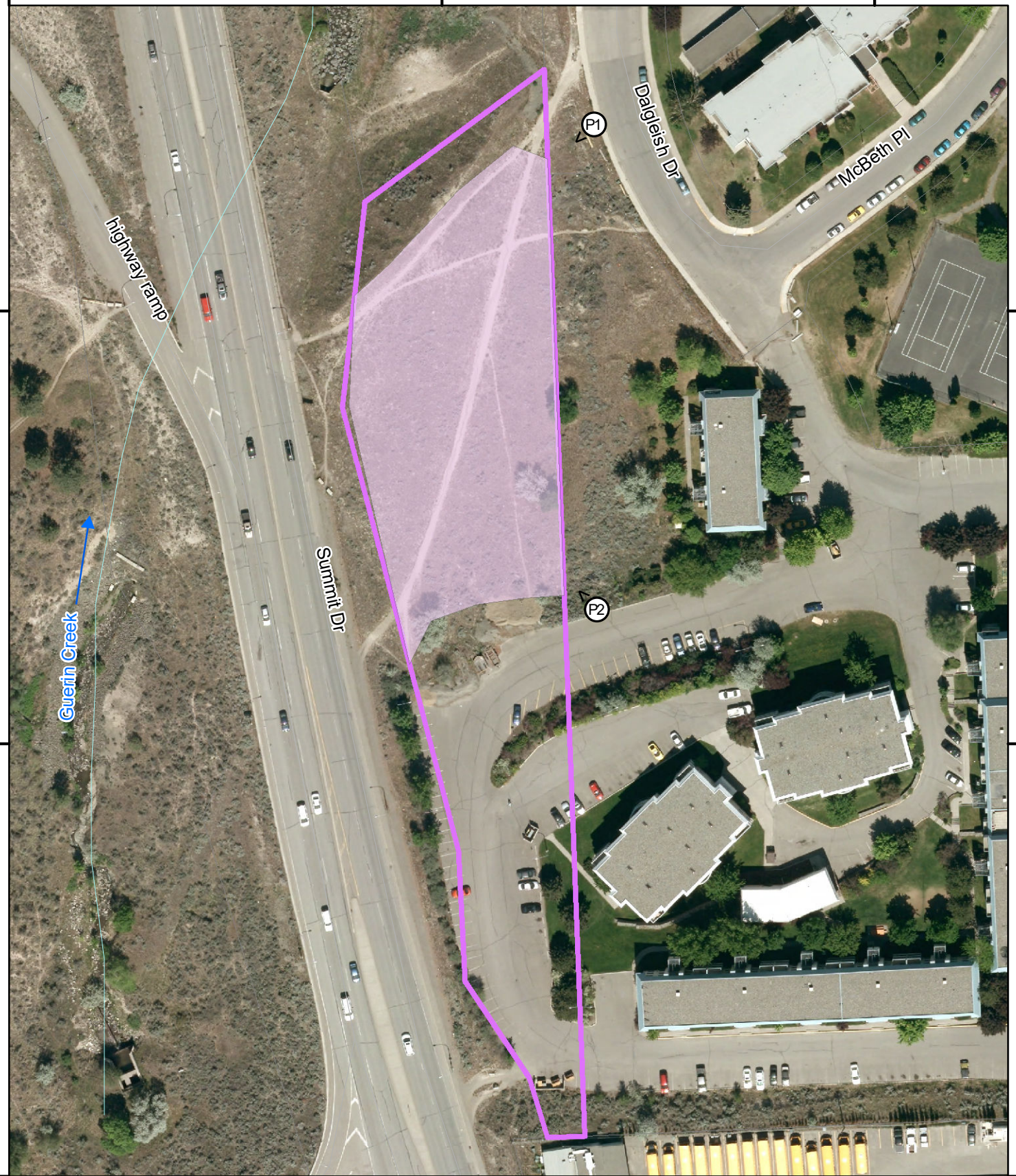
5616548

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**Figure 3. Project Area Overview**  
**Project: Archaeological Impact Assessment**  
**620 Dalgleish Drive**

**Client: Thompson Rivers University**  
**General Location: Kamloops, BC**  
**NTS Mapsheet #: 92I/09**  
**HCA Permit #: 2021-0151**

**Legend**

Photo Location and Direction	Road
Subsurface Test Area	Stream
Project Location	Parcel Boundary

Data Source: TteS NRD, MFLNRO, GeoBC, TRU  
 BC Archaeology Branch, City of Kamloops 2012 Orthophoto  
 Coordinate System: NAD 83  
 UTM Zone 10N

1:1,200

Date: 2022-12-12





**Figure 4. Detailed Results Map ATA1**  
**Project: Archaeological Impact Assessment**  
**620 Dalgleish Drive**

**Client: Thompson Rivers University**  
**General Location: Kamloops, BC**  
**NTS Mapsheet #: 92I/09**  
**HCA Permit #: 2021-0151**

**Legend**

Photo Location and Direction	Road
Negative Auger Test (41cm diameter)	Stream
Subsurface Test Area	Parcel Boundary

Data Source: TteS NRD, MFLNRO, GeoBC, TRU  
 BC Archaeology Branch, City of Kamloops 2012 Orthophoto  
 Coordinate System: NAD 83  
 UTM Zone 10N

1:600

Date: 2022-12-12



# Appendix A

## Test Recording Form

Prop.:	Thompson Rivers University	Project Name:	620 Dalglish AIA				Loc.:	620 Dalglish Drive, Kamloops			
Date(s):	April 11 - 12, 2022	Field Supervisor:	Robyn Oxley				GPS:				
Crew:	Robyn Oxley, Daren Thomas, Alexis Paul, Hank Bennett, Megan Anderson, Leonard Billy, Cade Hawkins-Bara										
Test #	STA	Type	Intls	P/N	DBS	GPS	Deb.	Tool	Fanl	Hist	Matrix/ Comments
1	1	Auger	MA	Neg.	1.80	Arrow					0 - 0.24 m: medium brown mixed sand and silt, moderate compaction, with 20% gravels. Disturbed. 0.24 - 0.66m: medium grey brown medium grain silt with some sand, slight compaction, and <5% inclusion. 0.66 - 1.60m: medium grey brown slightly silty medium grain sand, slightly compact, 5% pebbles from 1.30-1.40m.
2	1	Auger	AP	Neg.	1.80	Arrow					Similar to AT 1, no inclusions at 1.3m.
3	1	Auger	LB	Neg.	1.80	Arrow					Similar to AT 1. Modern disturbance from 0-0.5m.
4	1	Auger	MA	Neg.	1.80	Arrow					Similar to AT 1.
5	1	Auger	AP	Neg.	1.80	Arrow					Similar to AT 1.
6	1	Auger	LB	Neg.	1.80	Arrow					Similar to AT 1. Modern disturbance from 0-0.15m.
7	1	Auger	DT/RO	Neg.	1.80	Arrow					Similar to AT 1.
8	1	Auger	MA	Neg.	1.80	Arrow					Similar to AT 1.
9	1	Auger	LB	Neg.	1.80	Arrow					Test excavated within geotechnical disturbance. Sediments not disturbed past 30 cm dbs (test on edge of pad). Similar to AT 1.



# Appendix A

## Test Recording Form

Prop.:	Thompson Rivers University		Project Name:	620 Dalgleish AIA			Loc.:	620 Dalgleish Drive, Kamloops			
Date(s):	April 11 - 12, 2022		Field Supervisor:	Robyn Oxley			GPS:				
Crew:	Robyn Oxley, Daren Thomas, Alexis Paul, Hank Bennett, Megan Anderson, Leonard Billy, Cade Hawkins-Bara										
Test #	STA	Type	Intls	P/N	DBS	GPS	Deb.	Tool	Fanl	Hist	Matrix/ Comments
10	1	Auger	AP	Neg.	1.80	Arrow					0 - 0.25 m: medium grey brown mix silt and sand. 0.25 - 0.95 m: light grey brown sandy silt, compacted, with <1% inclusions. 0.95 - 1.60 m: light grey brown silty sand, loose, <1% inclusions.
11	1	Auger	DT/RO	Neg.	1.80	Arrow					0 - 0.25 m: medium grey brown mix silt and sand. 0.25 - 0.95 m: light grey brown sandy silt, compacted, with <1% inclusions. 0.95 - 1.55 m: light grey brown silty sand, loose, <1% inclusions. 1.55 - 1.80 m: beachy sand, loose, no inclusions.
12	1	Auger	DT/RO	Neg.	1.80	Arrow					Similar to 11, except 0-0.80 m mixed medium to coarse sand.
13	1	Auger	LB	Neg.	1.80	Arrow					Similar to 11.
14	1	Auger	MA	Neg.	1.80	Arrow					Similar to 11.
15	1	Auger	LB	Neg.	1.80	Arrow					Similar to 11.
16	1	Auger	AP	Neg.	1.80	Arrow					Similar to 1.
17	1	Auger	MA	Neg.	1.80	Arrow					Similar to 10.





# Appendix A

## Test Recording Form

Prop.:	Thompson Rivers University		Project Name:	620 Dalglish AIA			Loc.:	620 Dalglish Drive, Kamloops			
Date(s):	April 11 - 12, 2022		Field Supervisor:	Robyn Oxley			GPS:				
Crew:	Robyn Oxley, Daren Thomas, Alexis Paul, Hank Bennett, Megan Anderson, Leonard Billy, Cade Hawkins-Bara										
Test #	STA	Type	Intls	P/N	DBS	GPS	Deb.	Tool	Fanl	Hist	Matrix/ Comments
18	1	Auger	LB	Neg.	1.80	Arrow					0 - 0.04 m: littermat. 0.04 - 0.80 m: medium grey brown medium to coarse sandy silt, moderate compaction, with <5% inclusions. 0.80 - 1.35 m: medium grey brown medium to coarse silty sand, slightly compact, <1% pebbles. Sand increased with depth. 1.35 m +: sloughing due to loose sand.
19	1	Auger	AP	Neg.	1.80	Arrow					Similar to 18. 0-0.30 m: modern disturbance.
20	1	Auger	RO	Neg.	1.80	Arrow					Similar to 18. 0-0.30 m: modern disturbance.
21	1	Auger	MA	Neg.	1.80	Arrow					Similar to 18. 0-0.30 m: modern disturbance.
22	1	Auger	LB	Neg.	1.80	Arrow					Similar to 18. 0-0.20 m: modern disturbance.
23	1	Auger	AP	Neg.	1.80	Arrow					Within geotechnical pad. Sediments are mixed sand and silt.
24	1	Auger	MA	Neg.	1.80	Arrow					Similar to 10.
25	1	Auger	CHB/AP	Neg.	1.80	Arrow					Similar to 12.
26	1	Auger	CHB/AP	Neg.	1.80	Arrow					Similar to 12.
27	1	Auger	MA	Neg.	1.80	Arrow					Similar to 12.





# Appendix A

## Test Recording Form

Prop.:	Thompson Rivers University		Project Name:	620 Dalgleish AIA			Loc.:	620 Dalgleish Drive, Kamloops			
Date(s):	April 11 - 12, 2022		Field Supervisor:	Robyn Oxley			GPS:				
Crew:	Robyn Oxley, Daren Thomas, Alexis Paul, Hank Bennett, Megan Anderson, Leonard Billy, Cade Hawkins-Bara										
Test #	STA	Type	Intls	P/N	DBS	GPS	Deb.	Tool	Fanl	Hist	Matrix/ Comments
28	1	Auger	CHB/AP	Neg.	1.80	Arrow					0 - 0.06 m: littermat. 0.06 - 0.32 m: mixed sand and silt, loose and disturbed. 0.32 - 0.97 m: medium grey brown silt with some sand, moderate compaction, <5% inclusions. 0.97 - 1.27+ m: loose beachy sand. Sloughing.
29	1	Auger	LB	Neg.	1.80	Arrow					Similar to 28.
30	1	Auger	MA	Neg.	1.80	Arrow					Similar to 12.
31	1	Auger	AP	Neg.	1.80	Arrow					Similar to 10.
32	1	Auger	CHB/DT	Neg.	1.80	Arrow					Similar to 18.
33	1	Auger	DT	Neg.	1.80	Arrow					Similar to 10; imported crush material 0-0.28 m.
34	1	Auger	CHB/AP	Neg.	1.80	Arrow					0 - 0.05 m: littermat. 0.05 - 0.86 m: fill and mixed sand and silt, moderate compaction, with 30% pebbles and crush. 0.86 - 1.25 m: medium grey brown sandy silty becoming silty sand, moderate compaction, <1% inclusions. Sloughing after 1.25 m.
35	1	Auger	LB/MA	Neg.	1.80	Arrow					Similar to 34.
36	1	Auger	DT/RO	Neg.	1.80	Arrow					Similar to 43.
37	1	Auger	DT/RO	Neg.	1.80	Arrow					Similar to 43.



# Appendix A

## Test Recording Form

Prop.:	Thompson Rivers University		Project Name:	620 Dalglish AIA			Loc.:	620 Dalglish Drive, Kamloops			
Date(s):	April 11 - 12, 2022		Field Supervisor:	Robyn Oxley			GPS:				
Crew:	Robyn Oxley, Daren Thomas, Alexis Paul, Hank Bennett, Megan Anderson, Leonard Billy, Cade Hawkins-Bara										
Test #	STA	Type	Intls	P/N	DBS	GPS	Deb.	Tool	Fanl	Hist	Matrix/ Comments
38	1	Auger	LB/MA	Neg.	1.80	Arrow					Similar to 34, with mixed organicy sediments from 0-0.33 m.
39	1	Auger	DT/RO	Neg.	1.80	Arrow					Similar to 43.
40	1	Auger	LB/MA	Neg.	1.80	Arrow					Similar to 28.
41	1	Auger	DT/RO	Neg.	1.80	Arrow					Similar to 28.
42	1	Auger	HB	Neg.	1.80	Arrow					Similar to 43.
43	1	Auger	AP	Neg.	1.80	Arrow					0 - 0.05 m: littermat. 0.05 - 1.80 m: very disturbed; mixed medium grey brown silty medium to coarse sand, moderate compaction. <1% inclusions. Styrofoam observed in wall at 90cm dbs.
44	1	Auger	HB	Neg.	1.80	Arrow					Similar to 43 with 20% angular and subangular pebbles from 0-0.60 m.
45	1	Auger	HB	Neg.	1.80	Arrow					Similar to 43.
46	1	Auger	RO	Neg.	1.80	Arrow					Similar to 43.
47	1	Auger	DT	Neg.	1.80	Arrow					Similar to 43.
48	1	Auger	AP	Neg.	1.80	Arrow					Similar to 43.
49	1	Auger	HB	Neg.	1.80	Arrow					0 - 0.06 m: littermat. 0.06 - 0.94 m: medium brown medium grain sandy silt, compact, with 15% angular to subangular pebbles. 0.94 - 1.82 m: medium grey brown silty medium grain sand, moderate compaction, with 1% pebbles.
50	1	Auger	DT	Neg.	1.80	Arrow					Similar to 49.



# Appendix A

## Test Recording Form

Prop.:	Thompson Rivers University	Project Name:	620 Dalglish AIA				Loc.:	620 Dalglish Drive, Kamloops			
Date(s):	April 11 - 12, 2022	Field Supervisor:	Robyn Oxley				GPS:				
Crew:	Robyn Oxley, Daren Thomas, Alexis Paul, Hank Bennett, Megan Anderson, Leonard Billy, Cade Hawkins-Bara										
Test #	STA	Type	Intls	P/N	DBS	GPS	Deb.	Tool	Fanl	Hist	Matrix/ Comments
51	1	Auger	AP	Neg.	1.80	Arrow					Similar to 43.
52	1	Auger	HB	Neg.	1.80	Arrow					Similar to 10.
53	1	Auger	HB	Neg.	1.80	Arrow					Similar to 10.
54	1	Auger	DT	Neg.	1.80	Arrow					Similar to 10.
55	1	Auger	CHB	Neg.	1.80	Arrow					Similar to 10.
56	1	Auger	AP	Neg.	1.80	Arrow					Similar to 10.
57	1	Auger	DT	Neg.	1.80	Arrow					Similar to 10.
58	1	Auger	HB	Neg.	1.80	Arrow					Similar to 10.
59	1	Auger	AP	Neg.	1.80	Arrow					Similar to 10.
60	1	Auger	RO	Neg.	1.80	Arrow					Similar to 17.
61	1	Auger	HB	Neg.	1.80	Arrow					Similar to 17.
62	1	Auger	DT / CHB	Neg.	1.80	Arrow					Similar to 10.
63	1	Auger	HB	Neg.	1.80	Arrow					Similar to 10.
64	1	Auger	AP / CHB	Neg.	1.80	Arrow					Similar to 10.
65	1	Auger	HB	Neg.	1.80	Arrow					Similar to 17.
66	1	Auger	DT	Neg.	1.80	Arrow					Similar to 10.
67	1	Auger	RO / CHB	Neg.	1.80	Arrow					Similar to 10.
68	1	Auger	HB	Neg.	1.80	Arrow					Similar to 10.
69	1	Auger	AP	Neg.	1.80	Arrow					Similar to 17.
70	1	Auger	HB	Neg.	1.80	Arrow					Similar to 17.
71	1	Auger	DT / CHB	Neg.	1.80	Arrow					Similar to 17.
72	1	Auger	HB / AP	Neg.	1.80	Arrow					Similar to 17.
<b>Artifact Totals:</b>							<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	

**Summary Table:**

Total Tests:	<b>72</b>
--------------	-----------



# Appendix A

## Test Recording Form

Prop.:	Thompson Rivers University	Project Name:	620 Dalglish AIA				Loc.:	620 Dalglish Drive, Kamloops			
Date(s):	April 11 - 12, 2022	Field Supervisor:	Robyn Oxley				GPS:				
Crew:	Robyn Oxley, Daren Thomas, Alexis Paul, Hank Bennett, Megan Anderson, Leonard Billy, Cade Hawkins-Bara										
Test #	STA	Type	Intls	P/N	DBS	GPS	Deb.	Tool	Fanl	Hist	Matrix/ Comments
Total Positive Tests:		<b>0</b>									
Min Test Depth (m):		<b>1.80</b>									
Max Test Depth (m):		<b>1.80</b>									
Average Test Depth:		<b>1.80</b>									

TRUE Consulting  
2079 Falcon Road  
Kamloops, BC  
V2C 4J2

March 23, 2022  
File: 1050

Attention: Vince Boire, ASCT

**Re: Geotechnical Investigation Report – TRU East Village Student Housing  
620 Dalglish Drive, Kamloops, BC**

## **1.0 INTRODUCTION**

We understand that it is proposed to construct 2 to 3 student housing buildings at the address listed above. The buildings are proposed to be of modular wood framed construction up to 5 stories in height and could possibly contain 1 level of underground parking. Telford Geotechnical Ltd. was retained by TRUE Consulting to undertake a geotechnical investigation to review the subsurface conditions at the development site. The location and orientation of the housing units within the property footprint were not determined at the time of this report.

This report presents the results of the geotechnical investigation at the proposed development site and provides preliminary geotechnical recommendations for the design and construction of the project. It has been prepared exclusively for TRUE Consulting., for their use, the use of others on their design team, and the City of Kamloops for use in the development permitting process; however, this report remains the property of TGL.

## **2.0 SITE DESCRIPTION**

The project site encompasses the northern portion of two properties: 620 Dalglish Drive and 704 McGill Road. The site is located on the west side of Dalglish Drive, and it is bordered by Thompson Rivers University (TRU) East Village housing to the south, Summit Drive to the west, and Guerin Creek to the north.

The site contains an existing four-storey student housing building on the southeast corner. The remainder of the site is vegetated with weeds, sagebrush, and some trees. Overall, the site has a gentle slope from the south to the north. There is a steep slope along the north edge of the site that slopes down towards Guerin Creek at an angle of approximately 35 degrees with an elevation difference of approximately 13 m.

Based on a review of historical imagery available on the City of Kamloops GIS, fills were placed on the site between the years of 1969 to 1994, beginning on the east side of the site. The north and west sides of the site including the original Guerin Creek channel were later filled in the 1980's and 1990's.

### **3.0 FIELD INVESTIGATION**

The subsurface conditions were investigated on October 27, 2021, using a tracked excavator supplied and operated by Taylor & Sons from Kamloops, BC. Five test pits were excavated between depths of 2.5 to 4.2 m below the existing site grades.

A secondary investigation was conducted on January 17, 2022, using a track-mounted auger drill supplied and operated by Southland Drilling from Delta, BC. Seven test holes were advanced between depths of 9.1 to 13.0 m. Dynamic Cone Penetration Tests (DCPT's) were advanced in some of the test holes to assess the relative density of the soils. The DCPT is comprised of a 55 mm blunt nosed cone that is driven into the soil with a 63.5 kg drop hammer from a controlled height of 760 mm and provides results similar to the Standard Penetration Test.

The test pits and test holes were logged in the field by an engineer from our office. Select disturbed samples were collected for routine index testing of the soil's fines and moisture content. Following the logging and sampling, the test pits were loosely backfilled, and the test holes were backfilled with cuttings and bentonite chips.

The test hole and test pit locations are shown on our drawing 1050-01, included with this report.

### **4.0 SUBSURFACE CONDITIONS**

#### **4.1 Soil Profile**

The soil profile generally consisted of topsoil over thick layers of fill, followed by sand and silt deposits overlying glacial till and bedrock. The surficial topsoil was generally less than 0.3 m thick at the investigation locations.

Fills were encountered at every test location underlying the surficial topsoil. The fills varied in composition and density across the site. A thin layer of buried topsoil was encountered below the fills in TH22-01, TH22-07, and TP21-04, and anthropogenic material such as plastic, asphalt, and wood debris was encountered in some of the fills. In general, it was difficult to distinguish the exact interface between the fills and native soils in some of the test holes due to the similar color and soil types. It is assumed that the fills were originally sourced from a site nearby.

On the east side of the site, the fills were characterized as stiff to very stiff silts with a relatively consistent composition and density, to depths of 5.2 to 6.9 m below the existing site grades (TH22-04, TH22-07). A trace amount of discontinuous topsoil was found at a depth of 4.5 m in TH22-04. The fills on the north side of the site extended to a depth of 4.9 m below the site grades (TH22-01) and were primarily characterized as dense to very dense sand with trace amounts of asphalt and wood debris. The fills on the west side of the site were characterized as a loose to very loose dry sand and extended to depths of 4.3 to 5.8 m below the site grades (TP21-01, TH22-03).

Silt, sandy silt, silty sand, and gravelly silt layers were encountered under the fills. The density of the native material varied from compact/firm to very dense/very stiff, with some soft pockets encountered. This material overlays very stiff to hard glacial till that was generally characterized as a dark greyish brown sandy silt with some gravel. The depth to glacial till ranged from 7.0 to 10.7 m below the existing grades. Bedrock was encountered below the glacial till in some of the test holes.

A detailed description of the test pit and test hole logs is provided in Appendix A and B, respectively. The results of the laboratory testing are presented in Appendix C of this report.

## **4.2 Groundwater Conditions**

Groundwater was encountered in test holes TH22-01, 04, 06 and 07 at depths of 8.4 to 11.0 m below the existing grades.

## **5.0 DISCUSSION**

### **5.1 General Comments**

In general, fills that have been placed without documented density monitoring are not recommended for the support of building foundations (BC Building Code [BCBC], 2018). In our opinion, building foundations would be susceptible to differential settlements if supported by the fills due to the variation in composition, density, and presence of anthropogenic material encountered in the fill. Additionally, some soft layers of material in the native soil strata were encountered below the fills, which may be subject to consolidation and settlement under the applied loads. The depth of the fills and loose native soils ranges from 7.3 to 9.6 m at our test hole locations, with greater depths on the north side of the site.

Soil remediation (removing fills and unsuitable soils and replacing with engineered fills) is not recommended due to the depth of remediation required and the proximity of the site to Summit Drive and the existing student housing building.

It is recommended that the building loads are supported by deep foundations (piles) bearing on the hard glacial till or bedrock.

Following our review, we are of the opinion that the proposed development is feasible from a geotechnical standpoint provided that our recommendations are followed.

### **5.2 Liquefaction Analysis**

It is generally accepted that loose to compact saturated sands and non-plastic silts are prone to liquefaction or strain softening during cyclic loading caused by large magnitude long duration earthquakes. The strength reduction caused by soil liquefaction can cause foundations to punch. Furthermore, once liquefaction has been triggered, experience has shown that significant, permanent vertical and horizontal movements may be experienced. The dense till like soils and bedrock underlying this site are not considered prone to liquefaction.

## **6.0 RECOMMENDATIONS FOR DEVELOPMENT**

### **6.1 Site Preparations**

The recommended site preparations include the removal of the surficial topsoil and any unsuitable soils encountered. The stripped subgrade should be proof rolled to locate any soft areas, or loose zones. Any areas identified would have to be over excavated and replaced with granular materials or re-compacted to the required density.

The recommended stripping depths for the site are shown in Table 1 below.

**Table 1: Site Stripping Depths**

Investigation Location	Depth (m)	Investigation Location	Depth (m)
TP21-01	1.5	TH22-02	1.5
TP21-02	0.9	TH22-03	1.2
TP21-03	0.5	TH22-04	0.5
TP21-04	1.0	TH22-05	1.5
TP21-05	1.5	TH22-06	0.5
TH22-01	0.9	TH22-07	0.5

The red values indicate areas where a non-woven geotextile may be required to be placed on the subgrade to strengthen it, due to the soft/loose soils encountered. The stripping depths are referenced from our investigation locations and that the thickness of unsuitable soils is expected to vary across the site.

Any grade reinstatement beneath the site should consist of engineered fill. In the context of this report, engineered fill refers to imported granular fill that is free from debris and organics.

The granular fills are recommended to be compacted in 300 mm loose lifts with a vibratory drum roller to a minimum of 100% Standard Proctor maximum dry density. It is expected that the fills will be required to be moisture-conditioned to achieve the desired level of compaction. The fills should also be re-compacted and wetted if allowed to dry out. In-situ nuclear density tests should be conducted during the site filling to ensure that the fill is being compacted properly.

## 6.2 Pile Foundations

As noted, over-excavation of the fills and unsuitable soils and replacing them with engineered fill is not considered practical or economical, therefore the buildings are recommended to be supported on pile foundations. The depth of the fills and loose native soils ranges from 7.3 to 9.6 m at our test hole locations, with greater depths on the north side of the site. The piles are expected to achieve their design capacity when driven 1.5 m into the glacial till. It should be noted that the depth to glacial till is referenced from the test hole locations and may vary across the site.

Our preliminary analysis indicates that an 8 and 10 inch (219 and 273 mm O.D.) diameter pipe pile when driven into the dense glacial till, or bedrock should contain a factored axial geotechnical resistance at Ultimate Limit State (ULS) of 325 and 400 kN (73 and 90 kips) respectively using a geotechnical resistance factor of 0.4. The post-construction settlement of properly installed piles is expected to be less than 25 mm.

It is recommended to perform a pile driving analysis (PDA) on a representative number of piles to determine the pile capacity, pile driving criteria, stresses during driving, hammer efficiency, and shaft integrity. If PDA testing is performed, a geotechnical resistance factor of 0.5 can be used. The use of pile shoes may be required based on the soil/driving conditions encountered during installation.



Provided piles are installed at least 2.5 pile diameters, centre to centre, from each other it can be assumed for design purposes that they would act as individual piles with no group effects. TGL can provide a reduced axial load if piles are spaced closer than specified.

The exterior grade beams should be buried at least 1200 mm for frost protection or protected with insulation against frost penetration. The use of sulphate resistant concrete is recommended for any below grade foundations.

### **6.3 Seismic Design of Foundations**

The soils underlying this site, as defined in Table 4.1.8.4.A. of the 2018 BC Building Code are classified as Site Class C.

### **6.4 Setback from Existing Slopes**

The proposed buildings should be setback a minimum of 12 m from the existing slope on the north side of the site.

### **6.5 Temporary Excavation Slopes**

We would expect that temporary slopes cut at 1H:1V can be constructed in the existing fills and native material. The temporary excavation slopes in loose sand fills should be a maximum of 2H:1V. Temporary cut slopes more than 1.2 m in height require inspection by a professional engineer in accordance with WorkSafe BC guidelines.

### **6.6 Grade Supported Floor Slabs**

It is recommended that the floor slab be directly underlain by a polyethylene moisture barrier and 100 mm of 19 mm clear crush gravel to inhibit upward migration of moisture beneath the slab.

To provide suitable support for any concrete slabs-on-grade, we recommend that any grading fills placed under the slab should be compacted in 200 mm loose lifts to a minimum of 98% SPMDD.

### **6.7 Site and Foundation Drainage Systems**

A perimeter drain should be provided for all below grade interior spaces in accordance with the 2018 BCBC. It is recommended that the drain tile be covered with a minimum of 150 mm of clear drain rock and a non-woven geotextile fabric. The perimeter drains should be connected to the municipal storm system with a backflow valve. It is recommended that the roof drains be discharged into the municipal storm water system. The areas surrounding the buildings should be sloped away with a minimum gradient of at least 2% to prevent ponding of water near the buildings.

### **6.8 Earth Pressures on Foundation Walls**

We recommend that the foundation walls be designed to resist a static triangular soil pressure distribution of  $5.0 H$  (kPa), where  $H$  is equal to the total wall height in metres. The dynamic loading induced by the 2018 BCBC design earthquake should be added to the static loads and should be taken as  $1.5 H$  (kPa)

inverted triangular soil pressure distribution. The dynamic earth pressure is based upon unfactored soil parameters and that the walls are backfilled with a compacted free draining sand and gravel fill.

## 7.0 ON-SITE ROADS

### 7.1 Construction Materials

It is assumed that the specifications for granular materials for backfill, pipe bedding and compaction requirements for trenches will meet the requirements of the Master Municipal Specifications Construction Documents (MMCD) and the City of Kamloops Amendments to the MMCD.

### 7.2 Site Preparation

Following the recommended site preparation noted in Section 6.1 the road subgrade should be proof rolled to locate any soft areas, or loose zones. Any areas identified would have to be over excavated and replaced with granular materials or re-compacted to the required density.

### 7.3 Road Design and Construction

The minimum road structure for the proposed development is shown in Table 2 and is considered suitable for the ground conditions at this site, following completion of the recommended site preparation works.

**Table 2: Recommended Minimum Asphalt Pavement Structure**

Material	Thickness (mm)
Asphaltic Concrete	50
Crushed gravel base course – 19 mm minus	75
Select granular sub-base course, well graded – 75 mm minus	300

It is recommended that the road fills be compacted with a vibratory drum roller having a minimum operating weight of 10,400 kg and a drum diameter of at least 1.5 m.

The contractor must ensure that sufficient water is added as necessary during compaction in order to obtain the specified density and optimum moisture content for compaction. All imported fills, and subgrade soils should be compacted to a minimum of 100% SPMDD that is within 2% of the optimum moisture content.

## 8.0 FIELD REVIEWS

As required by the 2018 BC Building Code “Letters of Assurance”, Telford Geotechnical Ltd. will carry out sufficient field reviews during construction to ensure that the geotechnical design recommendations contained within this report have been adequately communicated to the design team and to the contractors implementing the design. These field reviews are not carried out for the benefit of the contractor's, therefore they do not in any way effect the contractor's obligations to construct the works in accordance with the design.

It is the contractors' responsibility to advise Telford Geotechnical Ltd. (a minimum of 24 hours in advance) that a field review is required. Geotechnical field reviews are normally required at the time of these activities:

1. Site stripping
2. Excavation subgrade
3. Review of cut and fill slopes
4. Compaction testing of engineered fills
5. Pile installation
6. Slab-on-grade preparation
7. Road subgrade and proof rolling
8. Road base and sub-base compaction

## 9.0 CLOSURE

This report has been prepared exclusively for TRUE Consulting for the purpose of providing preliminary geotechnical recommendations for the design and construction of the proposed development as described in this report.

We are pleased to be of assistance to you on this project and we trust that our comments and recommendations are both helpful and sufficient for this project. If you would like further details or require clarification, please do not hesitate to contact the undersigned.

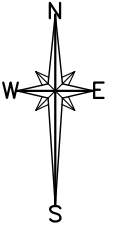
For:  
Telford Geotechnical Ltd.

Reviewed by:



Ameeta Bhabra, B.A.Sc., EIT  
Project Engineer

Bill Telford, M.Eng., P.Eng.  
Principal Geotechnical Engineer



**SITE PLAN**  
SCALE = N.T.S.

**LEGEND:**

- TEST HOLE LOCATION TH21-02
- TEST PIT LOCATION TP21-01
- INVESTIGATION LOCATIONS ARE APPROXIMATE

REFERENCE: CITY OF KAMLOOPS GIS

ORIGINAL PAPER SIZE 8.5"x11"

**TEL FORD**  
**GEOTECHNICAL**  
Geotechnical Engineering | Materials Testing

101-1428 Lorne Street Kamloops, BC V2C 1X4    telfordgeotech.com 250-828-2466

DATE:	JANUARY 31, 2022	
DRN. BY:	AKB	APP'D. WWT
SCALE:	AS SHOWN	

**TRU EAST VILLAGE STUDENT HOUSING**  
620 DALGEISH DRIVE, KAMLOOPS, BC  
**INVESTIGATION LOCATION PLAN**

FILE NO.:	<b>1050</b>
DWG. NO.:	<b>1050-01</b>

REVISIONS:

A.
B.
C.

## **APPENDIX A – TEST PIT LOGS**



**Test Pit Log: TP21-01**

**Project No.:** 1050

**Project:** TRU East Village Student Housing

**Client:** TRUE Consulting

**Location:** 620 Dalgleish Drive, Kamloops, BC



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Depth	Soil Profile			Water Content (%)	Groundwater/Well	Remarks
	Strata	Description	Depth (m)			
0		Ground Surface	0.0			
0 to 1		<b>Topsoil</b> Brown, roots				
1 to 4		<b>Fill</b> Sand and silt, rootlets, light brown, dry to slight moisture, loose, easy to excavate	1.3			
4 to 5		<b>Fill</b> Sand, trace silt, some silt seams, light brownish grey, dry, very loose		23.0		
5 to 2.5			2.5			Hole does not stay open past 2.5 m No groundwater
2.5 to 30		End of Test Pit				

**Date:** November 25, 2021  
**Excavator Type:** Excavator  
**Logged By:** AKB

**Datum:** Ground Surface  
**Page:** 1 of 1

**Test Pit Log: TP21-02**

**Project No.:** 1050

**Project:** TRU East Village Student Housing

**Client:** TRUE Consulting

**Location:** 620 Dalgleish Drive, Kamloops, BC



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Depth	Soil Profile			Water Content (%)	Groundwater/Well	Remarks
	Strata	Description	Depth (m)			
0		Ground Surface	0.0			
0 to 1		<b>Topsoil</b> Brown, roots				
1 to 3		<b>Fill</b> Silt, sandy (fine-grained), some rootlets, light brown, dry, blocky, evidence of freeze/thaw, compact	0.9	5.4		
3 to 4		<b>Fill</b> Sand, some fines, trace to some gravel, trace wood and asphalt debris, brown, slight moisture, dense to very dense				
4.0		End of Test Pit	4.0	10.8		No groundwater
0 to 30	ft m					

**Date:** November 25, 2021  
**Excavator Type:** Excavator  
**Logged By:** AKB

**Datum:** Ground Surface  
**Page:** 1 of 1

**Test Pit Log: TP21-03**

**Project No.:** 1050

**Project:** TRU East Village Student Housing

**Client:** TRUE Consulting

**Location:** 620 Dalgleish Drive, Kamloops, BC



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Depth	Soil Profile			Water Content (%)	Groundwater/Well	Remarks
	Strata	Description	Depth (m)			
0		Ground Surface	0.0			
0.3		<b>Topsoil</b> Brown, roots	0.3			
0.8		<b>Fill</b> Silt, some sand, some organics and rootlets, light brown, slight moisture, stiff	0.8			
1.0		<b>Fill</b> Silt, some sand, some organics and rootlets, light brown, slight moisture, stiff		17.9		
2.0		<b>Fill</b> Silt, some sand, greyish brown, slight moisture becoming moist, stiff to very stiff				
3.0				19.6		
4.0			4.0	30.0		No groundwater
14.0		End of Test Pit				

**Date:** November 25, 2021  
**Excavator Type:** Excavator  
**Logged By:** AKB

**Datum:** Ground Surface  
**Page:** 1 of 1



**Test Pit Log: TP21-04**

**Project No.:** 1050

**Project:** TRU East Village Student Housing

**Client:** TRUE Consulting

**Location:** 620 Dalgleish Drive, Kamloops, BC



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Depth	Soil Profile			Water Content (%)	Groundwater/Well	Remarks
	Strata	Description	Depth (m)			
0		Ground Surface	0.0			
0.3		<b>Topsoil</b> Brown, roots	0.3			
0.9		<b>Fill</b> Silt, some sand, light brown, dry	0.9			
1.5		<b>Buried Topsoil</b> Buried topsoil, thin seam	1.5	6.8		
2.1		<b>Fill</b> Silt, trace rootlets, light brown, dry, firm	2.1	33.7		
2.7		<b>Fill</b> Sand, some silt, some silt seams, light grey sand with light brown silt seams, silt is moist, sand is dry, loose to firm	2.7	4.4		
3.6		<b>Silt</b> Silt, trace rootlets, light brown, moist, very stiff, hard to excavate	3.6			
4.0		End of Test Pit	4.0	32.3		No groundwater
5.0						
6.0						
7.0						
8.0						
9.0						

**Date:** November 25, 2021  
**Excavator Type:** Excavator  
**Logged By:** AKB

**Datum:** Ground Surface  
**Page:** 1 of 1

**Test Pit Log: TP21-05**

**Project No.:** 1050

**Project:** TRU East Village Student Housing

**Client:** TRUE Consulting

**Location:** 620 Dalgleish Drive, Kamloops, BC



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Depth	Soil Profile			Water Content (%)	Groundwater/Well	Remarks
	Strata	Description	Depth (m)			
0		Ground Surface	0.0			
0		<b>Topsoil</b> Brown, roots				
1		<b>Fill</b> Sand and silt, some topsoil clumps, some plastic debris, light greyish brown, dry, compact becoming dense				
2				5.1		
3						
4						
5						
6						
7						
8						
9						
10				4.2		
11						
12			3.7			
13		<b>Fill</b> Silt, sandy, brownish grey, slight moisture, loose to compact	4.0	13.6		No groundwater
14			4.2	3.1		
15		<b>Sand</b> Sand, some silt, light grey, dry, loose to compact				
16						
17						
18		End of Test Pit				
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

**Date:** November 25, 2021  
**Excavator Type:** Excavator  
**Logged By:** AKB

**Datum:** Ground Surface  
**Page:** 1 of 1

## **APPENDIX B – TEST HOLE LOGS**

# Test Hole Log: TH22-01

**Project No.:** 1050

**Project:** TRU East Village Student Housing

**Client:** TRUE Consulting

**Location:** 620 Dalgleish Drive, Kamloops, BC



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Depth	Soil Profile			Dynamic Cone Penetration Resistance (blows/0.3m)	Water Content (%)	Groundwater/Well	Remarks
	Strata	Description	Depth (m)				
0		Ground Surface	0.0				
0.3		<b>Topsoil</b>	0.3				
0.9		<b>Fill: Silt</b> Silt, some sand, light brown, slight moisture, soft, weathered	0.9				
4.9		<b>Fill: Sand</b> Sand, some silt, some silt pockets, brown, slight moisture, dense  - Slightly less dense from 10'-15'	4.9		10.8		
4.9		<b>Buried Topsoil</b> Sand, silty, trace organics, dark greyish brown, slight odour	4.9		12.3		
6.1		<b>Silt</b> Silt, some sand, brown to light brown, slight moisture, firm (easy to drill), cohesive	6.1		21.0		
7.3		<b>Sand</b> Sand (fine-grained), some silt, greyish brown, compact (easy to drill)	7.3		9.2		
8.4		<b>Sandy Silt</b> Silt, sandy to some sand, brown, some rust mottling, moist becoming wet, firm to stiff	8.4		24.5		
30.1		<b>Gravelly Sandy Silt</b> Silt, sandy, gravelly, brown, wet, hard drilling, stiff to very stiff, hard drilling			30.1		

**Date of Drilling:** January 17, 2022

**Rig Type:** Track-Mounted Auger

**Logged By:** AKB

**Datum:** Ground Surface

**Page:** 1 of 2

**Test Hole Log: TH22-01**

**Project No.:** 1050

**Project:** TRU East Village Student Housing

**Client:** TRUE Consulting

**Location:** 620 Dalgleish Drive, Kamloops, BC



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Depth	Soil Profile			Dynamic Cone Penetration Resistance (blows/0.3m)	Water Content (%)	Groundwater/Well	Remarks
	Strata	Description	Depth (m)				
31			9.4				
32	10	<b>Silt</b> Silt, some sand, brown, trace gravel, moist to slight moisture, stiff to very stiff, cohesive	10.7				
33							
34							
35	11	<b>Glacial Till</b> Silt, sandy, gravelly, greyish brown, slight moisture, very dense, hard drilling	12.8				
36							
37							
38							
39	12		12.8				
40							
41	13	<b>Bedrock</b> Rock flour (greenish grey), hard drilling	12.8				
42							
43							
44		End of Borehole					
45	14						
46							
47							
48	15						
49							
50							
51	16						
52							
53							
54	17						
55							
56							
57	18						
58							
59							
60							

**Date of Drilling:** January 17, 2022  
**Rig Type:** Track-Mounted Auger  
**Logged By:** AKB

**Datum:** Ground Surface  
**Page:** 2 of 2

**Test Hole Log: TH22-02**

**Project No.:** 1050

**Project:** TRU East Village Student Housing

**Client:** TRUE Consulting

**Location:** 620 Dalgleish Drive, Kamloops, BC



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Depth	Soil Profile			Dynamic Cone Penetration Resistance (blows/0.3m)	Water Content (%)	Groundwater/Well	Remarks
	Strata	Description	Depth (m)				
0		Ground Surface	0.0				
0.3		<b>Topsoil</b>	0.3				
1.4		<b>Fill: Silt</b> Silt, some sand, light brown, slight moisture, soft, weathered	1.4				
4.6		<b>Fill: Sand</b> Sand (fine-grained)	4.6				
4.6		<b>Fill: Sand and Silt</b> Sand and silt, brown, slight moisture, compact to dense	4.6		23.8		
4.6		- Some sandy seams, trace white seams, trace gravel	4.6				
5.3		<b>Sand</b> Sand (fine-grained), some silt to silty, light greyish brown, loose to compact	5.3		9.9		
6.1		<b>Silt</b> Silt, trace sand, brown to light brown, slight moisture, firm	6.1		26.1		
6.7		<b>Sand</b> Sand (fine-grained), some silt, brown, compact	6.7		14.7		
7.6		<b>Gravelly Silt and Sand</b> Silt and sand, gravelly, brown, trace rust mottle, moist, compact	7.6		11.3		
9.1		<b>Silt</b> Silt, some sand, trace gravel, brown, slight moisture, stiff (driller noted it felt dense/tight to drill into)	9.1		16.5		

**Date of Drilling:** January 17, 2022  
**Rig Type:** Track-Mounted Auger  
**Logged By:** AKB

**Datum:** Ground Surface  
**Page:** 1 of 2

**Test Hole Log: TH22-02**

**Project No.:** 1050

**Project:** TRU East Village Student Housing

**Client:** TRUE Consulting

**Location:** 620 Dalgleish Drive, Kamloops, BC



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Depth	Soil Profile			Dynamic Cone Penetration Resistance (blows/0.3m)	Water Content (%)	Groundwater/Well	Remarks
	Strata	Description	Depth (m)				
31 32 33 34 35	10	<b>Glacial Till</b> Silt and sand, gravelly, dark grey, slight moisture, very stiff to hard	10.7		9.3		
36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60	11 12 13 14 15 16 17 18	End of Borehole					

**Date of Drilling:** January 17, 2022  
**Rig Type:** Track-Mounted Auger  
**Logged By:** AKB

**Datum:** Ground Surface  
**Page:** 2 of 2

**Test Hole Log: TH22-03**

**Project No.:** 1050

**Project:** TRU East Village Student Housing

**Client:** TRUE Consulting

**Location:** 620 Dalgleish Drive, Kamloops, BC



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Depth	Soil Profile		Dynamic Cone Penetration Resistance (blows/0.3m)	Water Content (%)	Groundwater/Well	Remarks
	Strata	Description				
0		Ground Surface				
0.3		<b>Topsoil</b>				
1		<b>Fill: Sand</b> Sand (fine-grained), light grey, dry, loose - Some silt seams up to 200 mm thick, light brown, slight moisture, firm - Becomes fine to medium grained	24			
2			17			
3			7			
4			20			
5			33			
6			24			
7			12			
8			16			
9			12			
10			10	2.3		
11			8			
12			8			
13			9			
14		<b>Silty Sand</b>	25			
15		Sand (fine-grained), silty, light brown, dry, compact to dense (fill?)	30			
16			27		10.2	
17			21			
18		<b>Silt</b>	20			
19		Silt, sandy to some sand, light brown, slight moisture, stiff becoming firm, (fill?)	22			
20			20		25.1	
21			12			
22		<b>Silty Sand</b>	3			
23		Sand (fine-grained), silt, light greyish brown, dry, loose to compact	7			
24			13		8.9	
25			21			
26		<b>Glacial Till</b>	38			
27		Sand and silt, some gravel becoming gravelly, well-graded, brown, slight moisture, dense becoming very dense	45			
28			50		8.8	
29						
30						

**Date of Drilling:** January 17, 2022  
**Rig Type:** Track-Mounted Auger  
**Logged By:** AKB

**Datum:** Ground Surface  
**Page:** 1 of 2



**Test Hole Log: TH22-03**

**Project No.:** 1050

**Project:** TRU East Village Student Housing

**Client:** TRUE Consulting

**Location:** 620 Dalgleish Drive, Kamloops, BC



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Depth	Soil Profile		Dynamic Cone Penetration Resistance (blows/0.3m)	Water Content (%)	Groundwater/Well	Remarks	
	Strata	Description					
31	10	End of Borehole					
32							
33							
34						14.0	
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							
45							
46							
47							
48							
49							
50							
51							
52							
53							
54							
55							
56							
57							
58							
59							
60							

**Date of Drilling:** January 17, 2022  
**Rig Type:** Track-Mounted Auger  
**Logged By:** AKB

**Datum:** Ground Surface  
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**Test Hole Log: TH22-04**

**Project No.:** 1050

**Project:** TRU East Village Student Housing

**Client:** TRUE Consulting

**Location:** 620 Dalgleish Drive, Kamloops, BC



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Depth	Soil Profile			Dynamic Cone Penetration Resistance (blows/0.3m)	Water Content (%)	Groundwater/Well	Remarks
	Strata	Description	Depth (m)				
0		Ground Surface	0.0				
0.3		<b>Topsoil</b>	0.3				
1		<b>Fill: Silt</b>					
2		Silt, trace sand, brown, stiff					
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14		- Trace topsoil pockets at 14'	4.6		19.9		
15							
16		<b>Sandy Silt to Silt</b>					
17		Silt, sandy to some sand, brown, slight moisture, stiff (Fill?)					
18					15.9		
19							
20							
21							
22			6.9				
23		<b>Sand</b>					
24		Sand (medium to coarse-grained), trace silt, light grey, compact			10.2		
25							
26		- Becomes wet at 28'					
27					20.4		
28			8.5				
29		<b>Sandy Silt</b>					
30		Silt, sandy to some sand, brown, trace rust mottle, moist to wet, stiff			36.1		

**Date of Drilling:** January 17, 2022

**Rig Type:** Track-Mounted Auger

**Logged By:** AKB

**Datum:** Ground Surface

**Page:** 1 of 2

**Test Hole Log: TH22-04**

**Project No.:** 1050

**Project:** TRU East Village Student Housing

**Client:** TRUE Consulting

**Location:** 620 Dalgleish Drive, Kamloops, BC



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Depth	Soil Profile			Dynamic Cone Penetration Resistance (blows/0.3m)	Water Content (%)	Groundwater/Well	Remarks
	Strata	Description	Depth (m)				
31							
32							
33	10				34.1		
34							
35			10.7				
36	11	<b>Gravelly Sandy Silt</b> Silt, sandy to some sand, gravelly, brown, wet, stiff to very stiff, becoming hard near 40', (weathered glacial till becoming competent)					
37							
38							
39	12		12.2				
40							
41		End of Borehole					
42							
43	13						
44							
45							
46	14						
47							
48							
49	15						
50							
51							
52	16						
53							
54							
55	17						
56							
57							
58							
59	18						
60							

**Date of Drilling:** January 17, 2022

**Rig Type:** Track-Mounted Auger

**Logged By:** AKB

**Datum:** Ground Surface

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**Test Hole Log: TH22-05**

**Project No.:** 1050

**Project:** TRU East Village Student Housing

**Client:** TRUE Consulting

**Location:** 620 Dalgleish Drive, Kamloops, BC



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Depth	Soil Profile			Dynamic Cone Penetration Resistance (blows/0.3m)	Water Content (%)	Groundwater/Well	Remarks
	Strata	Description	Depth (m)				
0		Ground Surface	0.0				
0.3		<b>Topsoil</b>	0.3	4			
1		<b>Fill</b> Silt, some sand seams (medium grained), trace gravel, brown, slight moisture, stiff to very stiff	3.0	24			
2				43			
3				19			
4				8			
5				>50 <sub>c</sub>			
6				>50 <sub>c</sub>		11.3	
7				>50 <sub>c</sub>			
8				34			
9				24			
10				<b>Fill</b> Silt, sandy, some loose fine-grained sand seams, brown, slight moisture, stiff	5.8	26	
11		19					
12		19					
13		19				16.0	
14		19					
15		19					
16		22					
17		19					
18		<b>Sandy Silt</b> Silt, sandy, some gravel becoming gravelly, brown, slight moisture, very stiff	7.0	30			
19				41			
20				46			
21				38			
22		<b>Glacial Till</b> Silt, sandy, gravelly, greyish brown, slight moisture, very stiff to hard	9.1	34			
23				>50 <sub>c</sub>			
24				7.6			
25							
26							
27							
28							
29							
30							

**Date of Drilling:** January 17, 2022  
**Rig Type:** Track-Mounted Auger  
**Logged By:** AKB

**Datum:** Ground Surface  
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No groundwater

**Test Hole Log: TH22-06**

**Project No.:** 1050

**Project:** TRU East Village Student Housing

**Client:** TRUE Consulting

**Location:** 620 Dalgleish Drive, Kamloops, BC



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Depth	Soil Profile		Dynamic Cone Penetration Resistance (blows/0.3m)	Water Content (%)	Groundwater/Well	Remarks
	Strata	Description				
0		Ground Surface				
0.3	Topsoil		9			
1	Fill Sand (fine-grained), silty, some silt seams, some light grey dense fine sand pockets, light brown becoming brown, compact		17			
2			14			
3			13			
4			9			
5			13			
6			23			
7			25			
8			30			
9			29			
10			35			
11			29			
12			31			
13			23			
14			21			
15	4.6					
16	Silt Silt, some sand, brown, slight moisture, stiff to very stiff		22			
17			24			
18			22			
19			21			
20			27			
21			26			
22			26			
23			18			
24			14			
25			18		34.6	
26		17				
27	8.2					
28	Silty Sand Sand (fine-grained), silty to some silt, brown, slight moisture		32			
29			32			
30		9.1		25		25.0

**Date of Drilling:** January 17, 2022  
**Rig Type:** Track-Mounted Auger  
**Logged By:** AKB

**Datum:** Ground Surface  
**Page:** 1 of 2

**Test Hole Log: TH22-06**

**Project No.:** 1050

**Project:** TRU East Village Student Housing

**Client:** TRUE Consulting

**Location:** 620 Dalgleish Drive, Kamloops, BC



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Depth	Soil Profile		Dynamic Cone Penetration Resistance (blows/0.3m)	Water Content (%)	Groundwater/Well	Remarks					
	Strata	Description									
31		<b>Glacial Till</b> Silt, some sand, some gravel, brown, moist becoming wet, very stiff becoming hard (weathered becoming competent)									
32											
33											
34											
35											
36											
37							<b>Bedrock</b> Drill refusal, poor recovery	11.0	18.9		
38							End of Borehole				
39											
40											
41											
42											
43											
44											
45											
46											
47											
48											
49											
50											
51											
52											
53											
54											
55											
56											
57											
58											
59											
60											

**Date of Drilling:** January 17, 2022  
**Rig Type:** Track-Mounted Auger  
**Logged By:** AKB

**Datum:** Ground Surface  
**Page:** 2 of 2

**Test Hole Log: TH22-07**

**Project No.:** 1050

**Project:** TRU East Village Student Housing

**Client:** TRUE Consulting

**Location:** 620 Dalgleish Drive, Kamloops, BC



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Depth	Soil Profile			Dynamic Cone Penetration Resistance (blows/0.3m)	Water Content (%)	Groundwater/Well	Remarks
	Strata	Description	Depth (m)				
0		Ground Surface	0.0				
0-1		<b>Topsoil</b>					
1-5.2		<b>Fill</b> Silt, some sand, trace gravel, brown, slight moisture, stiff to very stiff		17, 21, 23, 33, 27, 25	17.4		Drilled out 0-10' and started DCPT at 11'
5.2-6.1		<b>Topsoil</b> Topsoil, trace organics, brown, slight moisture, soft	5.2	11, 14, 12	13.2		
6.1-7		<b>Sand</b> Sand (fine-grained), some silt, greyish brown, trace rust mottle, slight moisture, loose to compact	6.1	17, 21, 23			
7-8		<b>Silty Sand</b> Sand (fine-grained), silty, some coarse sand seams, brown, slight moisture becoming moist, loose to compact		19, 19, 14	32.6		
8-9				10, 17			
9-30		- Becomes wet at 31'		36	24.3		

**Date of Drilling:** January 17, 2022  
**Rig Type:** Track-Mounted Auger  
**Logged By:** AKB

**Datum:** Ground Surface  
**Page:** 1 of 2

**Test Hole Log: TH22-07**

**Project No.:** 1050

**Project:** TRU East Village Student Housing

**Client:** TRUE Consulting

**Location:** 620 Dalgleish Drive, Kamloops, BC



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Depth	Soil Profile			Dynamic Cone Penetration Resistance (blows/0.3m)	Water Content (%)	Groundwater/Well	Remarks
	Strata	Description	Depth (m)				
31			9.6		30.9	▼	
32		<b>Glacial Till</b>		39			
33	10	Silt, sandy, gravelly, greyish brown, dry to slight moisture, very stiff to hard		32			
34				35	19.7		
35				50			
36	11						
37							
38			11.9				
39	12	<b>Bedrock</b>					
40		Drill refusal, poor recovery					
41		End of Borehole					
42							
43	13						
44							
45							
46	14						
47							
48							
49	15						
50							
51							
52	16						
53							
54							
55	17						
56							
57							
58							
59	18						
60							

**Date of Drilling:** January 17, 2022

**Rig Type:** Track-Mounted Auger

**Logged By:** AKB

**Datum:** Ground Surface

**Page:** 2 of 2



## **APPENDIX C – LABORATORY TESTING**

**FINES CONTENT REPORT**  
**(ASTM C117)**

CLIENT:	TRUE CONSULTING	PROJECT #	1050
PROJECT NAME:	TRU EAST VILLAGE STUDENT HOUSING		
PROJECT LOCATION:	620 DALGLEISH DRIVE, KAMLOOPS, BC		
SAMPLED BY:	AMEETA BHABRA	DATE SAMPLED:	25-Nov-21
TESTED BY:	AMEETA BHABRA	DATE TESTED:	7-Dec-21

Hole #:	TP21-02	TP21-03	TP21-03	TP21-04
Depth:	0.9 m	0.8 m	4.0 m	1.0 m
Fines Content:	28.1%	88.0%	97.4%	56.9%

Hole #:	TP21-04	TP21-04	TP21-05	TP21-05
Depth:	2.0 m (Sand)	4.0 m	4.0 m	4.2 m
Fines Content:	19.6%	99.2%	77.4%	11.5%

Hole #:	TH22-01	TH22-01	TH22-01	TH22-02
Depth:	4.9 m	5.5 m	8.4 m	5.8 m
Fines Content:	58.5%	80.4%	74.7%	92.7%

Hole #:	TH22-02	TH22-02	TH22-03	TH22-03
Depth:	8.2 m	10.4 m	4.9 m	5.5 m
Fines Content:	70.4%	48.3%	76.8%	92.9%

Hole #:	TH22-03	TH22-04	TH22-05	TH22-05
Depth:	7.3 m	8.8 m	2.1 m	4 m
Fines Content:	64.8%	97.0%	64.4%	84.3%

Hole #:	TH22-06	TH22-06	TH22-06	
Depth:	7.3 m	8.8 m	11 m	
Fines Content:	96.8%	61.4%	70.4%	

Comments:

v

Per: Ameeta Bhabra, B.A.Sc., EIT

Reviewed by: Bill Telford, M.Eng., P.Eng.

Project Engineer

Geotechnical Engineer

**MOISTURE CONTENT REPORT  
(ASTM D2216)**

CLIENT:	TRUE CONSULTING	PROJECT #	1050
PROJECT NAME:	TRU EAST VILLAGE STUDENT HOUSING		
PROJECT LOCATION:	620 DALGLEISH DRIVE, KAMLOOPS, BC		
SAMPLED BY:	AMEETA BHABRA	DATE SAMPLED:	25-Nov-21
TESTED BY:	AMEETA BHABRA	DATE TESTED:	6-Dec-21

Hole #:	TP21-01	TP21-02	TP21-02	TP21-03
Depth:	1.3 m	0.9 m	3.3 m	0.8 m
Moisture:	23.0%	5.4%	10.8%	17.9%

Hole #:	TP21-03	TP21-03	TP21-04	TP21-04
Depth:	2.5 m	4.0 m	1.0 m	2.0 m (Silt)
Moisture:	19.6%	30.0%	6.8%	33.7%

Hole #:	TP21-04	TP21-04	TP21-05	TP21-05
Depth:	2.0 m (Sand)	4.0 m	1.5 m	3.0 m
Moisture:	4.4%	32.3%	5.1%	4.2%

Hole #:	TP21-05	TP21-05	TH22-01	TH22-01
Depth:	4.0 m	4.2 m	4 m	4.9 m
Moisture:	13.6%	3.1%	10.8%	12.3%

Hole #:	TH22-01	TH22-01	TH22-01	TH22-01
Depth:	5.5 m	7 m	7.6 m	8.4 m
Moisture:	21.0%	9.2%	24.5%	30.1%

Hole #:	TH22-02	TH22-02	TH22-02	TH22-02
Depth:	2.4 m	4.9 m	5.8 m	6.4 m
Moisture:	23.8%	9.9%	26.1%	14.7%

Comments:

Per: Ameeta Bhabra, B.A.Sc., EIT

Reviewed by: Bill Telford, M.Eng., P.Eng.

Project Engineer

Geotechnical Engineer

**MOISTURE CONTENT REPORT  
(ASTM D2216)**

CLIENT:	TRUE CONSULTING	PROJECT #	1050
PROJECT NAME:	TRU EAST VILLAGE STUDENT HOUSING		
PROJECT LOCATION:	620 DALGLEISH DRIVE, KAMLOOPS, BC		
SAMPLED BY:	AMEETA BHABRA	DATE SAMPLED:	25-Nov-21
TESTED BY:	AMEETA BHABRA	DATE TESTED:	6-Dec-21

Hole #:	TH22-02	TH22-02	TH22-02	TH22-03
Depth:	7.3 m	8.2 m	10.4 m	2.7 m
Moisture:	11.3%	16.5%	9.3%	2.3%

Hole #:	TH22-03	TH22-03	TH22-03	TH22-03
Depth:	4.9 m	5.5 m	7.3 m	8.5 m
Moisture:	10.2%	25.1%	8.9%	8.8%

Hole #:	TH22-03	TH22-04	TH22-04	TH22-04
Depth:	10.1 m	4.3 m	5.5 m	7 m
Moisture:	14.0%	19.9%	15.9%	10.2%

Hole #:	TH22-04	TH22-04	TH22-04	TH22-05
Depth:	7.9 m	8.8 m	9.8 m	2.1 m
Moisture:	20.4%	36.1%	34.1%	11.3%

Hole #:	TH22-05	TH22-05	TH22-06	TH22-06
Depth:	4 m	7 m	7.3 m	8.8 m
Moisture:	16.0%	7.6%	34.6%	25.0%

Hole #:	TH22-06	TH22-07	TH22-07	TH22-07
Depth:	11 m	4 m	5.2 m	7 m
Moisture:	18.9%	17.4%	13.2%	32.6%

Comments:

Per: Ameeta Bhabra, B.A.Sc., EIT

Reviewed by: Bill Telford, M.Eng., P.Eng.

Project Engineer

Geotechnical Engineer

**MOISTURE CONTENT REPORT  
(ASTM D2216)**

CLIENT:	TRUE CONSULTING	PROJECT #	1050
PROJECT NAME:	TRU EAST VILLAGE STUDENT HOUSING		
PROJECT LOCATION:	620 DALGLEISH DRIVE, KAMLOOPS, BC		
SAMPLED BY:	AMEETA BHABRA	DATE SAMPLED:	25-Nov-21
TESTED BY:	AMEETA BHABRA	DATE TESTED:	6-Dec-21

Hole #:	TH22-07	TH22-07	TH22-07	
Depth:	8.8 m	9.4 m	10.1 m	
Moisture:	24.3%	30.9%	19.7%	

Hole #:				
Depth:				
Moisture:				

Hole #:				
Depth:				
Moisture:				

Hole #:				
Depth:				
Moisture:				

Hole #:				
Depth:				
Moisture:				

Hole #:				
Depth:				
Moisture:				

Comments:

Per: Ameeta Bhabra, B.A.Sc., EIT

Reviewed by: Bill Telford, M.Eng., P.Eng.

Project Engineer

Geotechnical Engineer