



1. Application

**Adam Fraser Law Corporation Whistler Real Estate
Lawyer
Suite 338A 4370 Lorimer Road
Whistler BC V8E 1A6
1-604-905-5180**

43225

2. Description of Land

PID/Plan Number	Legal Description
006-042-287	LOT 6 BLOCK 30 SOUTH 1/2 OF THE SOUTH EAST 1/4 OF SECTION 22 TOWNSHIP 50 PLAN 14705

3. Nature of Interest

Type	Number	Additional Information
COVENANT		

4. Terms

Part 2 of this instrument consists of:

(b) Express Charge Terms Annexed as Part 2

5. Transferor(s)

KELLIE IRENE MCINTOSH
PETER HARTMUT HEINRICH

6. Transferee(s)

DISTRICT OF SQUAMISH
P.O. BOX 310
37955 – 2ND AVENUE
SQUAMISH BC V8B 0A3

7. Additional or Modified Terms



8. Execution(s)

This instrument creates, assigns, modifies, enlarges or governs the priority of the interest(s) described in Item 3 and the Transferor(s) and every other signatory agree to be bound by this instrument, and acknowledge(s) receipt of a true copy of the filed standard charge terms, if any.

Witnessing Officer Signature

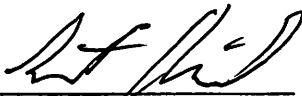

ADAM FRASER
Barrister & Solicitor, Notary Public
338A - 4370 Lorimer Road
Whistler, BC V8E 1A6 Canada
Tel: 604-905-5180

Execution Date

YYYY-MM-DD
2026-09-17

Transferor / Transferee / Party Signature(s)


KELLIE IRENE MCINTOSH


PETER HARTMUT HEINRICH

Officer Certification

Your signature constitutes a representation that you are a solicitor, notary public or other person authorized by the *Evidence Act*, R.S.B.C. 1996, c.124, to take affidavits for use in British Columbia and certifies the matters set out in Part 5 of the *Land Title Act* as they pertain to the execution of this instrument.

Witnessing Officer Signature

Execution Date

YYYY-MM-DD

Transferor / Transferee / Party Signature(s)

DISTRICT OF SQUAMISH
By their Authorized Signatory

Officer Certification

Your signature constitutes a representation that you are a solicitor, notary public or other person authorized by the *Evidence Act*, R.S.B.C. 1996, c.124, to take affidavits for use in British Columbia and certifies the matters set out in Part 5 of the *Land Title Act* as they pertain to the execution of this instrument.

Electronic Signature

Your electronic signature is a representation that you are a designate authorized to certify this document under section 168.4 of the *Land Title Act*, RSBC 1996, c 250, that you certify this document under section 168.41 (4) of the Act, and that an execution copy, or a true copy of that execution copy, is in your possession.

TERMS OF INSTRUMENT - PART 2
(SECTION 219 LAND TITLE ACT)
(Flooding/Hazard Covenant)

THIS AGREEMENT dated for reference the 9th day of September, 2026

BETWEEN:

**KELLIE IRENE MCINTOSH and
PETER HARTMUT HEINRICH**

(jointly the “**Grantor**”)

AND:

DISTRICT OF SQUAMISH a municipal corporation under the Community Charter of the Province of British Columbia, having its offices at P.O. Box 310, 37955 – 2nd Avenue, Squamish, B.C., V8B 0A3.

(the “**District**”)

WHEREAS

- A. The Grantor is the owner in fee-simple of lands in the District of Squamish, legally described in Item 2 of Part 1 of the *Land Title Act* Form C to which this Agreement is attached and which forms part of this Agreement (the “**Lands**”);
- B. Section 219 of the *Land Title Act*, R.S.B.C. 1996, c. 250 permits the registration of a covenant of a positive or negative nature in favour of the District with respect to matters including the use of land, or the use of a building on or to be erected on land, or that land is to be built on or subdivided only in accordance with the covenant, which covenant is binding on the Grantor and the Grantor’s successors in title even if the covenant is not annexed to land owned by the District.
- C. The District and Grantor wish to provide notice to future owners that the Lands are subject to potential flooding and that minimum building floor elevations for habitable areas must be maintained as set out in this Agreement.

NOW THEREFORE THIS AGREEMENT WITNESSES that in consideration of the sum of TEN (\$10.00) DOLLARS of lawful money of Canada and other good valuable consideration paid by the District to the Grantor, the receipt and sufficiency of which is

hereby acknowledged, the Grantor does hereby covenant and agree with the District under section 219 of the *Land Title Act* as follows:

1. The Grantor is aware of and, on behalf of itself and its heirs, executors, administrators, successors and assigns, hereby acknowledges that there is a potential flood danger to the Lands.
2. The Grantor covenants and agrees with the District that the Lands shall only be used and built upon in accordance with District of Squamish Floodplain Management Bylaw No. 3184, 2025 as shown in Schedule "A" and the Flood Hazard Assessment as shown in Schedule "B".
3. Without limiting the generality of Section 2, the Grantor further covenants and agrees with the District that no Habitable Area shall be located within any building, mobile home or unit, or modular home or structure at an elevation such that the underside of the wooden floor system or top of concrete slab is less than the Flood Construction Level requirements set out in Floodplain Management Bylaw No. 3184, 2025 except in accordance with regulations contained in the Bylaw.
4. The Grantor shall not use for dwelling purposes, business or the storage of goods that are susceptible to damage by floodwater, any building or structure on, or to be constructed on, the Lands, the underside of the floor system of which is below the Flood Construction Level except in accordance with the regulations contained in Floodplain Management Bylaw No. 3184, 2025.
5. The Flood Construction Level may be achieved using structural support or compacted landfill or a combination of both provided that the structural support or landfill is adequately protected against scour and erosion in accordance with Floodplain Management Bylaw No. 3184, 2025.
6. The Grantor, on behalf of itself and its heirs, executors, administrators, successors and assigns, acknowledges that the District does not represent to the Grantor, nor to any other person that any building, modular home, mobile home or unit, improvement, chattel or other structure, including the contents of any of them, on, or to be constructed on, the Lands will not be damaged by flooding or erosion and the Grantor, on behalf of itself and its heirs, executors, administrators, successors and assigns, with full knowledge of the potential flood or erosion danger from natural causes and in consideration of the approvals given by the District hereby agrees to release, save harmless and indemnify the District, its elected officials, officers, invitees, licensees, employees, servants and agents harmless from and against all liability, actions, causes of action, expenses, damages, costs, claims, debts, losses (including injurious affection) or demands whatsoever by the Grantor or any other person which has arisen or may arise out of or is in any way due directly or indirectly to the granting or existence of this Agreement including:

- (a) any breach of any covenant or agreement on the part of the Grantor contained in this Agreement or any steps taken by the District to enforce this Agreement;
- (b) any injury to persons, including bodily injury and death or damage to or a loss of property on or about the Lands; and
- (c) any flooding on the Lands.

7. In the event of any loss or damage caused by flooding of the Lands including any loss or damage to any building or structure, or any part thereof constructed or located on the Lands or to any contents thereof caused by such flooding, the Grantor shall not claim damages from or hold the District responsible or liable for any such loss or damage.

8. Subject to the provisions of section 219 of the *Land Title Act*, the Grantor's covenants contained in this Agreement shall burden and run with the Lands and shall enure to the benefit of and be binding upon the Grantor, its heirs, executors, administrators, successors and assigns and the District and its assigns.

9. Despite anything contained herein, the Grantor shall not be liable under any of the covenants and agreements contained herein where such liability arises because of an act or omission occurring after the Grantor ceases to have any further interest in the Lands.

10. Nothing in this Agreement shall prejudice, or effect the rights, powers and remedies of the District in relation to the Grantor, including its heirs, executors, administrators, successors and assigns, or the Lands under any law, bylaw, order or regulation, or in equity, all of which rights, powers and remedies may be fully and effectively exercised by the District as if this Agreement had not been made by the parties.

11. The Grantor will do or cause to be done at its expense all acts reasonably necessary for the District to gain priority for this Agreement over all liens, charges and encumbrances which are or may be registered against the Lands save and except those in favour of the District and those specifically approved in writing by the District.

12. The parties agree that this Agreement shall not be modified or discharged except in accordance with the provisions of section 219(9) of the *Land Title Act*.

13. Whenever the singular or masculine or neuter is used herein, the same shall be construed as including the plural, masculine, feminine, neuter, body corporate or politic unless the context requires otherwise.

14. If any section or any part of this Agreement is found to be illegal or unenforceable, then such sections or parts shall be considered to be separate and severable from this Agreement and the remaining sections or parts of this Agreement, as the case may be, shall be unaffected thereby and shall remain and be enforceable to the

fullest extent permitted by law as though the illegal or unenforceable parts or sections had never been included in this Agreement.

15. This Agreement shall be interpreted according to the laws of the Province of British Columbia.

16. Where there is a reference to an enactment of the Province of British Columbia in this agreement, that reference shall include a reference to any subsequent enactment of the Province of British Columbia of like effect, and unless the context otherwise requires, all statutes referred to herein are enactments of the Province of British Columbia.

IN WITNESS WHEREOF the parties hereto have executed this Agreement by signing the General Instrument – Part 1 attached hereto as of the date indicated thereon.

Schedule "A"

District of Squamish

BYLAW NO. 3184, 2025

A Floodplain Management Bylaw to designate land as floodplain and make provisions in relation to flood management in the District of Squamish

WHEREAS:

It is desirable to minimize the risk of injury, loss of life, and property damage due to flooding,

Council has considered Provincial Guidelines respecting flood control, and

The *Local Government Act*, Section 524, authorizes Council to enact a bylaw to designate floodplains within the District of Squamish and to regulate in relation to flood control, flood hazard management, and development of land that is subject to flooding.

NOW THEREFORE the Council of the District of Squamish, in open meeting assembled, hereby enacts as follows:

1.0 Citation

- 1.1 This Bylaw may be cited as "District of Squamish Floodplain Management Bylaw No. 3184, 2025".

2.0 Interpretation

- 2.1 In this Bylaw:

APPROVING OFFICER has the meaning defined in the *Land Title Act*.

BUILDING INSPECTOR has the meaning defined in the *Community Charter*.

COUNCIL means elected Council of the District.

DEBRIS FLOW HAZARD AREA means an area exposed to debris flow hazards as shown in Schedule D-1 of the Official Community Plan.

DISTRICT means the District of Squamish.

DESIGNATED FLOOD means a *Flood* resulting in a peak discharge or peak water level that a *Qualified Professional* determines will be equaled or exceeded with an annual probability of 1:200 or 0.5% (i.e., a "1 in 200-year recurrence interval").

DESIGNATED FLOOD LEVEL means the observed or calculated water surface elevation for the Designated Flood, used in the calculation of the *FCL*.

FCL, see *Flood Construction Level*.

FLOOD means any event in which water, rising significantly above normally occurring levels, spills out of a *Watercourse* or the ocean and inundates areas beyond the associated *Natural Boundary*.

FLOOD CONSTRUCTION LEVEL (FCL) means the required elevation of the underside of a wooden floor system or top of *Pad* to be used for *Habitable Areas* as specified in Section 4.1 of this Bylaw. In the case of a *mobile home*, *FCL* means the ground level or top of *Pad* on which the *mobile home* is located.

FLOOD HAZARD AREA means a protected (diked) or unprotected area, which, by reasons of land elevation is susceptible to flooding from a *Watercourse*, or other body of water as shown in Schedule A1 of this Bylaw.

FLOOD HAZARD ASSESSMENT means a report, prepared by a *Qualified Professional* in accordance with *District's* Terms of Reference for Natural Hazard and/or Risk Assessments and Provincial legislation. The assessment identifies flood characteristics, determines whether a development is safe for the intended use, and specifies any corresponding flood mitigation measures.

FLOODPLAIN means an area designated in Section 3 of this Bylaw.

FLOODPLAIN SETBACK means the required minimum horizontal distance from a reference line, point or natural feature to any landfill, structure, obstruction or structural support required to elevate a floor system or *Pad* above the *FCL*. *Floodplain Setbacks* are specified to provide adequate space for dike operations and maintenance and emergency response, maintain *Secondary Floodways*, reduce exposure to hazards during a flood and/or allow for potential land erosion.

FREEBOARD means an additional vertical distance added above a *Designated Flood Level* to establish an *FCL*.

GARAGE means a roofed accessory building or portion of a principal building with more than 60% of the perimeter enclosed within walls, the principal use of which is for parking one or more motor vehicles.

GROUNDWATER MANAGEMENT PLAN means a plan prepared by a Hydrogeologist in accordance with the District's Terms of Reference that addresses groundwater issues

including impacts on the groundwater table and/or neighbouring properties and impacts on the District's drainage system.

HABITABLE AREA means any space or room, including a *mobile home* that can be used for dwelling purposes, business, or the storage of goods susceptible to damage by floodwater.

HEAVY INDUSTRY means and includes manufacturing, processing or shipping of wood and paper products, metal, heavy electrical, non-metallic mineral products, petroleum, hydrocarbon and coal products, industrial chemicals and by-products, and allied products.

INSPECTOR OF DIKES means an official of the Ministry of Water, Land and Resource Stewardship as defined under the *Dike Maintenance Act*.

INTEGRATED FLOOD HAZARD MANAGEMENT PLAN means a plan prepared by the *District* assessing flood hazards and providing information to support flood management in Squamish.

MASHITER OVERLAND FLOW HAZARD AREA means an area where shallow water may flow during a flood event, but where water is not expected to rise to a significant depth and is designated as "*Mashiter Overland Flow Hazard Area*" in Schedule A1.

MINIMUM PONDING ELEVATION means a minimum elevation for construction that is intended to reduce possible flood damage from ponding of local drainage. *Minimum Ponding Elevation* is determined on a site-specific basis based on topography, road elevations and downstream embankments using the criteria specified in Section 4.1.1(ii) of this Bylaw.

MINOR BUILDING means any single-storey building or structure accessory to a residential or farm use which is less than 10 square metres in area and which does not require a building permit under the *District of Squamish Building Bylaw*.

MOBILE HOME means a factory-built single-unit dwelling capable of being moved from place to place on an integrated chassis.

NATURAL BOUNDARY means the visible high watermark of any lake, river, stream, coastal foreshore, or other body of water where the presence and action of the water are so common and usual and so long continued in all ordinary years as to mark upon the soil of the bed of the lake, river, stream, or other body of water a character distinct from that of the banks thereof, in respect to vegetation, as well as in respect to the nature of the soil itself and also includes the edge of dormant side channels of any lake, river, stream, or other body of water.

NATURAL GROUND ELEVATION means the average of the undisturbed, pre-development ground elevations at the four primary corners of a proposed building site.

OVERLAND FLOW HAZARD AREA means an area where shallow water may flow during a flood event, but where water is not expected to rise to a significant depth. *Overland Flow Hazard Areas* include those areas designated as “*Overland Flow Hazard Area*” in Schedule A1 as well as any area less than 1.5 metres above the *Natural Boundary* of an adjacent or nearby stream.

PAD means a surface on which blocks, posts, runners or strip footings are placed for the purposes of supporting a *mobile home*, or a concrete surface for the purposes of supporting a *Habitable Area*.

PRIMARY FLOODWAY means a river corridor or un-diked *Floodplain* area that is reasonably required to discharge the flow of a *Designated Flood*. *Primary Floodways* are shown in Schedule E.

PROFESSIONAL ENGINEER means a person who is registered or licensed in the practice of engineering under the *Engineers and Geoscientists Act*.

PROFESSIONAL GEOSCIENTIST means a person who is registered or licensed in the practice of geoscience under the *Engineers and Geoscientists Act*.

PROTECTIVE WORKS means any landfill, embankment, dike, berm, revetment, wall, barrier, flap gate, drainage infrastructure or other structure constructed exclusively or *inter alia* for the purposes of protecting an area, structure or development from the effects of *Floods*, debris flows, or debris floods.

QUALIFIED PROFESSIONAL means a *Professional Engineer* or *Professional Geoscientist* registered or licensed under the provisions of the *Engineers and Geoscientists Act* that is experienced in geotechnical engineering under Subsection 524(7) of the *Local Government Act* or a person in a class prescribed by the minister under Subsection 524(9) of the *Local Government Act*. A *Qualified Professional* must meet the requirements outlined in the *District's Terms of Reference* for Natural Hazard and/or Risk Assessments.

SEA DIKE means an existing or future dike shown in Schedule B, that is operated and maintained by the *District* to protect against coastal flooding and sea level rise, with a minimum crest elevation defined in the *Integrated Flood Hazard Management Plan*, meeting Provincial guidelines for design and construction and approved by the *Inspector of Dikes*.

SECONDARY FLOODWAY means an area within a dike-protected *Floodplain* that is critical for conveying floodwaters in the event of a dike breach to maintain modelled flood levels. *Secondary Floodways* are shown in Schedule E.

SECONDARY SUITE means a second, self-contained dwelling unit with private access, its own kitchen and bathroom, and located within a single-unit dwelling, within

a detached accessory building, or within a townhouse dwelling complying with the requirements of the Zoning Bylaw.

SETBACK see *Floodplain Setback*.

STANDARD DIKE means a dike shown in Schedule B, built to a minimum crest elevation equal or above the *FCL* and meeting standards of design and construction approved by the *Inspector of Dikes* and maintained by the *District*.

TSUNAMI RUNUP ELEVATION means an elevation that will provide reasonable protection for development against water levels that may be experienced during a tsunami. The *Tsunami Runup Elevation* shall be 4.7 metres geodetic.

UNCONNECTED COASTAL FLOOD HAZARD AREA means any area that is not and will not be protected by the planned *Sea Dike* shown in Schedule B and that is below 5.6 metres geodetic elevation.

WATERCOURSE means any natural or man-made depression with well-defined banks and a bed 0.6 metres or more below the surrounding land serving to give direction to a current of water at least six (6) months of the year or having a drainage area of 2 square kilometres or more upstream of the point of consideration. Roadside ditches are not considered a *Watercourse* for the purposes of this Bylaw.

- 2.2 Unless otherwise provided in this Bylaw, words and phrases used herein have the same meanings as in the *Local Government Act*, *Community Charter*, or *Land Title Act*, as the context and circumstances may require. A reference to a statute in this Bylaw refers to a statute of the Province of British Columbia unless otherwise indicated, and a reference to any statute, regulation, bylaw or other enactment refers to that enactment as it may be amended or replaced from time to time. In the event of a conflict between this Bylaw and a Provincial enactment, the stricter law prevails. Headings in this Bylaw are for convenience only and must not be construed as defining or limiting its scope or intent. If any part of this Bylaw is held to be invalid by a court of competent jurisdiction, the invalid part is severed and the remainder continues to be valid.
- 2.3 The *District* does not, by the enactment, administration or enforcement of this Bylaw, represent to any person that any building, structure, manufactured home or *Habitable Area* located, constructed or used in accordance with the provisions of this Bylaw, or in accordance with conditions, terms, information, advice, direction or guidance provided by the *District* in the course of administering this Bylaw, will not be damaged by flooding or floodwater.
- 3.0 Application and Floodplain Designation**
- 3.1 This Bylaw shall be applicable within the boundaries of the *District* except within an Indian Reserve.

3.2 Floodplain Designation

The following areas of the *District* are designated as *Floodplain*:

- (i) Any land within a *Flood Hazard Area, Overland Flow Hazard Area, and/or Mashiter Overland Flow Hazard Area* shown in Schedule A1.
- (ii) Any land within an *Unconnected Coastal Flood Hazard Area*.
- (iii) Any land that is less than 1.5 metres above the *Natural Boundary* of an adjacent *Watercourse*, lake, pond, swamp, marsh area or reservoir.
- (iv) Any land within the *Floodplain Setbacks* specified in Section 4.

4.0 Floodplain Specifications

4.1 Flood Construction Levels

4.1.1 Within a designated *Floodplain*, the following elevations are specified as *FCLs*, except where more than one *FCL* is applicable, the higher elevation shall govern:

- (i) The elevation determined by interpolation of *FCLs* shown in Schedule A1.
- (ii) For *Overland Flow Hazard Areas*, the *Minimum Ponding Elevation*, which is determined as the higher elevation of:
 - a. 1.5 metres above the *Natural Boundary* of any adjacent *Watercourse*, lake, pond, marsh or reservoir, whether natural or constructed;
 - b. 0.6 metres above the crest of any downstream road or embankment or other feature that could result in a backwater condition, but specifically excluding the effect of downstream *Standard Dikes* and *Sea Dikes*; and
 - c. 1 metre above the finished grade around the building.
- (iii) For the *Mashiter Overland Flow Hazard Area*:
 - a. 0.3 metres above the crown of the road adjacent to the parcel. Where a parcel abuts more than one road, the *FCL* shall be measured from the highest adjacent road.
- (iv) For development directly adjacent to the *Sea Dike*, the higher elevation of:
 - a. 0.3 metres above the adjacent crest of the *Sea Dike*; and

- b. An *FCL* determined by a *Qualified Professional* based on the interaction of any overtopping flows with the proposed structure over its design life.
- (v) For *Unconnected Coastal Flood Hazard Areas*, an *FCL* determined by a *Qualified Professional* in accordance with Provincial Guidelines as the sum of:
 - a. *Designated Flood Level* established in the *Integrated Flood Hazard Management Plan*,
 - b. Allowance for regional uplift or subsidence to the year 2100,
 - c. Estimated wave effects for a wind event with an annual exceedance probability of 1:200 or 0.5%, and
 - d. A minimum freeboard of 0.6 metres.
- (vi) The *Tsunami Runup Elevation*.

4.2 Floodplain Setbacks

4.2.1 *Floodplain Setbacks* shall be as follows, except that where more than one *Setback* is applicable, the greater shall apply.

- (i) 30.0 metres from the *Natural Boundary* of the Squamish, Mamquam, Cheakamus, Cheekeye and Stawamus Rivers.
- (ii) 15.0 metres from the *Natural Boundary* of any other *Watercourse* where the development, structure or improvement are not located within a *Secondary Floodway*.
- (iii) 30.0 metres from the *Natural Boundary* of any *Watercourse*, for developments, structures or improvements located within a *Secondary Floodway*.
- (iv) For areas abutting any dike maintained by the *District*, except the *Sea Dike*, the greater of:
 - a. 7.5 metres from the toe of an actual or theoretical dike cross-section that meets Provincial requirements for a *Standard Dike*,
 - b. 15.0 metres from the toe of any existing dike that does not meet Provincial Requirements for a *Standard Dike*.
- (v) For areas abutting the Squamish River dike or the Mamquam River South dike, 7.5 metres from the minimum future dike shown in Schedule C.

- (vi) 0.0 metres from the boundary (i.e. outside) of any existing right-of-way for *Protective Works*, including but not limited to any existing or future *Standard Dike* or *Sea Dike* shown in Schedule B.
- (vii) For areas abutting the *Sea Dike*, the greater of:
 - a. 15.0 metres from the water side crest of the *Sea Dike* where the sea dike has been designed or built to the Year 2100 standard shown in Schedule D,
 - b. 3.0 metres from any part of the *Sea Dike* as illustrated in Schedule D, including but not limited to:
 - i. the intersection of an actual or theoretical 3H:1V backslope of a dike raised to accommodate 2 metres sea level rise from present day (i.e. anticipated Year 2200 sea level) with the natural (i.e., pre-development) ground elevation,
 - ii. the intersection of the theoretical 3H:1V backslope of a dike raised to accommodate 2 metres sea level rise (i.e. anticipated Year 2200 sea level) with the lowest base elevation of the proposed structure, and
 - iii. any structural or geotechnical component (e.g. cable tieback or soil anchor).
 - c. 30.0 metres from the future natural boundary, including 1 metre of sea level rise, as determined by a *Qualified Professional* in accordance with Provincial Guidelines, where the *Sea Dike* has not been designed or built.
- (viii) For float homes, the greater of:
 - a. 7.5 metres from the water side toe of the existing *Sea Dike*,
 - b. 7.5 metres from the intersection of existing natural grade with the water level at mean high tide, for areas along the planned *Sea Dike* alignment shown in Schedule B where the *Sea Dike* has not yet been built, and
 - c. 7.5 metres from the water side toe of the planned *Sea Dike* shown in Schedule B, where a preliminary design for the planned *Sea Dike* has been completed.
- (ix) For *Unconnected Coastal Flood Hazard Areas*, the greater of:

- a. 15.0 metres from the future natural boundary, including 1 metre of sea level rise, as determined by a *Qualified Professional* in accordance with Provincial Guidelines,
- b. The distance to where existing grade, or proposed grade (where the land is proposed to be filled and permanently protected from erosion) intersects with the *FCL* as determined by a *Qualified Professional* in accordance with Provincial Guidelines,
- c. Such additional distance beyond (a) or (b) where a *Qualified Professional* determines is necessary to accommodate future waves and erosion, and
- d. 15.0 metres from the waterside crest of any *Protective Works* designed to mitigate future erosion.

5.0 Application of Floodplain Specifications

5.1 Within a designated *Floodplain*, the following regulations apply:

- (i) No *Habitable Area* shall be constructed, reconstructed, altered, moved or extended, such that the underside of its floor system or the top of its supporting *Pad* is lower than the *FCL* specified in this Bylaw.
- (ii) No building, structure, obstruction, *Habitable Area* or fill shall be constructed, reconstructed, altered, moved or extended within the *Floodplain Setback* specified in this Bylaw.
- (iii) Enclosed underground parking is not permitted on any property located within the *Floodplain* that is not protected by a *Standard Dike*.
- (iv) Major fixed equipment including, but not limited to, major electrical switchgear, furnaces, ventilation systems, hot water tanks and hot water heaters that are integral to and necessary for the functioning of a building according to the *BC Building Code* must meet *FCLs* specified in this Bylaw unless the building is exempt from meeting the *FCL* under Section 6.1 (i), (ii), (iii), (iv) and (v).
- (v) All structural support or compacted landfill or a combination of both supporting a building or structure must be designed to withstand forces imposed by floodwater including protection against scour and erosion from flood flows, wave action, ice and other debris using the following minimum requirements:

- a. Within the *Mashiter Overland Flow Hazard Area* and/or where Schedule A2 shows that simplified design flood velocity for a specific property is less than 0.8 metres per second, areas shall not be left as bare earth except during construction.
- b. Within all *Overland Flow Hazard Areas* or where Schedule A2 shows that simplified design flood velocity for a specific property is between 0.8 metres per second and 2.8 metres per second, a *Professional Engineer* must incorporate erosion and scour protection measures using the standard details shown in Schedule F.
- c. In any other *Flood Hazard Area*, including but not limited to areas where Schedule A2 shows that simplified design flood velocity for a specific property is greater than 2.8 metres per second, a *Professional Engineer* must specify site-specific erosion and scour protection measures.

5.2 The *Building Inspector* may require that a British Columbia Land Surveyor's certificate be submitted, at the cost of the land owner, to verify compliance with:

- (i) the location of the proposed development site in relation to *Primary Floodway* or *Secondary Floodway* boundaries, and
- (ii) the *FCL* and *Floodplain Setback* specified in this Bylaw.

5.3 Notwithstanding the requirements laid out in this Bylaw, a *Flood Hazard Assessment*, pursuant to the *Community Charter* or the *Land Title Act*, may be required by the *Building Inspector* or *Approving Officer* prior to building permit or subdivision approval where they deem that this Bylaw and/or the *Integrated Flood Hazard Management Plan* does not resolve concerns for a potential hazard due to flooding.

6.0 General Exemptions

6.1 The following types of development are exempt from meeting the *FCL* specified in this Bylaw:

- (i) Farm buildings and open-sided livestock housing,
- (ii) Public recreation shelters, parks, docks, piers and playgrounds susceptible to only marginal damage by floodwaters,
- (iii) *Minor Buildings*,

- (iv) Porches and domestic greenhouses,
- (v) Manure pits, and
- (vi) *Heavy Industry* located behind a *Standard Dike*.

6.2 The following types of development are exempt from the *FCLs* specified in this Bylaw, subject to the conditions listed for each type of development:

- (i) A renovation to an existing building or structure below *FCL*, provided that:
 - a. there is no increase to the existing floor area below the *FCL*, and
 - b. the renovation does not create a new dwelling unit.
- (ii) An addition to an existing building or structure below the *FCL*, provided that:
 - a. the total floor area added below the *FCL*, after the date of adoption of this Bylaw does not exceed 25 percent of the floor area below *FCL* that exists at the date of adoption of this Bylaw,
 - b. the addition is no lower than the existing floor area below the *FCL*,
 - c. the degree of non-conformity regarding a *Floodplain Setback* is not increased,
 - d. structural support or compacted landfill below the *FCL*, for the addition, is adequately protected from flood flows per the requirements specified in Section 5.1(v), and
 - e. the addition does not involve the creation of a new dwelling unit.
- (iii) That portion of a building or structure to be used as an entryway not exceeding 12 square metres in floor area, or as a parkade or *garage*, provided that:
 - a. The property is protected by a *Standard Dike*,
 - b. the underside of a wooden floor system or top of *Pad* is elevated above the higher of the seasonal high water table or 1 metre geodetic elevation unless it is accompanied by a *Groundwater Management Plan* in accordance with the *District's Terms of Reference*,
 - c. appropriate signage is installed and maintained notifying users of the flood hazard,
 - d. emergency access/egress is provided, and
 - e. no goods damageable by floodwater are stored below the *FCL*.

- (iv) That portion of a building with a ceiling height not exceeding 1.5 metres (e.g. crawl space) provided that no goods damageable by floodwater are stored within the crawl space.
- (v) Electrical circuits not integral to the operation of the building's central and integral systems, provided they are permitted and installed in accordance with BC Safety Authority regulations.
- (vi) Closed-sided livestock housing provided the underside of the wooden floor system or the top of the *Pad* is elevated above the *Minimum Ponding Elevation*.
- (vii) On-loading and off-loading facilities associated with water-oriented industry and portable sawmills, provided the main electrical switchgear is located above the *FCL*.
- (viii) A building to be used as a public washroom, provided that:
 - a. it is protected by a *Standard Dike*,
 - b. the underside of any wooden floor system or pad is elevated a minimum of 0.3 metres above the finished grade around the building, and
 - c. it is designed to withstand the effects of floodwaters.

7.0 Local Area Exemptions

7.1 Within the Downtown FCL Exemption Area identified in Schedule G, non-residential uses may be constructed, reconstructed, moved or extended below the *FCL*, provided that:

- (i) major fixed equipment including major electrical switchgear, furnaces, ventilation systems and hot water tanks that are integral to and necessary for the functioning of a building according to the *BC Building Code* are located above the *FCL*,
- (ii) the floor level is at least 0.15 metres above the crown of road and 0.3 metres above the gutter of any adjacent road,
- (iii) all elevators have an automatic shut-off to prevent occupants from inadvertently descending into an inundated area, and
- (iv) a maximum of one level of parking is located below the finished grade with clearly marked and accessible exits to the surface,

subject to the parkade elevation remaining above the higher of the seasonal high water table and 1 metre geodetic elevation.

8.0 Site-Specific Exemptions

8.1 The General Manager of Community Services may exempt a person from meeting the requirements of this Bylaw in relation to a specific parcel of land or a use, building or other structure on the parcel of land if he/she considers it advisable and subject to all of the following conditions:

- (i) The *District* receives a *Flood Hazard Assessment* completed in accordance with the *District's* Terms of Reference for Natural Hazard and/or Risk Assessments, certifying that:
 - a. the land may be used safely for the use intended without reliance on *Protective Works*,
 - b. a valid hardship exists and no other reasonable option is available,
 - c. the proposed *FCL* and *Floodplain Setback* represent the minimum practicable variation from the requirements of this bylaw given the location, configuration, and intended use of the land, specifically without regard to the economic circumstances or siting preferences of the Owner, and
 - d. the exemption will not result in a transfer of flood hazard to other lands.

A valid hardship shall only be recognized where the physical characteristics of the lot (e.g. exposed bedrock, steep slope, the presence of a *Watercourse*, etc.) and size of the lot are such that building development proposals consistent with the current land use zoning cannot occur under the requirements of this Bylaw. The economic circumstances or design and siting preferences of the owner shall not be considered as grounds for hardship;

- (ii) The exemption is consistent with Provincial Flood Hazard Area Land Use Management Guidelines;
- (iii) The owner enters into a *Restrictive Covenant* with the *District* in a form approved by the *District*;
- (iv) Electrical circuits and mechanical systems integral to the operation of the building's central and integral systems are installed above the *FCL* and in accordance with BC Safety Authority regulations; and
- (v) The building is designed to withstand the effects of floodwaters.

8.2 Notwithstanding Section 8.1, the General Manager of Community Services may exempt a person from meeting the *Floodplain Setbacks* established under Section 4.2 in relation to a *Setback* from an existing dike that does not meet Provincial Standards or a *Sea Dike* that has not been designed or built, where:

- (i) a conceptual design and alignment is prepared by a *Qualified Professional* and submitted to the *District*,
- (ii) the General Manager of Community Services and *Inspector of Dikes* consider the exemption advisable and provide written approval, and
- (iii) the works receive approvals under all applicable statutes including, but not limited to, the *Dike Maintenance Act*, *Water Sustainability Act*, *Fisheries Act* and *Navigation Protection Act*.

8.3 Notwithstanding Section 8.1, the General Manager of Community Services may exempt a person from meeting the *Floodplain Setbacks* established under Section 4.2 in relation to placing fill within a dike *Setback*, where:

- (i) a *Qualified Professional* certifies that the proposed fill:
 - a. is compatible from a geotechnical perspective with the abutting dike fill,
 - b. will not decrease the conveyance of a *Secondary Floodway* or result in a transfer of flood hazard to other lands, and
 - c. has been constructed in general conformance with the specified design parameters upon completion.
- (ii) the General Manager of Community Services and *Inspector of Dikes* consider it advisable and provide written approval, and
- (iii) the works receive approvals under all applicable statutes including, but not limited to, the *Dike Maintenance Act*, *Water Sustainability Act*, *Fisheries Act* and *Navigation Protection Act*.

8.4 Notwithstanding Section 8.1, the General Manager of Community Services may exempt a renovation or addition to a building or structure existing prior to the date of adoption of this Bylaw that creates a new *Secondary Suite* below the *FCL*, provided that:

- (i) the *District* receives a *Flood Hazard Assessment* completed in accordance with the *District's* Terms of Reference for Natural Hazard and/or Risk Assessments, certifying that:
 - a. the land may be used safely for the use intended without reliance on *Protective Works*,

- b. the flood depth in the Secondary Suite is less than 1 metre,
 - c. the building or structure is not within a *Debris Flow Hazard Area*,
 - d. the exemption will not result in a transfer of flood hazard to other lands, and
 - e. the degree of non-conformity regarding a *Floodplain Setback* is not increased.
- (ii) the total floor area added below the *FCL* after the date of adoption of this Bylaw does not exceed 25 percent of the non-conforming floor area below *FCL* that exists at the date of adoption of this Bylaw,
- (iii) the renovation or addition does not result in conversion of a one-unit dwelling to a two-unit dwelling as defined in the Zoning Bylaw,
- (iv) the owner enters into a *Restrictive Covenant* with the *District* in a form approved by the *District*.

8.5 Notwithstanding Section 8.1, a *Qualified Professional* who is also a *Professional Engineer* may provide a site-specific *Flood Hazard Assessment* that proposes a different design velocity for erosion protection than is shown on Schedule A2. Where the General Manager of Community Services accepts the revised design velocity, the same *Qualified Professional* must complete the design of corresponding site-specific erosion and scour protection measures.

9.0 Offence and Penalty

9.1 A person who contravenes a provision of this Bylaw, or who permits, allows or suffers a contravention by another person, commits an offence and in the case of a continuing offence, each day that the offence continues is a separate offence. A person convicted of an offence under this Bylaw is liable to a fine not exceeding ten thousand dollars (\$10,000).

10.0 Enforcement

10.1 This Bylaw may be enforced by the General Manager of Community Services, Building Inspector, Senior Manager of Infrastructure Planning, Municipal Engineer or Bylaw Enforcement Officer of the *District*.

11.0 Schedules

11.1 Schedules A through G are attached to and form part of this Bylaw.

12.0 Repeal

12.1 District of Squamish Floodplain Management Bylaw 2880, 2021 is repealed.

READ A FIRST, SECOND AND THIRD time this 2 day of September, 2025.

ADOPTED this 16 day of September, 2025.



Armand Hurford, Mayor

Melissa Von Bloedau, Corporate Officer

Schedule A1 - Flood Construction Level Maps

Path: O:\400-0459\463-278\430-GIS\MXD-Rpt\Final IFHMP Report\20170424-SchedA1_CheakamusNorth_FCLs.mxd Date Saved: 4/25/2017 3:55:05 PM
Author: jau

Legend

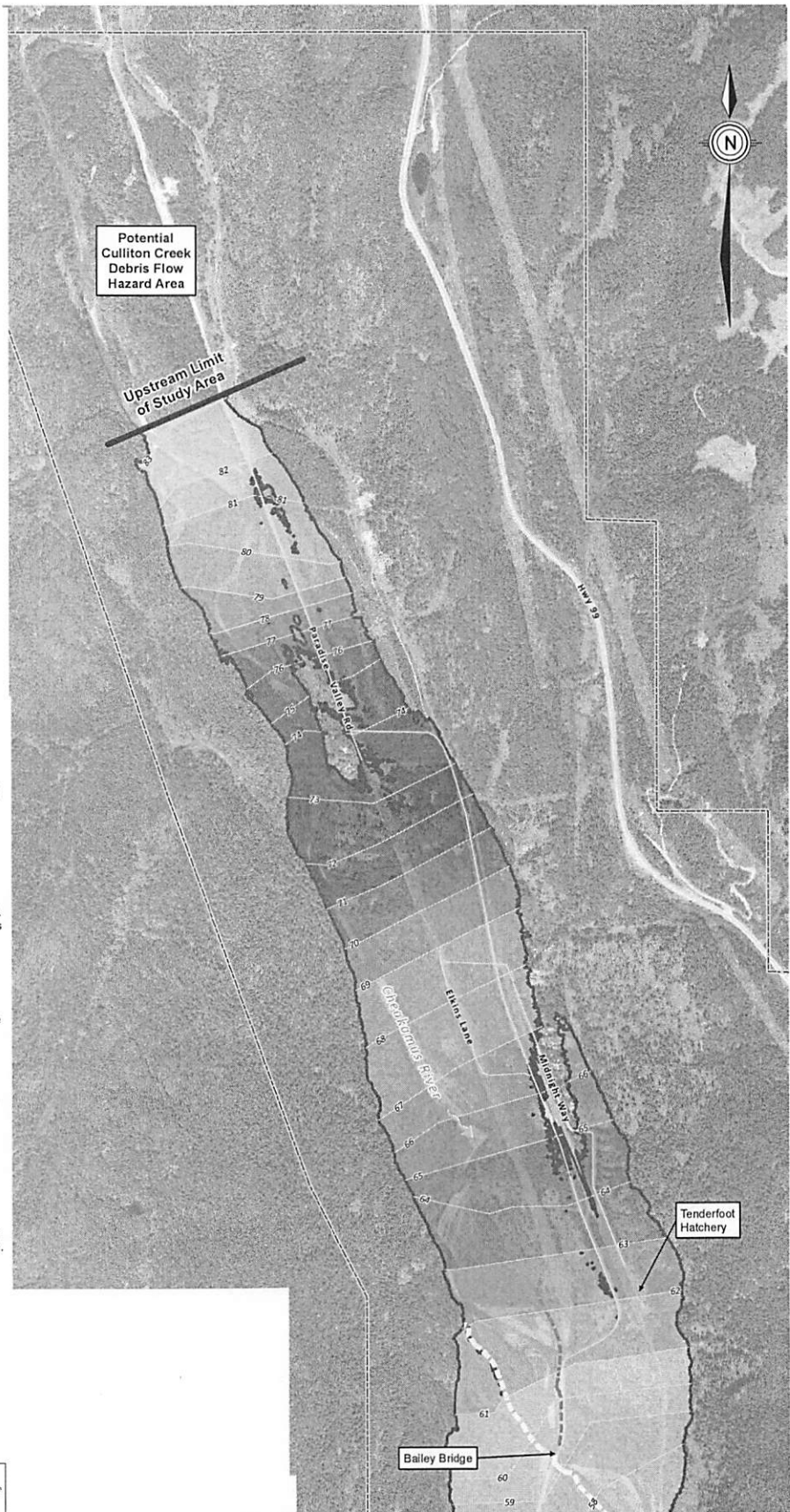
- Municipal Boundary
- First Nations Reserve Boundary
- Study Limits
- District Dike
- Other Dike
- Overland Flow Hazard Area
- Flood Construction Level Contours (1m Interval)

Minimum Flood Construction Level (m)

< 57	70 - 71
57 - 58	71 - 72
58 - 59	72 - 73
59 - 60	73 - 74
60 - 61	74 - 75
61 - 62	75 - 76
62 - 63	76 - 77
63 - 64	77 - 78
64 - 65	78 - 79
65 - 66	79 - 80
66 - 67	80 - 81
67 - 68	81 - 82
68 - 69	82 - 83
69 - 70	> 83

Notes:

- Model results are based on limited - width MOE cross sections from 1978 and 1983.
- Conservative inundation limits are shown in backwater areas to reflect hydraulic model uncertainty.
- FCL's shown on map are geodetic elevations to CGVD28 and include 0.6m freeboard.
- This map does not include all possible flood, debris flood, or debris flow hazards (e.g., from site drainage or tributary streams). Designer must confirm that site-specific FCLs account for all possible sources of flood hazard.
- Previous studies have identified the potential for debris flows on Culliton Creek. Culliton Creek debris flows were not assessed as part of the IFHMP but should be considered for any development proposals within the potential runout zone.
- Previous studies have identified the potential for debris floods generated by the failure of potential landslide blockages of the Cheakamus River at Culliton Creek, Cheakamus Canyon, and Rubble Creek. IFHMP modelling provides an interim allowance for debris floods but did not carry out a detailed debris flood assessment.
- This figure is provided to support IFHMP reporting and related District policy. Users seeking a larger-scale representation of the polygons shown on this figure should refer to the District of Squamish online GIS database.



References: 2013 Orthophoto from The District of Squamish

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District of Squamish - Integrated Flood Hazard Management Plan

Project No.
463-278
Date
April, 2017
250 0 250
1:15,000 (m)

Cheakamus River (North) Minimum Flood Construction Levels

Schedule A1

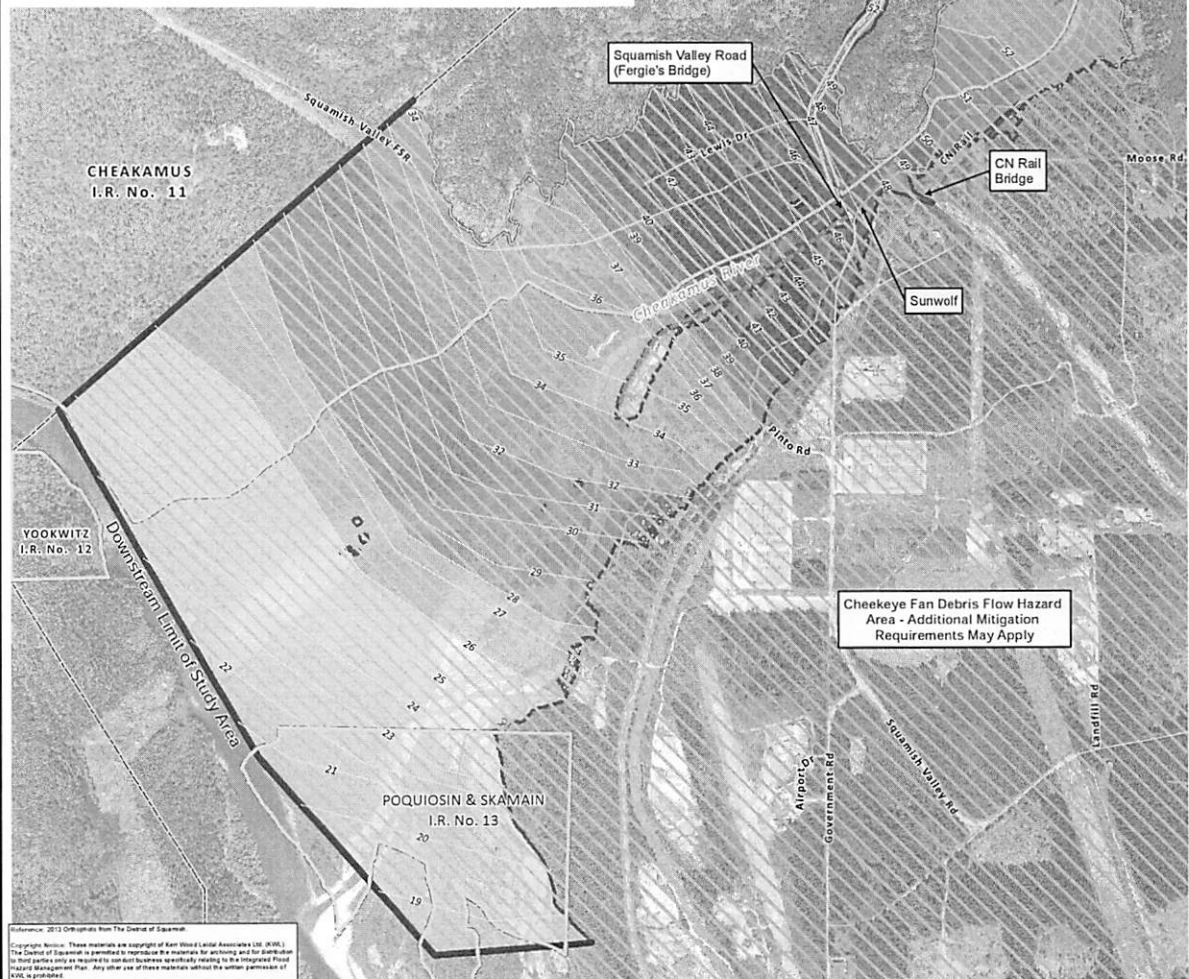
Legend

- Municipal Boundary
- First Nations Reserve Boundary
- Study Limits
- District Dike
- Other Dike
- Overland Flow Hazard Area
- Flood Construction Level Contours (1m Interval)

Minimum Flood Construction Level (m)

Notes:

- Model results are based on limited-width MOE cross sections from 1978 and 1983.
- Conservative inundation limits are shown in backwater areas to reflect hydraulic model uncertainty.
- FCL's shown on map are geodetic elevations to CGVD28 and include 0.6m freeboard.
- This map does not include all possible flood, debris flood, or debris flow hazards (e.g., from site drainage or tributary streams). Designer must confirm that site-specific FCLs account for all possible sources of flood hazard.
- Development in Cheekye Fan debris flow hazard area must meet or exceed floodproofing requirements for overland flow areas.
- This figure is provided to support IFHMP reporting and related District policy. Users seeking a larger-scale representation of the polygons shown on this figure should refer to the District of Squamish online GIS database.



KW KERR WOOD LEIDAL
 consulting engineers

District of Squamish - Integrated Flood Hazard Management Plan

Project No. 463-278 Date April, 2017

250 0 250 (m)
 1:15,000

Cheakamus River (South) Minimum Flood Construction Levels

Schedule A1

Legend

- Study Area Boundary
- First Nations Reserve Boundary
- Existing Dike
- Downtown Historic Area for FCL Exemption
- Proposed Sea Dike (Final Alignment to be confirmed)
- Overland Flow Hazard Area

Minimum Flood Construction Level (m)

< 4.00	7.51 - 8.00
4.01 - 4.50	8.01 - 8.50
4.51 - 5.00	8.51 - 9.00
5.01 - 5.50	9.01 - 9.50
5.51 - 6.00	9.51 - 10.00
6.01 - 6.50	10.01 - 10.50
6.51 - 7.00	10.51 - 11.00
7.01 - 7.50	> 11.00

Notes:

- Results represent an envelope of the effects expected from a single dike breach event occurring at any location along the dike.
- This map does not include all possible flood hazards and must be considered together with complementary studies including but not limited to District ISMRs and Master Drainage Plans. Designer must confirm that site-specific FCL's account for all possible sources of flood hazard.
- FCLs for unconnected coastal flood hazard areas must be determined by a Qualified Professional in accordance with the District's floodplain bylaw.
- The IFHMP Coastal Flood Hazard Mitigation Strategy and Flood Protection Options Final Draft Report recommended a sea dike to protect downtown from coastal flood hazards. The Future Sea Dike has been included in all dike breach modeling.
- FCL's shown on map are geodetic elevations to CGVD28 and do not include freeboard.
- This figure is provided to support IFHMP reporting and related District policy. Users seeking a larger-scale representation of the

FCL's for unconnected coastal flood hazard areas must be determined by a Qualified Professional in accordance with the District's floodplain bylaw

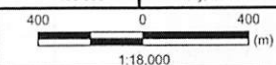
Reference: 2013 Ordinance from The District of Squamish

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District of Squamish - Integrated Flood Hazard Management Plan

Project No. 463-396 Date July, 2025



Minimum Flood Construction Levels for
 Dike Protected Lower Squamish River Floodplain

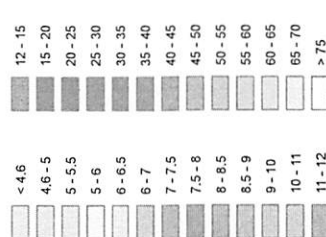
Schedule A1



Legend

-  Municipal Boundary
 First Nations Reserve Boundary
 Study Limits
 District Dike
 Other Dike
 Overland Flow Hazard Area

Flood Construction Level Contours
0.5m Interval Downstream of Hwy 99
2m Interval Upstream of Hwy 99
Minimum Flood Construction Level (m)



Reference: 2013 Orthophoto from the District of Squamish.



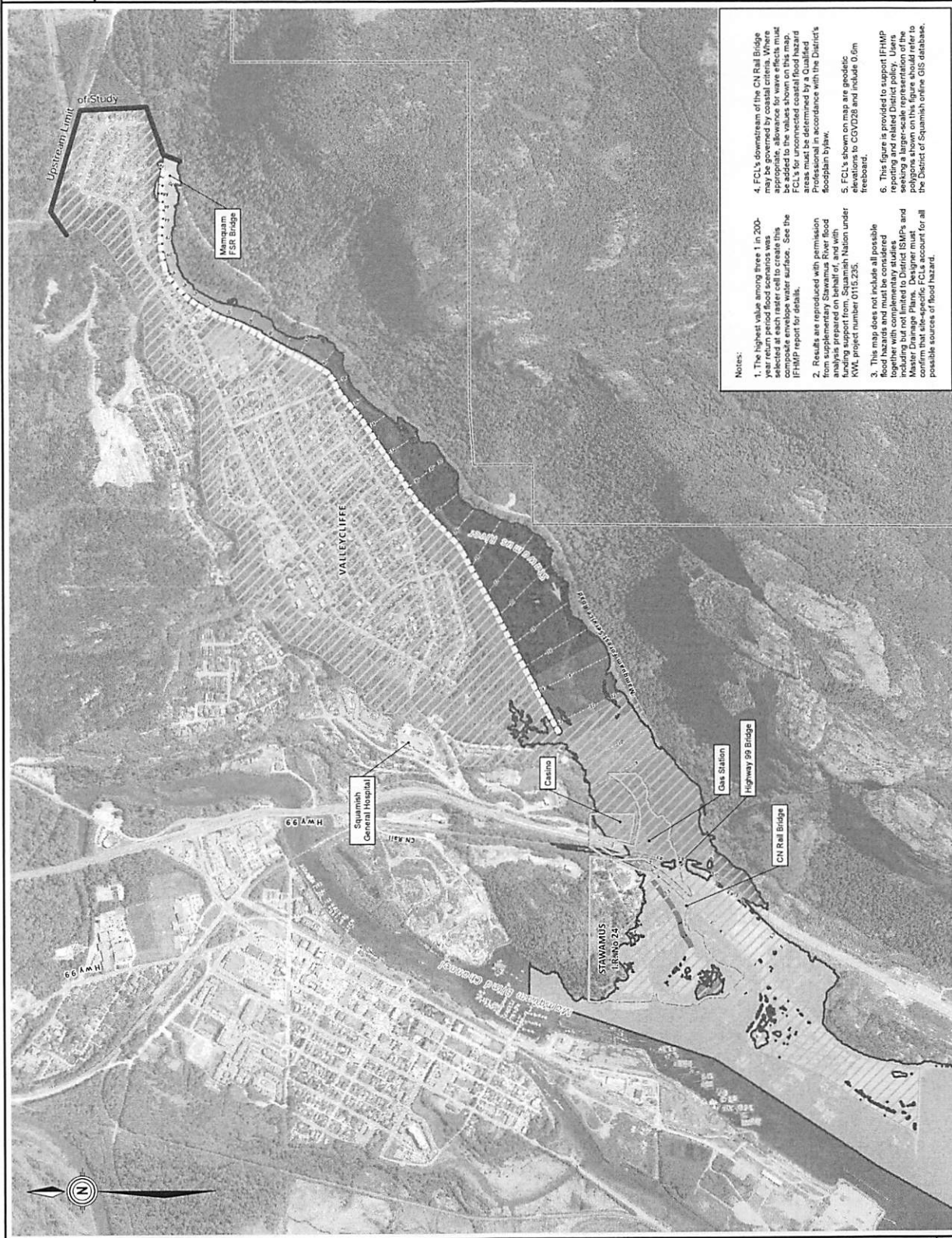
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Project No. 463-278

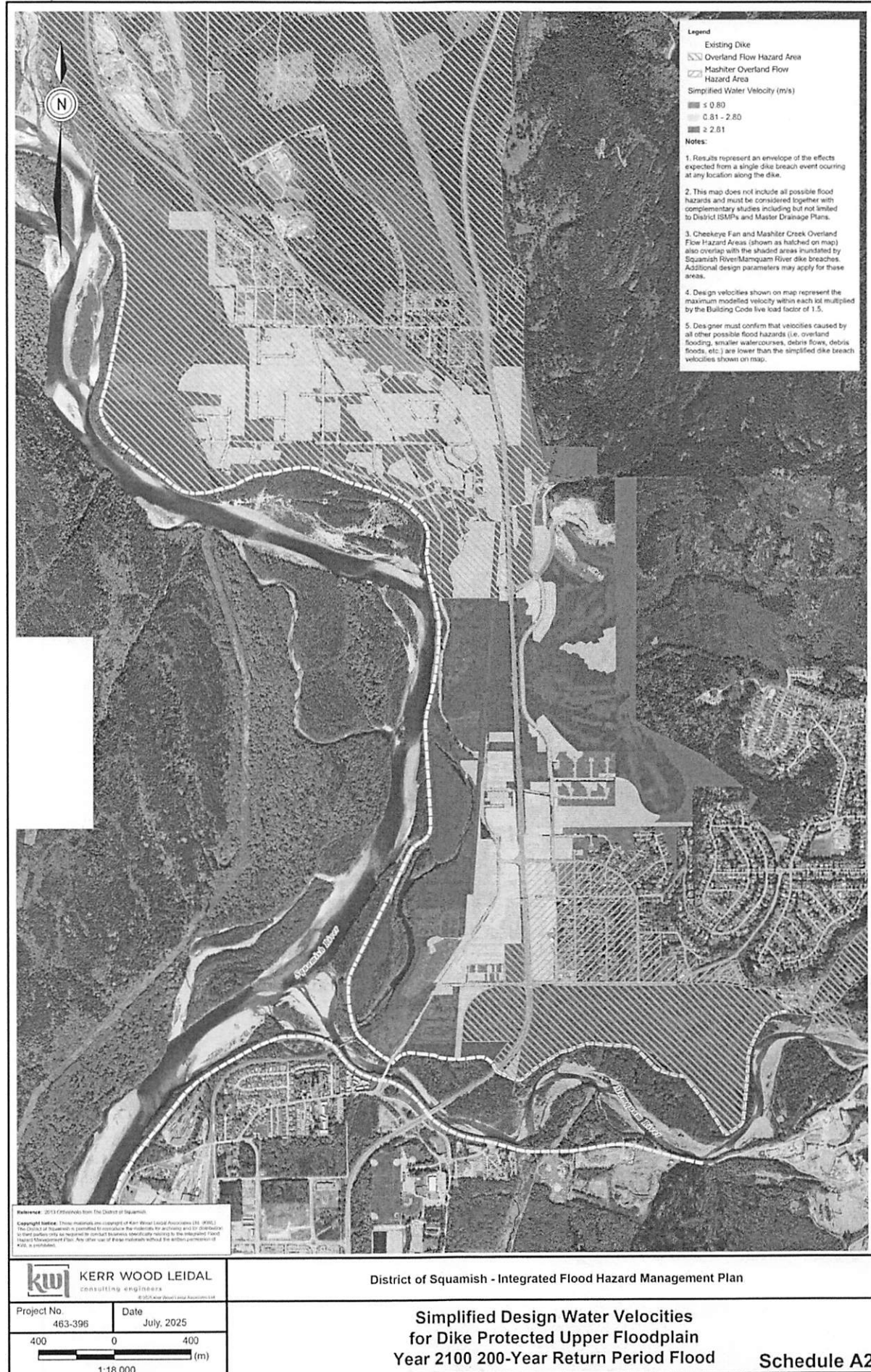
Stawamus River
Minimum
Flood Construction Levels

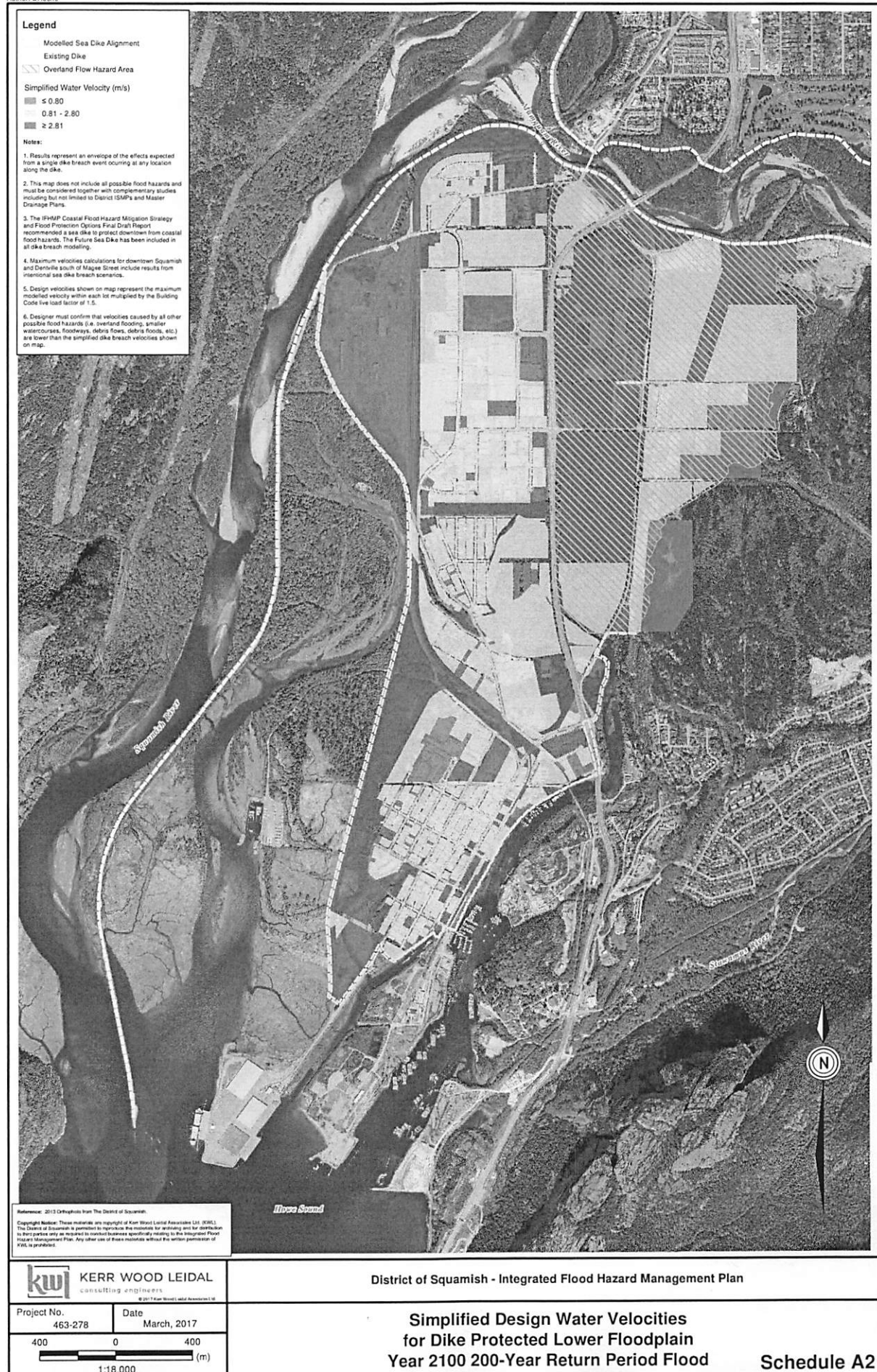
Schedule A1



Notes:

1. The highest value among three 1 in 200-year return period flood levels is adopted as the design flood level for the proposed envelope water seal. See the FHIMP report for details.
2. Results are reproduced with permission from the Queensland National Underwater and Aquatic Science Centre (QNASCC) and with analysis prepared on behalf of, and with funding from, the Queensland Government (QGW, project number 0116.235).
3. This may also not include all possible flood levels, together with complementary studies including but not limited to District ISMPs and Master Drainage Plans. Designer must ensure that the selected flood level is an account for all possible flood levels that could be expected to be exceeded by the proposed envelope water seal.
4. FCL's downstream of the CN Rail Bridge (see Figure 1) are not considered appropriate, allowance for wave effects must be added to the values shown on this map.
5. FCL's for unconnected coastal flood hazard areas must be determined by a Qualified Professional in accordance with the District's floodplain bylaws.
6. FCL's shown on map are geodetic elevations to CSV28 and are 0.0m freeboard.
7. This figure is provided to support FHIMP reporting and related District policy. Users seeking a larger-scale representation of the polygons shown on this figure should refer to the District of Squisham on GIS database.





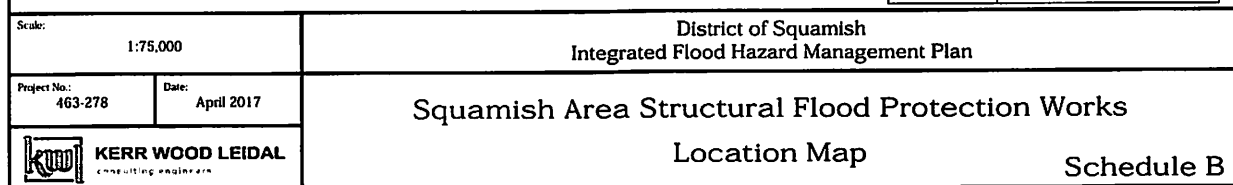
KW KERR WOOD LEIDAL
 consulting engineers

District of Squamish - Integrated Flood Hazard Management Plan

Project No. 463-278 Date March, 2017

**Simplified Design Water Velocities
 for Di-ke Protected Lower Floodplain
 Year 2100 200-Year Return Period Flood**

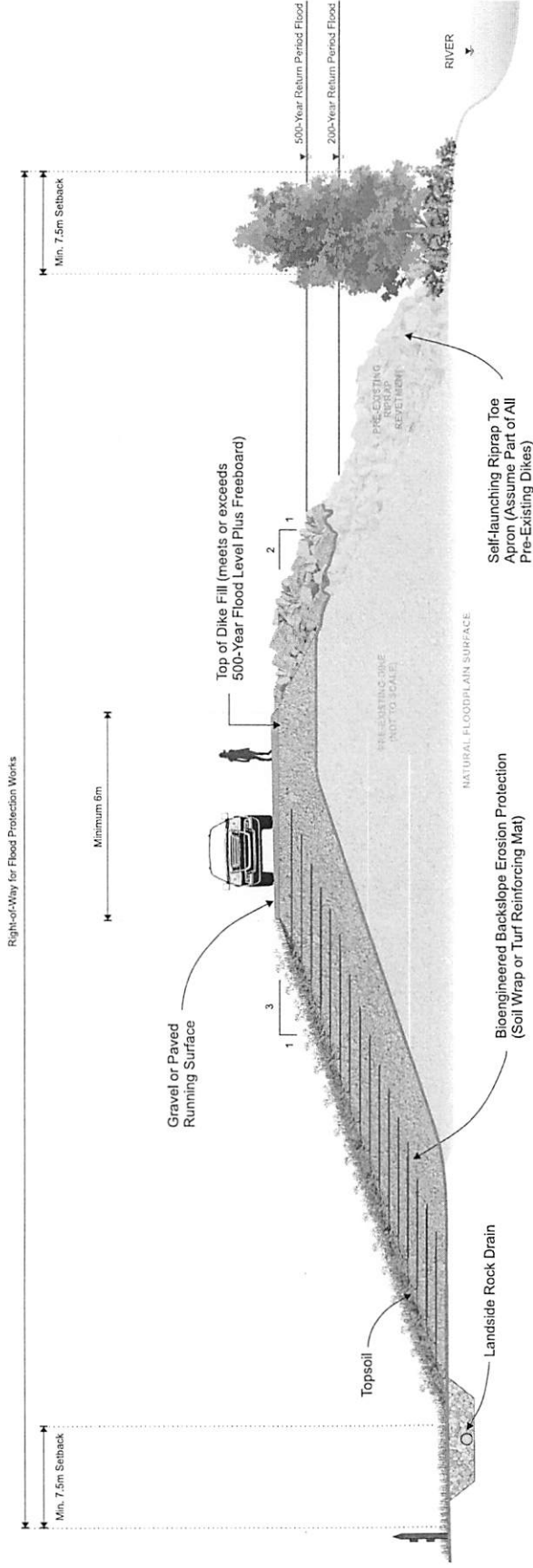
Schedule A2



Schedule C - Future Squamish and Mamquam River Dike Standard

463-278 (501-Drawing)\b_Figures\463-278_Fig3-3_RecommendedSuperDikeUpgrade.CDR

District of Squamish Integrated Flood Hazard Management Plan



Super Dike Upgrades Include:

1. Raise crest elevation to meet or exceed 1:500 year flood level plus 0.6m freeboard
2. Upgrade riprap revetment and self-launching toe apron to protect against erosion and scour during 500-year return period or larger floods. Extend riprap to raised dike crest.
3. Provide minimum crest width of 6m to improve stability, reduce seepage, and allow service vehicles (shown above) to support potential flood fighting efforts on the dike crest.
4. Add erosion protection on landside slope. Figure shows use of bioengineered soil wraps.
5. Add rock drain along landside toe to reduce seepage exit gradients and prevent toe scour during overtopping.
6. Acquire land to support dike upgrade and expanded statutory right-of-way.

Project No. 463-278

Date April 2019

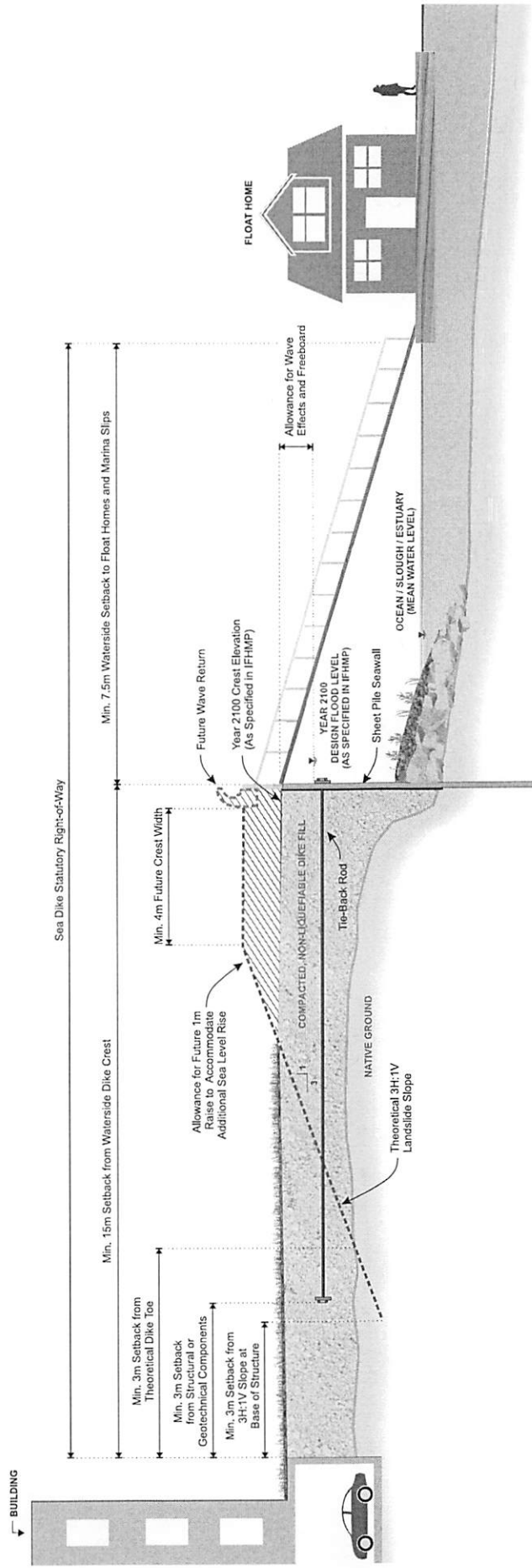
Scale 1:125

Minimum Future Dike Cross-Section for Squamish River Dike and Mamquam River South Dike

Schedule D - Typical Sea Dike Sections

0:0400-0498/453-278-501-Drawing/15 SeaDikeCrossSections CDR

District of Squamish
Integrated Flood Hazard Management Plan



Note:

This dike section illustrates key concepts considered in developing the Squamish IFHMP. It is not intended to form the basis for design. Individual elements must be designed by a qualified professional and will be subject to regulatory review processes.

Project No. 463-278

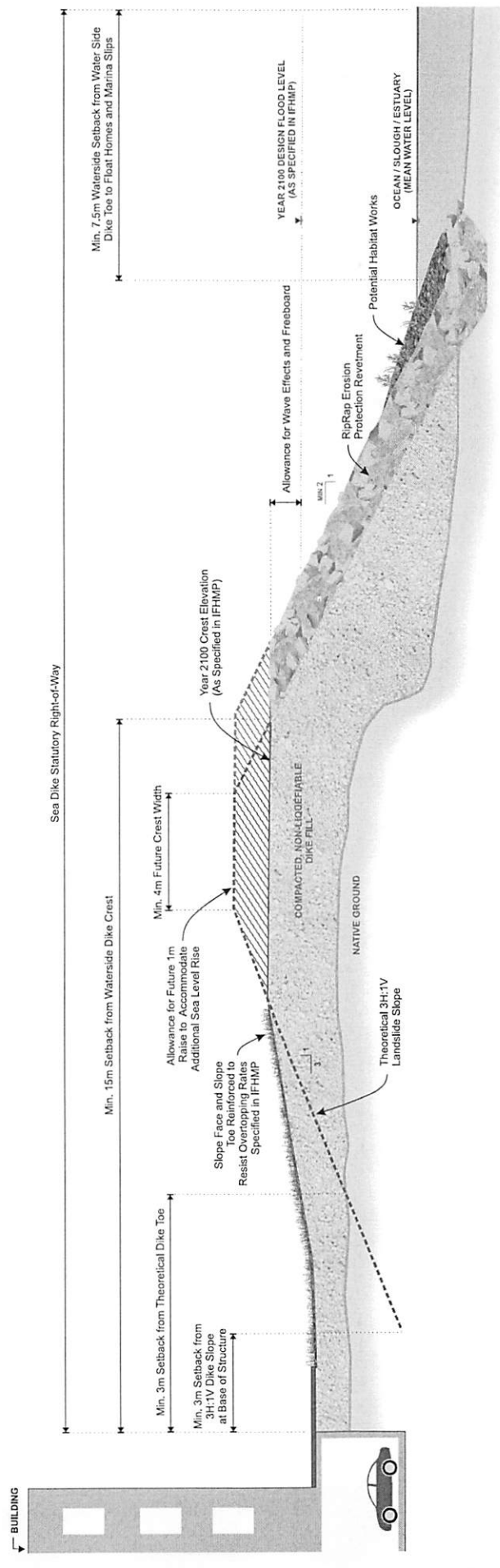
Date February 2017

Not to Scale

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KWL

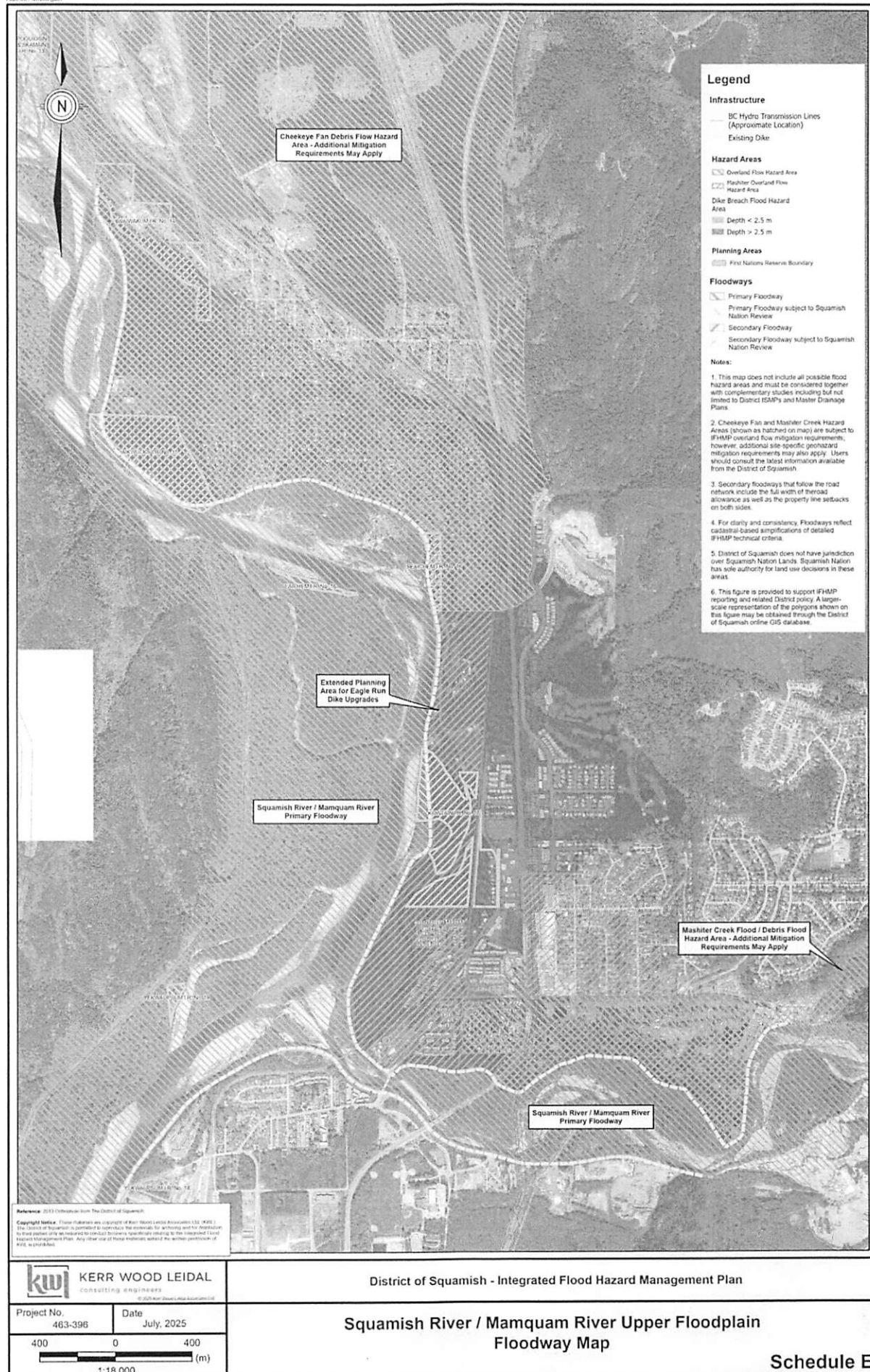
Schedule D

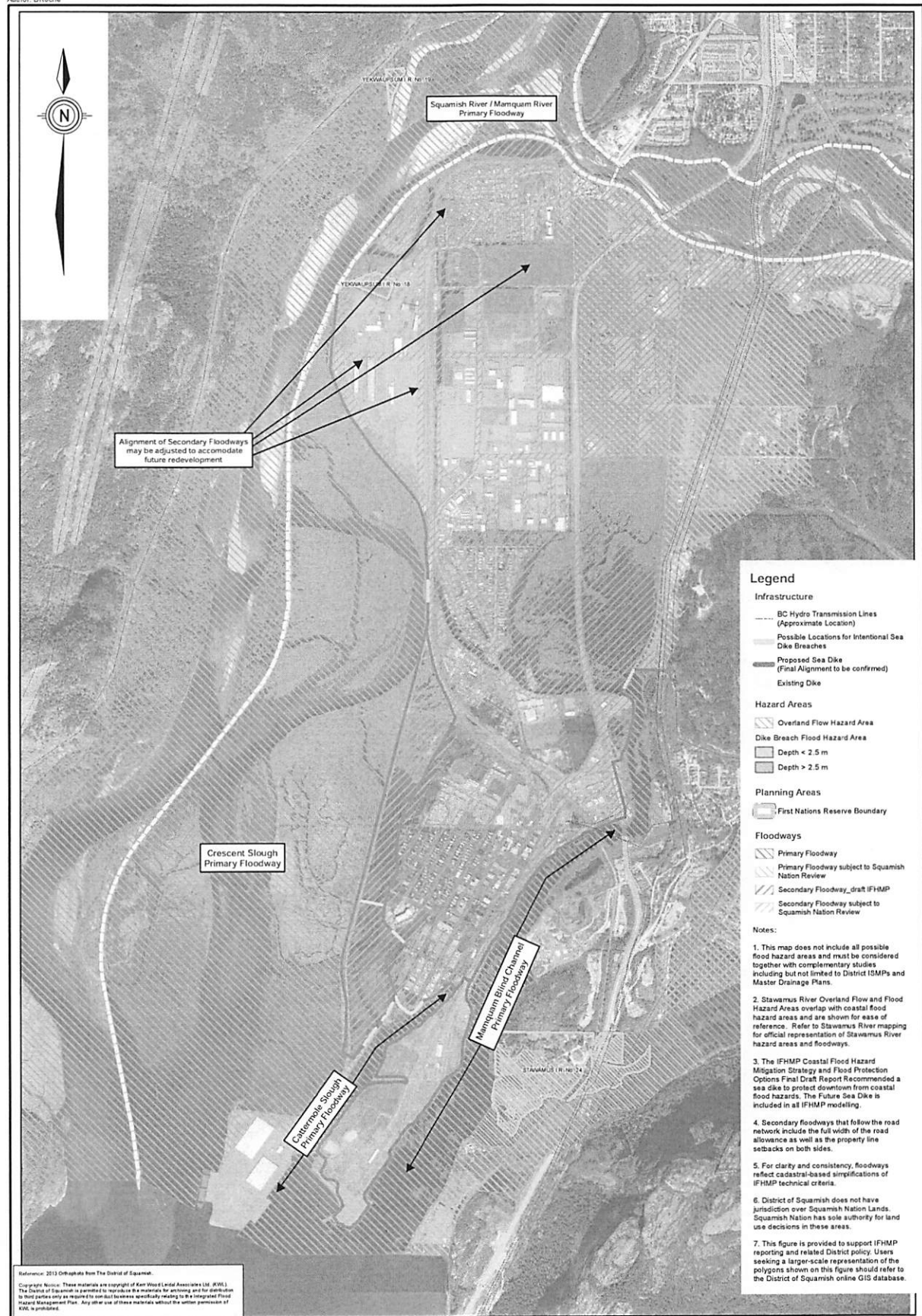
Proposed District of Squamish Sea Dike
Conceptual Cross-Section for Sheet Pile Alternative



Note:

This dike section illustrates key concepts considered in developing the Squamish IFHMP. It is not intended to form the basis for design. Individual elements must be designed by a qualified professional and will be subject to regulatory review processes.





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Project No. 463-278 Date September, 2017

400 0 400
 1:18,000 (m)

District of Squamish - Integrated Flood Hazard Management Plan

Squamish River / Mamquam River Lower Floodplain
 Floodway Map

Schedule E

Legend

Infrastructure

- BC Hydro Transmission Lines
(Approximate Location)
- Railway
- District Dike
- Other Dike

Hazard Areas

- Overland Flow Hazard Area
- Flood / Debris Flood Hazard Area
- Depth < 2.5 m
- Depth > 2.5 m

Planning Areas

- Municipal Boundary
- First Nations Reserve Boundary
- Study Limits

Floodways

- Primary Floodway
- Primary Floodway subject to
Squamish Nation Review

Notes:

1. Model results are based on limited - width MOE cross sections from 1978 and 1983.
2. Conservative inundation limits are shown in backwater areas to reflect hydraulic model uncertainty.
3. This map does not include all possible flood, debris flood, or debris flow hazards (e.g., from site drainage or tributary streams).
4. Previous studies have identified the potential for debris flows on Culliton Creek. Culliton Creek debris flows were not assessed as part of the IFHMP but should be considered for any development proposals within the potential runoff zone.
5. Previous studies have identified the potential for debris floods generated by the failure of potential landslide blockages of the Cheakamus River at Culliton Creek, Cheakamus Canyon, and Rubble Creek. IFHMP modelling provides an interim allowance for debris floods but did not carry out a detailed debris flood assessment.
6. This figure is provided to support IFHMP reporting and related District policy. Users seeking a larger-scale representation of the polygons shown on this figure should refer to the District of Squamish online GIS database.



Reference: 2013 Orthophoto from The District of Squamish

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District of Squamish - Integrated Flood Hazard Management Plan

Project No.	Date
463-278	April, 2017
1:15,000	

Cheakamus River (North) Floodway Map

Schedule E

Legend

Infrastructure

- BC Hydro Transmission Lines (Approximate Location)
- Railway
- District Dike
- Other Dike

Hazard Areas

- Overland Flow Hazard Area
- Flood / Debris Flood Hazard Area
 - Depth < 2.5 m
 - Depth > 2.5 m

Planning Areas

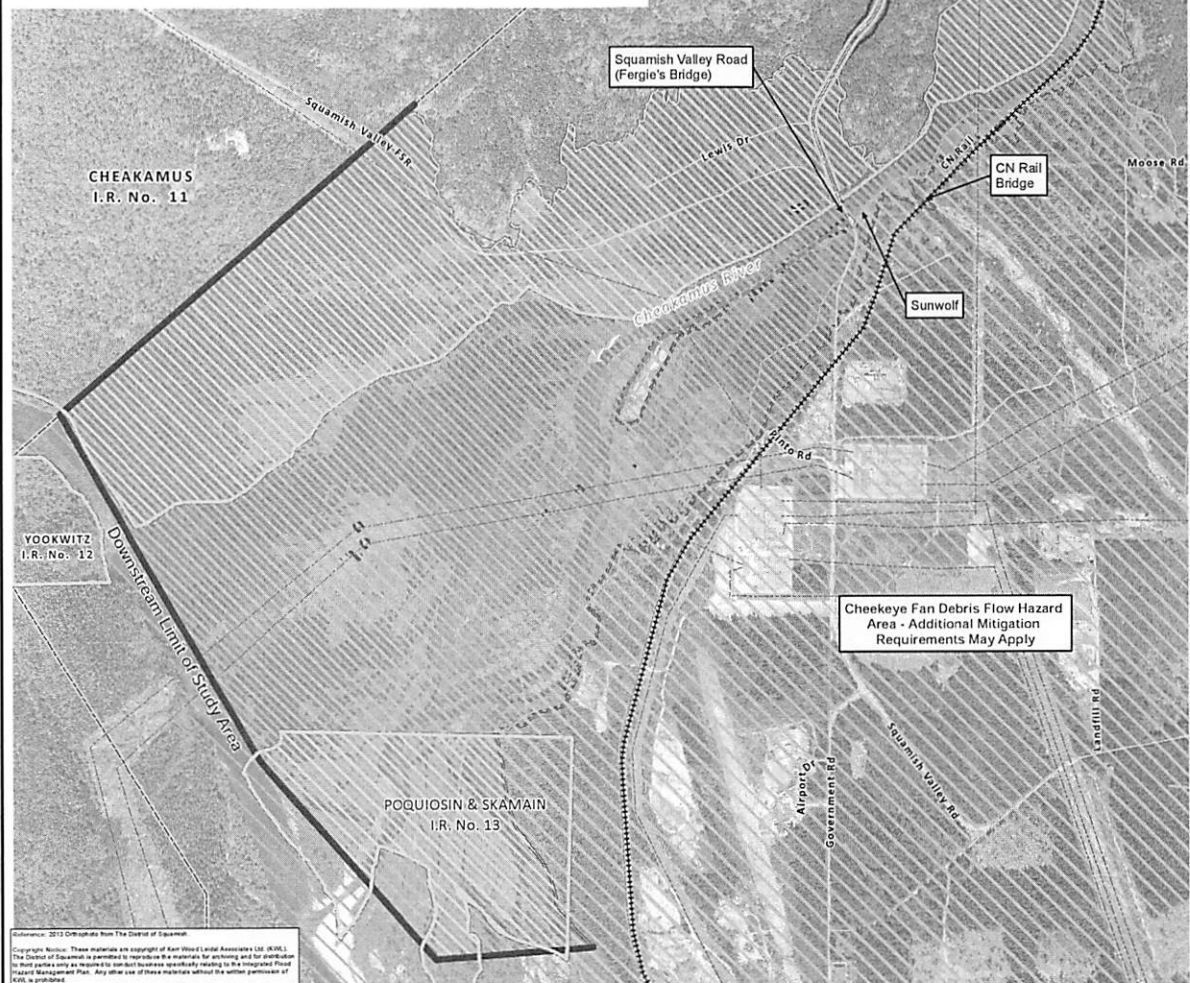
- Municipal Boundary
- First Nations Reserve Boundary
- Study Limits

Floodways

- Primary Floodway
- Primary Floodway subject to Squamish Nation Review

Notes:

1. Model results are based on limited-width MOE cross sections from 1978 and 1983.
2. Conservative inundation limits are shown in backwater areas to reflect hydraulic model uncertainty.
3. This map does not include all possible flood, debris flood, or debris flow hazards (e.g., from site drainage or tributary streams).
4. Cheekeye Fan Hazard Area (shown as hatched on map) is subject to IFHMP overland flow mitigation requirements; however, additional site-specific geohazard mitigation requirements may also apply. Users should consult the latest information available from the District of Squamish.
5. This figure is provided to support IFHMP reporting and related District policy. Users seeking a larger-scale representation of the polygons shown on this figure should refer to the District of Squamish online GIS database.



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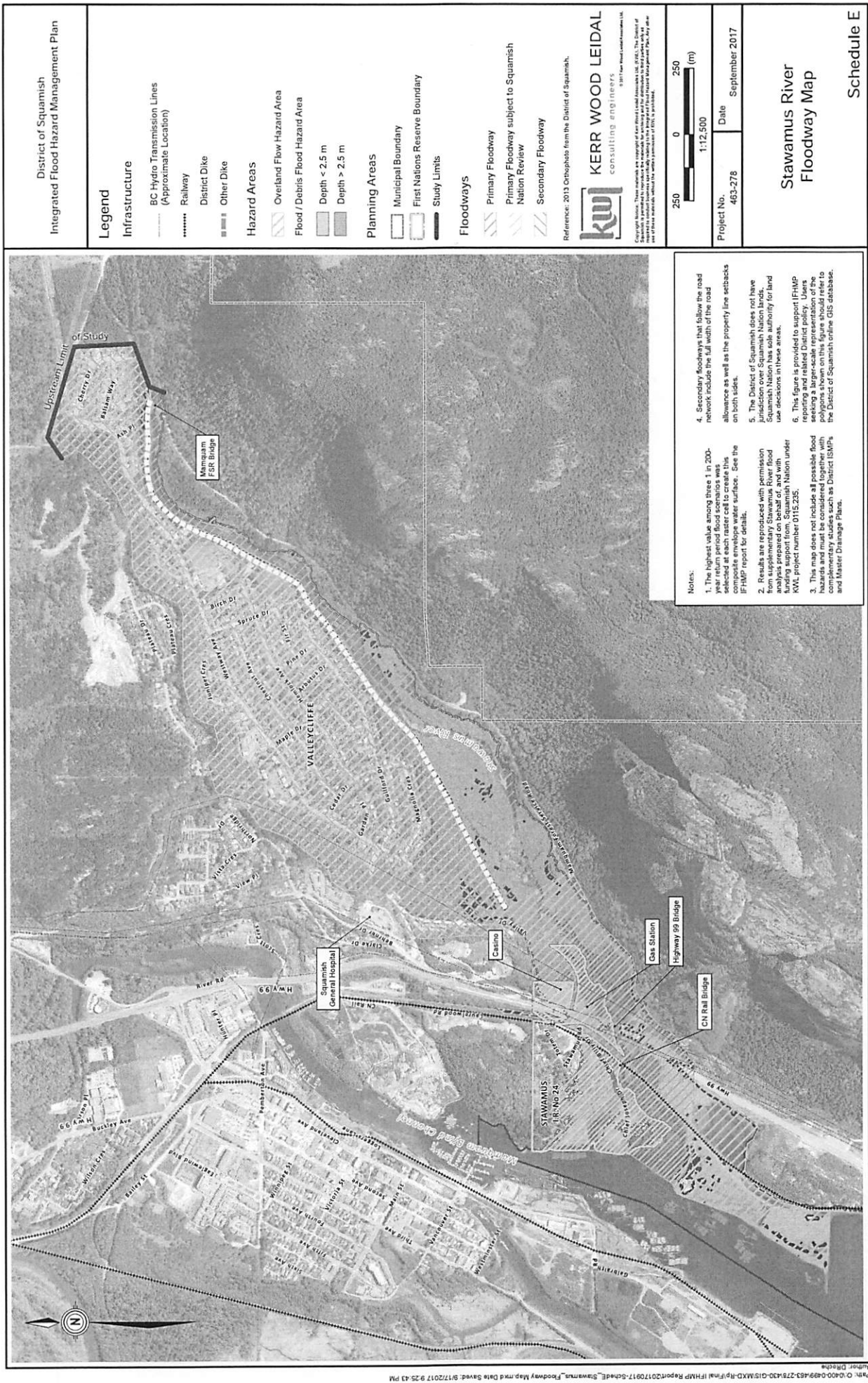
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District of Squamish - Integrated Flood Hazard Management Plan

Project No. 463-278 Date April, 2017
 250 0 250 (m)
 1:15,000

Cheakamus River (South) Floodway Map

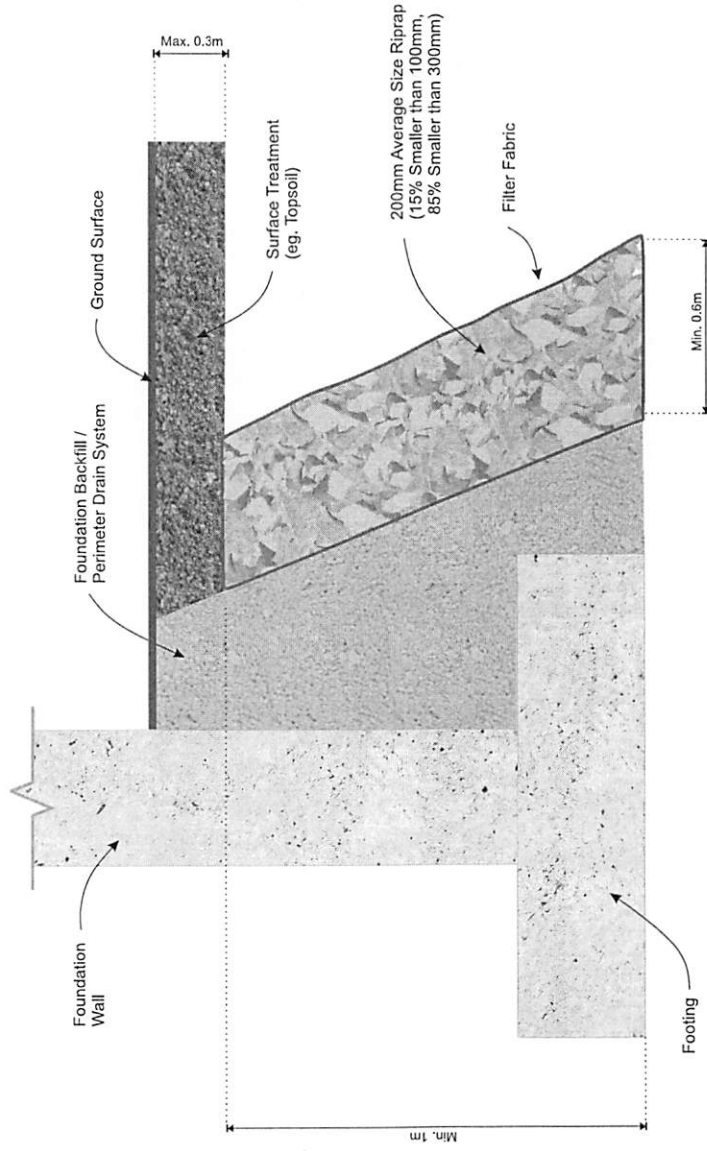
Schedule E



Schedule F - Standard Erosion and Scour Protection Details

0:10:00-4499143-278-501-Drawing1b_Figures1453278_DetailA_Drafts CDR

District of Squamish
Dike Breach Erosion Protection



NOTES

1. This conceptual detail illustrates an erosion protection concept that should be incorporated into a foundation design or other aspect of site design. The design should be prepared and field reviewed by a professional engineer.
2. Key aspects of this concept include a minimum 0.6 m thick rock layer located outside the foundation backfill zone and perimeter drain system, starting at or below the base of the footing and extending up to within 0.3 m of the ground surface. The minimum vertical height of the rock layer is 1 m.
3. Riprap and filter fabric are not required if top of footing is at least 2m below natural (pre-development) grade or if confining fill is protected as per Detail B.
4. This detail is intended exclusively for use on lots where District of Squamish simplified velocity mapping indicates a maximum velocity of less than 2.8 m/s.

Project No. 443-278

Date November 2018

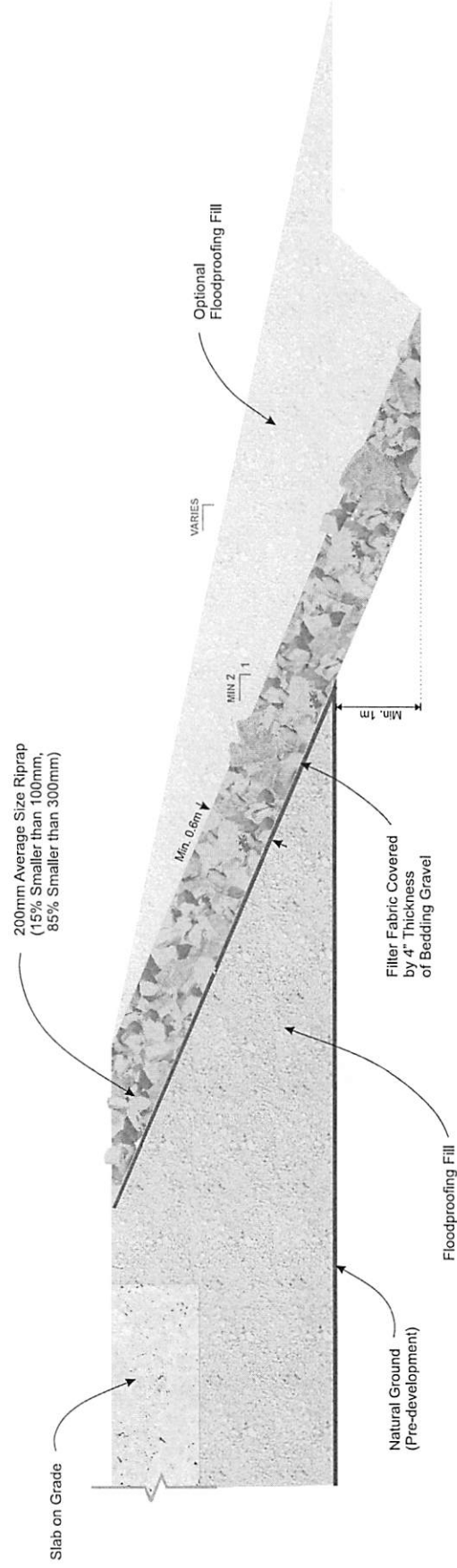
Not To Scale

KERR WOOD LEIDAL
Engineering Architects

Detail A

Conceptual Erosion Protection for Buildings in Squamish River Flood Hazard Area - Structural Elevation

District of Squamish
Dike Breach Erosion Protection



BASIS

For exclusive use on lots where District of Squamish simplified velocity mapping indicates a maximum velocity of less than 2.8 m/s.

Project No. 443-278

Date October 2016

Not to Scale



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 consulting engineers
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Project No. 463-396	Date July, 2025
------------------------	--------------------

100 0 100 (m)
 1:6,000

District of Squamish - Integrated Flood Hazard Management Plan

**Designated Downtown Historic Area
 for Flood Construction Level (FCL) Exemption**

Schedule G

Schedule "B"

Newlines ADU

Attention: Gabriel Viel-Cotes, Co-Founder
Gabriel.viel.cotes@newlinesadu.com**RE: Geologic Hazard Assessment
Single-Family Dwelling
37 Bracken Pky, Squamish, BC**

Dear Gabriel Viel-Cotes,

1.0 INTRODUCTION

In accordance with your recent authorization in reference to Kontur's Proposal K-261429-PP, Kontur Geotechnical Consultants Inc. ("Kontur") has completed this *Geologic Hazard Assessment* for the above-referenced project. The purposes of this study were to characterize the site from a geotechnical point-of-view and to provide geotechnical comments and recommendations with respect to the installation of a modular home.

This letter which summarizes the findings of the *Geologic Hazard Assessment*, has been prepared in accordance with standard and widely accepted geotechnical engineering principles and practices for similar projects in this region. This report does not address any archaeological, environmental, or other engineering considerations related to the project.

Kontur's assessment of potential naturally occurring geologic hazard events follow generally accepted guidelines provided by the Engineers and Geoscientists of British Columbia (EGBC) "Landslide Assessments in British Columbia" dated March 1, 2023 and District of Squamish Official Community Plan (OCP).

Review and use of this letter should be completed in accordance with the attached *Interpretation and Use of Study and Report* document. It is included as an integral part of this report and should be read in conjunction with all parts of this report.

2.0 PROJECT DESCRIPTION

Based on discussions with New Lines ADU, it is understood that the project generally consists of replacing an existing mobile home with a 1,000 sq. ft. modular home.

It is understood that the client intends to use helical piles to support the proposed building.

The subject property is located within a zone identified as a Secondary Floodway, and within Zone C5 of the Cheekeye Fan Debris Flow Hazard, as per the Squamish Integrated Flood Hazard Management Plan. As such, preparation of a geologic hazard assessment report and determination of an appropriate Flood Construction Level (FCL) is required for the proposed development.



3.0 METHODOLOGY

The following sources of information were referenced as part of this study:

- Geotechnical exploration completed on June 18, 2026;
- Surficial Geology Map titled *"Surficial Geology and Landslide Inventory of the Middle Sea to Sky Corridor"* open file 5323 prepared by the Geological Survey of Canada;
- Available information obtained from District of Squamish online web-mapping Application;
- Kontur's nearby and relevant experience in the area;
- Guidelines titled *"Landslide Assessments in British Columbia"* Version 4.1 prepared by Engineers and Geoscientists British Columbia dated March 1, 2023;
- Report titled *"Report of the Cheekeye River (Ch'Kay Stakw) and Fan Expert Review Panel"* dated April 23, 2014;
- Report titled *"Integrated Flood Hazard Management Plan"* (IFHMP) prepared by Kerr Wood Leidal (KWL), dated October, 2017;
- District of Squamish Floodplain Management Bylaw No. 2751;
- District of Squamish Official Community Plan Bylaw 2500, 2017 "Schedule A" updated June 2025 (OCP); and,
- Report titled *"Cheekeye Fan Debris-Flow Mitigation - Baseline Risk Assessment (Rev. 2)"* prepared by BGC Engineering Inc. dated December 4, 2020.

On June 18, 2026, geotechnical exploration consisting of two test pits, designated TP26-01 and TP26-02, were advanced to 2.2m and 3.5m depth, respectively. The test pits were completed using an excavator equipped with a smooth-edged bucket.

4.0 SITE DESCRIPTION

4.1 General

The subject property covers an approximate area of about 720sq.m located about 8km north of downtown Squamish. The property is rectangular in shape, with plan dimensions of about 36m (aligned east-west) by 20m (aligned north-south). The property is bordered to the north, south and west by neighbouring single-family residential lots, and to the east by Bracken Parkway.

Existing development within the subject property generally consists of a single-level mobile home and a garden shed.

4.2 Surface Conditions

Topography within the subject property generally consists of flat-lying ground. Vegetation generally consists of well-maintained grass cover covering the northern and western portions of the property, with remaining exterior areas consisting of asphalt surfacing.



4.3 Subsurface Conditions

Interpretation of subsurface soil and groundwater conditions at the site are based on published surficial geology maps of the area, Kontur's nearby and relevant experience, and the site reconnaissance/test pits completed as part of this study.

"*Surficial Geology and Landslide Inventory of the Middle Sea to Sky Corridor*" open file 5323 prepared by the Geological Survey of Canada, the site is underlain by Floodplain Sediments typically comprising sand and silt, commonly including organics underlain, in many places, by gravel. In general, the surficial geology maps of the area and nearby information/experience, are generally consistent with the findings of the geotechnical exploration program completed by Kontur as described in this report.

Conditions encountered within the test pits are summarized in Table 1 below:

Table 1: Test pit excavations

Test Pit ID	Depth (m)		Description
	From	To	
TP26-01	0.0	0.1	(TOPSOIL) ORGANIC SANDY SILT, dark brown-black, moist (loose), surficial grass
	0.1	0.4	SILT, some sand and organics, dark brown, w>PL (Soft)
	0.4	0.8	SILT, some sand to sandy, trace to some organics, brown-grey, w=PL (soft to firm), sand is fine grained, organics consist of rootlets, sand is fine grained - 0.6m: Moisture = 48.4%
	0.8	1.4	SILTY SAND, grey, wet (very loose), sand is fine grained, some brown blotches - 0.9m: Seepage and ongoing sidewall collapse below about 0.9m - 1.1m: Moisture = 41.7%
	1.4	1.8	SAND, some silt and organics, grey, wet (loose), sand is fine grained, organics consist of occasional wood pieces up to 50mm diameter and 300mm length.
	1.8	2.2	GRAVELLY SAND, brown-grey, wet (compact), maximum fragment size of about 100mm - 2.2m: Limit of exploration due to ongoing test pit sidewall collapse
TP26-02	0.0	0.1	(TOPSOIL) ORGANIC SANDY SILT, dark brown-black, moist (loose), surficial grass
	0.1	0.3	(FILL) SILTY SAND, trace organics, brown, moist (loose)



	0.3	0.9	(FILL) GRAVELLY SAND, some cobbles, trace silt, pale brown, moist (compact), maximum fragment size of about 200mm, cobbles are sub-rounded to sub-angular
	0.9	1.3	SILTY SAND, trace to some organics, grey, moist (loose to compact), some silt in areas, sand is fine grained, organics consist of rootlets, roots and decomposed organic clumps - 1.2m: Moisture = 27.2% - 1.3m: Seepage observed from sidewalls
	1.3	1.7	SILT, some sand to sandy, brown-grey, w<PL (firm), trace to some organics/rootlets - 1.5m: Moisture = 41.3%
	1.7	3.3	SILTY SAND, grey, wet (loose), some silt in areas, sand is fine grained
	3.3	3.5	(Inferred description based on machine feedback and mixed/saturated spoils) GRAVELLY SAND, compact, maximum fragment size of about 150mm

Groundwater seepage was encountered between 0.9 to 1.3m depth during test pit excavation. Fluctuations in groundwater conditions should be anticipated at this site which may be influenced by periods of prolonged and/or intense rainfall, rapid snowmelt, and/or nearby land uses.

4.4 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. 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 test pit information only. Variation in stratigraphic conditions should always be expected.

5.0 GEOTECHNICAL HAZARD ASSESSMENT

5.1.1 General

Kontur's assessment of potential naturally occurring geologic hazard events follow generally accepted guidelines provided by the Engineers and Geoscientists of British Columbia (EGBC) "Landslide Assessments in British Columbia" dated March 1, 2023 and District of Squamish Official Community Plan (OCP).

Based on a review of the District of Squamish Floodplain Management Bylaw (Bylaw 2751), the subject property is located in an area characterized as the Cheekeye Fan Debris Flow Hazard Area and a Flood Hazard Area.

The above noted items are discussed in detail in the following *Section 5.1.2 and 5.1.3*.



5.1.2 Cheekeye Fan Debris Flow/Debris Flood Hazard

The subject property is located in an area identified as being within the potential influence zone of the Cheekeye Fan Debris Flow Hazard. Specifically, the property is located within Debris Hazard Zone C5 identified in Schedule D-1 of the OCP. As such, Section 11.10.c of the OCP requires submission of a risk assessment by a Qualified Professional that supports the application. Squamish OCP Section 11.10.g indicates that risk tolerance criteria stated in Section 11.2.c shall be achieved to permit new development. Section 11.2.c states that a Quantitative Risk Assessment is required as a minimum acceptable threshold for new developments in areas subject to landslide, debris flow, debris flood or rockfall:

- i. For existing development, the individual risk to loss of life per annum shall not exceed 1:10,000; and
- ii. For new development, the individual risk to loss of life per annum shall not exceed 1:100,000, and
- iii. Societal (group) risk of loss of life per annum shall be within the Broadly acceptable or As Low As Reasonably Practical (ALARP) zones shown in Figure 11-2 (presented below); and
- iv. Where societal risks to life fall within the ALARP zone, the risk assessment report shall explain to the satisfaction of the approving officer why the cost of reducing the risk further is considered grossly disproportional to the benefit gained (as per the definition of ALARP).

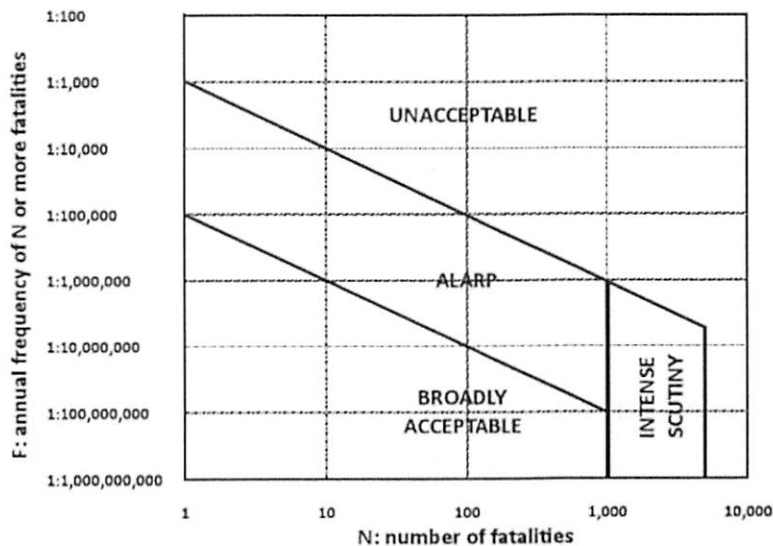


Figure 11-2. Frequency – Number of Fatalities Diagram

Based on a review of the BGC December 2020 report, it is understood that this hazard assessment should be completed in accordance with an individual risk assessment and reviewed against tolerable thresholds for new development (ie. 1:100,000).

Section 2.4 of the BGC December 2020 report indicates that individual risk, also known as annual Probability of Death of an Individual (PDI), is calculated as follows:



$$PDI_j = \sum_{i=1}^n P(H)_i P(S:H)_{i,j} P(T:S)_{i,j} V_{i,j}$$

Equation 2-1

Where:

- PDI_j is the PDI at a given parcel (j)
- $P(H)_i$ is the annual probability of a geohazard scenario¹ (i)
- $P(S:H)_{i,j}$ is the spatial probability of impact of geohazard scenario (i) at a given parcel (j)
- $P(T:S)_{i,j}$ is the temporal probability of a person occupying a building at parcel (j)
- $V_{i,j}$ is the probability of fatality (vulnerability) given impact by the estimated hazard intensity²

Section 3 of the BGC December 2020 report outlines methods used to assess debris-flow hazard and risk assessment. A total of seven (7) volume classes of debris-flow scenarios were modelled with return periods between 10 to 10,000 years, with total event volumes ranging between 0.2Mm³ to 5.5Mm³ and peak discharge ranging from 800m³/s to 33,000m³/s. Based on a review of Drawings 2 to 9 of the BGC December 2020 report, it is anticipated that:

- A volume class 1 debris flow event (0.4Mm³ event volume, 1,600m³/s peak discharge) would not impact the subject property;
- A volume class 2 and 3 debris-flow events (max 0.8Mm³ event volume, 3,400m³/s peak discharge) would have less than 10% probability of influencing the subject property, with debris flow intensities of less than 1m³/s²;
- A volume class 4 debris-flow event (1.4Mm³ event volume, 6,600m³/s peak discharge) has a 10 – 20% probability of impacting the subject property, with debris flow intensities of less than 1m³/s²;
- A volume class 5 and 6 debris-flow event (max 2.8Mm³ event volume, 15,000m³/s peak discharge) has a 20 – 40% probability of impacting the subject property, with debris flow intensities of less than 1m³/s²; and,
- A volume class 7 debris-flow event (5.5Mm³ event volume, 33,000m³/s peak discharge) has a 20 – 40% probability of impacting the subject property, with debris flow intensities between 1 to 3m³/s².

Based on the above discussion and reference to section 3 of the BGC 2020 report, the following values for the Landslide Risk have been developed regarding the risk of one fatality for the volume class 3 event.

$P(H) = 0.0067$ based on Table 3-2 of the BGC December 2020 report

$P(S:H) = 0.1$ based on the upper bound values outlined above as shown in Drawing 5 of the BGC December 2020 report which indicate that the subject property has a less than 10% probability of impact from a volume class 3 event.

$P(T:S) = 0.9$ based on Table 3-7 of the BGC December 2020 report

$V = 0$ based on Table 3-8 of the BGC December 2020 report with a hazard intensity index of less than 1m³/s².



Hence, for a volume class 3 debris flow event, $PDI = 0.0067 \times 0.1 \times 0.9 \times 0 = 0$ (due to debris flow hazard intensity of less than $1\text{m}^3/\text{s}^2$ where life loss vulnerability is considered to be 0%).

A sensitivity analysis was completed for the subject property in consideration of hazard intensities between other volume class events with the potential to influence the subject property, considering a maximum of 4 occupants within the building at the time of the event:

Volume Class of Debris Flow Event	Return Period (Years)	P(H)	P(T:S)	V	P(S:H)	Occupants	PDI x Occupants	
							Mathematical Result	1:"X" Year Risk (approximate)
4	300 to 1000	0.0023	0.9	0	0.2	4	0	NA
5	1000 to 3000	0.00067	0.9	0	0.4	4	0	NA
6	3000 to 10,000	0.00023	0.9	0	0.4	4	0	NA
6	10,000 – best estimate	0.000092	0.9	0	0.4	4	0	NA
7	10,000 – best estimate	0.000092	0.9	0.04	0.4	4	5.3×10^{-6}	188707
7	10,000 – upper bound	0.000008	0.9	0.04	0.4	4	4.6×10^{-7}	2170139

As such, the annual probability of death of an individual (individual risk to loss of life per annum) as a result of a debris flow event impacting the subject property is not expected to be less than 1:100,000.

A Landslide Hazard Assurance Statement is attached to this report.

5.1.3 Flood Hazard Area

Based on a review of the District of Squamish Floodplain Management Bylaw (Bylaw 2751), the subject property is located in a flood hazard area defined as:

1. Overland Flow Hazard area
2. Secondary Floodway



Based on a review of Schedule A1 of the Flood Hazard Management Plan (IFHMP) final report dated October 2017, a Flood Construction Level (FCL) of 14.0m is deemed appropriate.

Areas below recommended FCL may be used for parking, as is not considered to be habitable space by provincial guidelines. If such space is to be developed there must be unobstructed pedestrian ingress and egress to area above FCL as indicated in the "Flood Hazard Area Land Use Management Guidelines" 2004. Signage should be installed which clearly indicates that the parking area is subject to flooding if below FCL. No storage of goods damageable by floodwaters should be permitted in the below FCL parking areas. Electrical and mechanical equipment must be located above FCL. Any parts of the building constructed below FCL should be constructed with "flood resistant" materials not easily damaged by floodwater.

Schedule A2 of the IFHMP indicates a simplified design velocity of 0.81 to 2.8 m/s during the design flood event. As such, backfill surrounding proposed foundations must be protected from scour and erosion (refer to attached Schedule F - *Standard Erosion and Scour Protection Details*). Scour protection for deep foundations (helical piles) would require the upper helix to be at least 2m below finished grade.

Section 35.8 of the OCP (DPA 2) indicates the following requirements for new developments within a secondary floodway:

1. New structures within a secondary floodway should maximize floodway conveyance and minimize potential increase in flood levels in adjacent or upstream areas.
2. Fill placed within any property line setback should remain below a line projecting up at 5H:1V from existing grades at the property line.
3. Any fences, hedgerows or other potential "linear flow obstructions" should be designed to allow flood conveyance.

Based on a discussion with the client, the building will be structurally elevated above existing grades to achieve FCL. Grade increases are not proposed within the subject property.

Based on the discussions above and provided items 2 and 3 are implemented, guidelines set out in Section 35.8 of DPA 2 would be considered met.

A Flood Hazard Assurance Statement is attached to this report.

6.0 CLOSURE

The comments and recommendations presented in this letter are based on the referenced information and Kontur's understanding of the project as described herein. If site conditions or project parameters differ from those described in this letter report, Kontur should be notified promptly to review geotechnical aspects of the project and provide additional or modified comments and recommendations, as deemed appropriate. Contractors should make their own assessments of subsurface conditions at this site and select the construction means and methods that are most appropriate for encountered site conditions.

The subject property is considered 'safe' for the intended purpose, that being the installation of a modular home. The term safe specifically refers to the ability of the sub surface soils to support the proposed building within typically tolerable settlement for such buildings, global slope stability being adequate for static/ seismic conditions.



The subject property is considered safe, as per the guidelines set out in the District of Squamish Bylaws/OCP, against flooding and landslide hazards with respect to the construction of a duplex (provided the recommendations set out in *Section 5* above are implemented).

This letter has been prepared for the exclusive use of Newlines Contracting and/or their designated agents or consultants for the intended purpose described herein. The District of Squamish may use the information for development and/or building permit purposes. Any use of the information contained in this report 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:

Per:

Peter Knott EIT
Geotechnical Engineer-In-Training

Evan Sykes P.Eng
Principal | Geotechnical Engineer

Attachments: Interpretation and Use of Study and Report
Test Hole Location Plan
Appendix D: Landslide Assurance Statement
Appendix J: Flood Hazard and Risk Assurance Statement
Schedule D1: Flood and Debris Flow Hazard Areas
Schedule F – Scour protection and Erosion Details



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 envelopment 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.

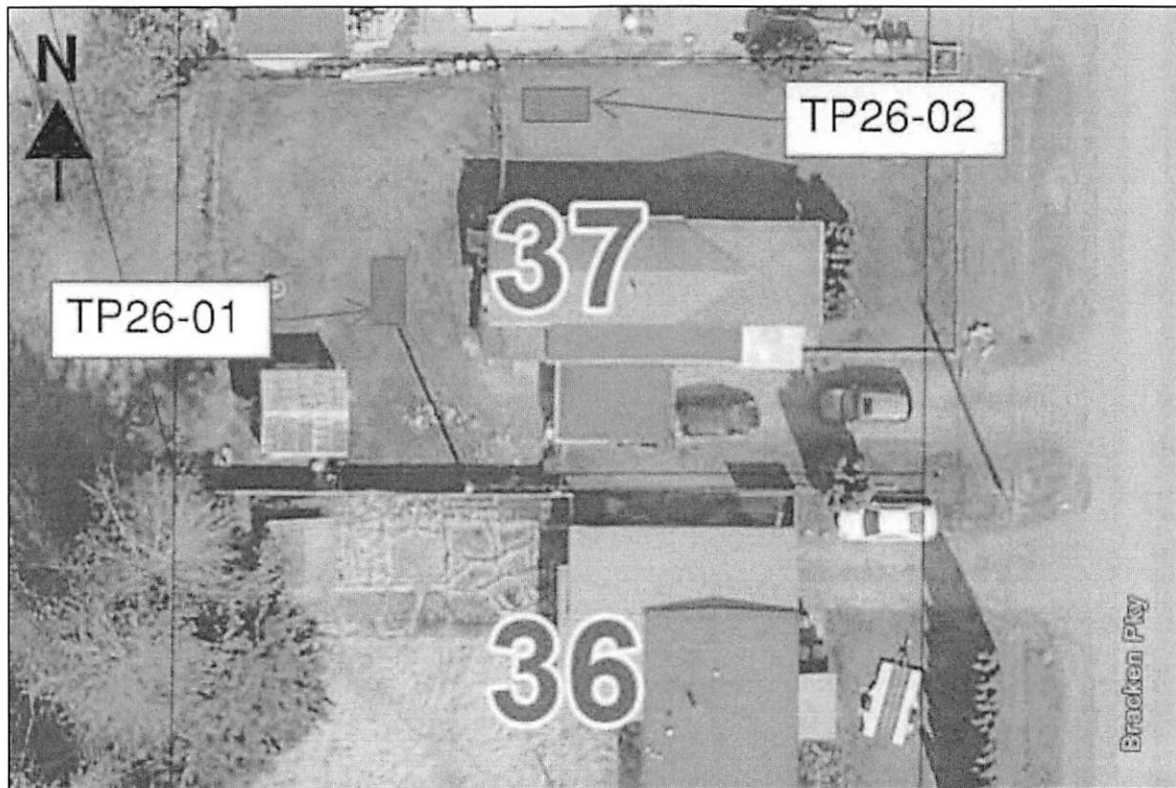
To avoid misunderstandings, KONTUR should be retained to work with the other design professionals to explain relevant engineering findings and to review their plans, drawings, and specifications relative to engineering issues pertaining to consulting services provided by KONTUR. Further, KONTUR should 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.



Note: Base image extrapolated from District of Squamish online web-mapping application

LANDSLIDE ASSESSMENT ASSURANCE STATEMENT

Notes: This statement is to be read and completed in conjunction with the Engineers and Geoscientists BC *Professional Practice Guidelines – Landslide Assessments in British Columbia* ("the guidelines") and the current *BC Building Code (BCBC)*, and is to be provided for Landslide Assessments (not floods or flood controls), particularly those produced for the purposes of the *Land Title Act*, *Community Charter*, or *Local Government Act*. Some jurisdictions (e.g., the Fraser Valley Regional District or the Cowichan Valley Regional District) have developed more comprehensive assurance statements in collaboration with Engineers and Geoscientists BC. Where those exist, the Qualified Professional is to fill out the local version only. Defined terms are capitalized; see the Defined Terms section of the guidelines for definitions.

To: The Approving Authority (or Client)

Date: July 8, 2026

District of Squamish

37955 2nd Avenue, Squamish BC V8B 0A3

Jurisdiction/name and address

With reference to (CHECK ONE):

- ☐ A. *Land Title Act* (Section 86) – Subdivision Approval
- ☒ B. *Local Government Act* (Sections 919.1 and 920) – Development Permit
- ☐ C. *Community Charter* (Section 56) – Building Permit
- ☐ D. Non-legislated assessment

For the following property (the "Property"):

37 Bracken Parkway, Squamish BC

Civic address of the Property

The undersigned hereby gives assurance that they are a Qualified Professional and a professional engineer or professional geoscientist who fulfils the education, training, and experience requirements as outlined in the guidelines.

I have signed, authenticated, and dated, and thereby certified, the attached Landslide Assessment Report on the Property in accordance with the guidelines. That report must be read in conjunction 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 or other 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

LANDSLIDE ASSESSMENT ASSURANCE STATEMENT

8. Where the Approving Authority has not adopted a Level of Landslide Safety, or where the Landslide Assessment is not produced in response to a legislated requirement, 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 those guidelines (per item 8.2) 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)

Where the Landslide Assessment is not produced in response to a legislated requirement, I hereby give my assurance that, based on the conditions¹ contained in the attached Landslide Assessment Report:

A. SUBDIVISION APPROVAL

- ☐ For subdivision approval, as required by the *Land Title Act* (Section 86), "the land may be used safely for the use intended"
- [CHECK ONE]
- ☐ with one or more recommended additional registered Covenants
 - ☐ without an additional registered Covenant(s)

B. DEVELOPMENT PERMIT

- ☐ For a development permit, as required by the *Local Government Act* (Sections 488 and 491), my report will "assist the local government in determining what conditions or requirements it will impose under subsection (2) of [Section 491]"
- [CHECK ONE]
- ☐ with one or more recommended additional registered Covenants
 - ☐ without an additional registered Covenant(s)

C. BUILDING 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 additional registered Covenants
 - ☒ without any additional registered Covenant(s)

¹ When seismic slope stability assessments are involved, Level of Landslide Safety is considered to be a "life safety" criteria, as described in Commentary JJJ of the *National Building Code of Canada (NBC) 2015, Structural Commentaries (User's Guide – NBC 2015: 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."

LANDSLIDE ASSESSMENT ASSURANCE STATEMENT

Evan Sykes

July 8, 2026

Name (print)

Date

103 - 37768 Second Ave,
Squamish BC, V8B 0S8

Address

778 730 1747

Telephone

esykes@kontur.ca

Email

(Affix PROFESSIONAL SEAL and signature here)

The Qualified Professional, as a registrant on the roster of a registrant firm, must complete the following:

I am a member of the firm Kontur Geotechnical Consultants Inc
(Print name of firm)

with Permit to Practice Number 1000925
(Print permit to practice number)

and I sign this letter on behalf of the firm.

FLOOD ASSURANCE STATEMENT

Note: This statement is to be read and completed in conjunction with the current Engineers and Geoscientists BC *Professional Practice Guidelines – Legislated Flood Assessments in a Changing Climate in BC* ("the guidelines") and is to be provided for flood assessments for the purposes of the *Land Title Act*, Community Charter, or the *Local Government Act*. Defined terms are capitalized; see the Defined Terms section of the guidelines for definitions.

To: The Approving Authority

Date: July 8 2026

District of Squamish

37955 2nd Avenue, Squamish BC V8B 0A3

Jurisdiction and address

With reference to (CHECK ONE):

- ☐ *Land Title Act* (Section 86) – Subdivision Approval
- ☐ *Local Government Act* (Part 14, Division 7) – Development Permit
- ☐ Community Charter (Section 56) – Building Permit
- ☐ *Local Government Act* (Section 524) – Flood Plain Bylaw Variance
- ☐ *Local Government Act* (Section 524) – Flood Plain Bylaw Exemption

For the following property ("the Property"):

LOT 6 BLOCK 30 SOUTH 1/2 OF THE SOUTH EAST 1/4 OF SECTION 22 TOWNSHIP 50 PLAN 14705
37 Bracken Parkway, Squamish BC

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 who fulfils the education, training, and experience requirements as outlined in the guidelines.

I have signed, sealed, and dated, and thereby certified, the attached Flood Assessment Report on the Property in accordance with the guidelines. That report and this statement must be read in conjunction with each other. In preparing that Flood Assessment Report I have:

[CHECK TO THE LEFT OF APPLICABLE ITEMS]

 1. Consulted with representatives of the following government organizations:

- X 2. Collected and reviewed appropriate background information
- X 3. Reviewed the Proposed Development on the Property
- X 4. Investigated the presence of Covenants on the Property, and reported any relevant information
- X 5. Conducted field work on and, if required, beyond the Property
- X 6. Reported on the results of the field work on and, if required, beyond the Property
- X 7. Considered any changed conditions on and, if required, beyond the Property

8. For a Flood Hazard analysis I have:

- X 8.1 Reviewed and characterized, if appropriate, Flood Hazard that may affect the Property
- X 8.2 Estimated the Flood Hazard on the Property
- X 8.3 Considered (if appropriate) the effects of climate change and land use change
- X 8.4 Relied on a previous Flood Hazard Assessment (FHA) by others
- 8.5 Identified any potential hazards that are not addressed by the Flood Assessment Report

9. For a Flood Risk analysis I have:

- X 9.1 Estimated the Flood Risk on the Property
- X 9.2 Identified existing and anticipated future Elements at Risk on and, if required, beyond the Property
- X 9.3 Estimated the Consequences to those Elements at Risk

PROFESSIONAL PRACTICE GUIDELINES
LEGISLATED FLOOD ASSESSMENTS IN A CHANGING CLIMATE IN BC

FLOOD ASSURANCE STATEMENT

10. In order to mitigate the estimated Flood Hazard for the Property, the following approach is taken:

- ☒ 10.1 A standard-based approach
- ☐ 10.2 A Risk-based approach
- ☐ 10.3 The approach outlined in the guidelines, Appendix F: Flood Assessment Considerations for Development Approvals
- ☐ 10.4 No mitigation is required because the completed flood assessment determined that the site is not subject to a Flood Hazard

11. Where the Approving Authority has adopted a specific level of Flood Hazard or Flood Risk tolerance, I have:

- ☒ 11.1 Made a finding on the level of Flood Hazard or Flood Risk on the Property
- ☒ 11.2 Compared the level of Flood Hazard or Flood Risk tolerance adopted by the Approving Authority with my findings
- ☒ 11.3 Made recommendations to reduce the Flood Hazard or Flood Risk on the Property

12. Where the Approving Authority has not adopted a level of Flood Hazard or Flood Risk tolerance, I have:

- ☐ 12.1 Described the method of Flood Hazard analysis or Flood Risk analysis used
- ☐ 12.2 Referred to an appropriate and identified provincial or national guideline for level of Flood Hazard or Flood Risk
- ☐ 12.3 Made a finding on the level of Flood Hazard or Flood Risk tolerance on the Property
- ☐ 12.4 Compared the guidelines with the findings of my flood assessment
- ☐ 12.5 Made recommendations to reduce the Flood Hazard or Flood Risk

☒ 13. Considered the potential for transfer of Flood Risk and the potential impacts to adjacent properties

☒ 14. Reported on the requirements for implementation of the mitigation recommendations, including the need for subsequent professional certifications and future inspections.

Based on my comparison between:

[CHECK ONE]

- ☒ The findings from the flood assessment and the adopted level of Flood Hazard or Flood Risk tolerance (item 11.2 above)
- ☐ The findings from the flood assessment and the appropriate and identified provincial or national guideline for level of Flood Hazard or Flood Risk tolerance (item 12.4 above)

I hereby give my assurance that, based on the conditions contained in the attached Flood 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":

[CHECK ONE]

- ☐ With one or more recommended registered Covenants.
- ☐ Without any registered Covenant.

- ☐ For a development permit, as required by the *Local Government Act* (Part 14, Division 7), my Flood Assessment Report will "assist the local government in determining what conditions or requirements it will impose under subsection (2) of this section [Section 491 (4)]".

- ☒ 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* and the *Amendment Section 3.5 and 3.6* associated with the *Local Government Act* (Section 524), "the development may occur safely".
- ☐ For flood plain bylaw exemption, as required by the *Local Government Act* (Section 524), "the land may be used safely for the use intended".

FLOOD ASSURANCE STATEMENT

I certify that I am a Qualified Professional as defined below.

July 8, 2026

Date

Evan Sykes

Prepared by

Evan Sykes

Name (print)

Signature

103 - 37768 Second Ave,
Squamish BC, V8B 0S8

Address

778 730 1747

Telephone

esykes@kontur.ca

Email

Reviewed by

Brian Mylleville

Name (print)

Signature

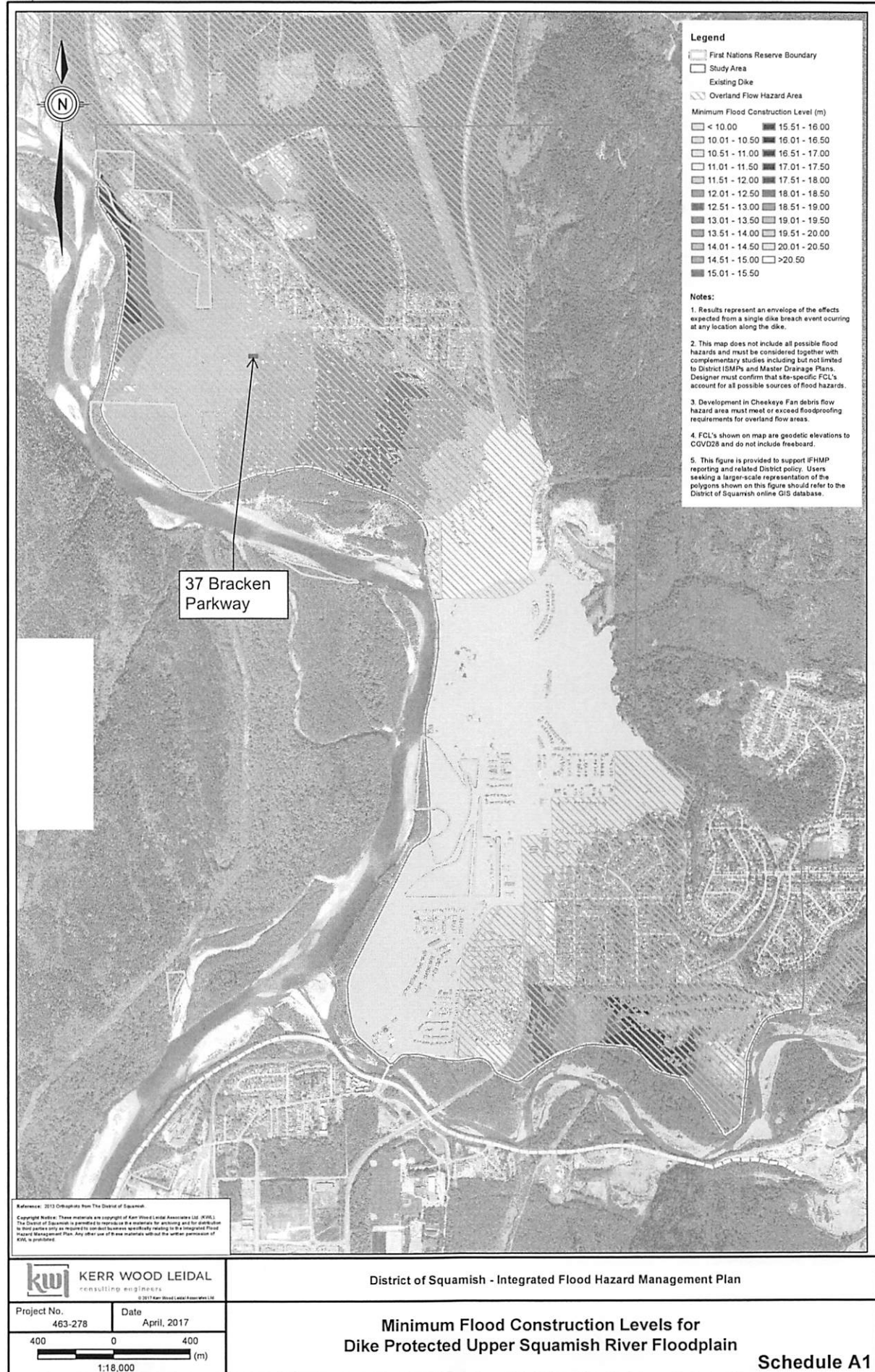
(Affix PROFESSIONAL SEAL here)

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.

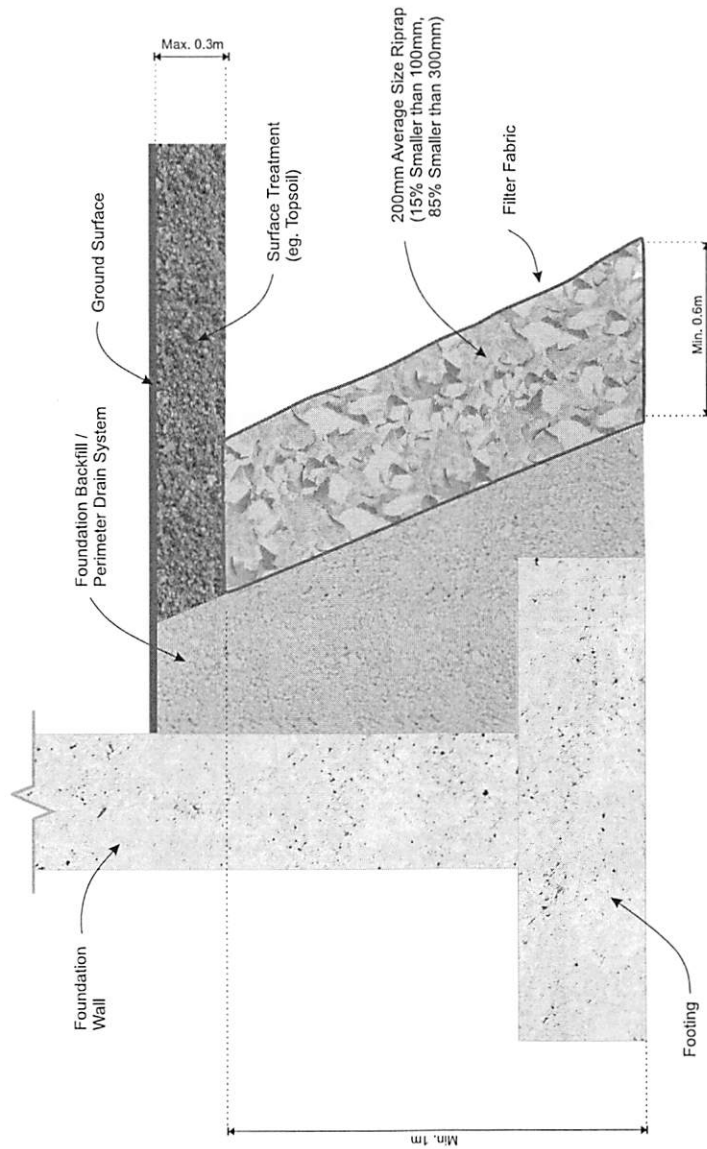
(Name of firm)



Schedule F - Standard Erosion and Scour Protection Details (Added as per Amendment Bylaw No. 2880, 2021)

0:\040-0459\045-275\045-275-Drawing\10_Figures\45275_DetailA_DetailA.CDR

District of Squamish
Dike Breach Erosion Protection



NOTES

1. This conceptual detail illustrates an erosion protection concept that should be incorporated into a foundation design or other aspect of site design. The design should be prepared and field reviewed by a professional engineer.
2. Key aspects of this concept include a minimum 0.6 m thick rock layer located outside the foundation backfill zone and perimeter drain system, starting at or below the base of the footing and extending up to within 0.3 m of the ground surface. The minimum vertical height of the rock layer is 1 m.
3. Riprap and filter fabric are not required if top of footing is at least 2m below natural (pre-development) grade or if confining fill is protected as per Detail B.
4. This detail is intended exclusively for use on lots where District of Squamish simplified velocity mapping indicates a maximum velocity of less than 2.8 m/s.

Project No. 463-275

Date: November 2018

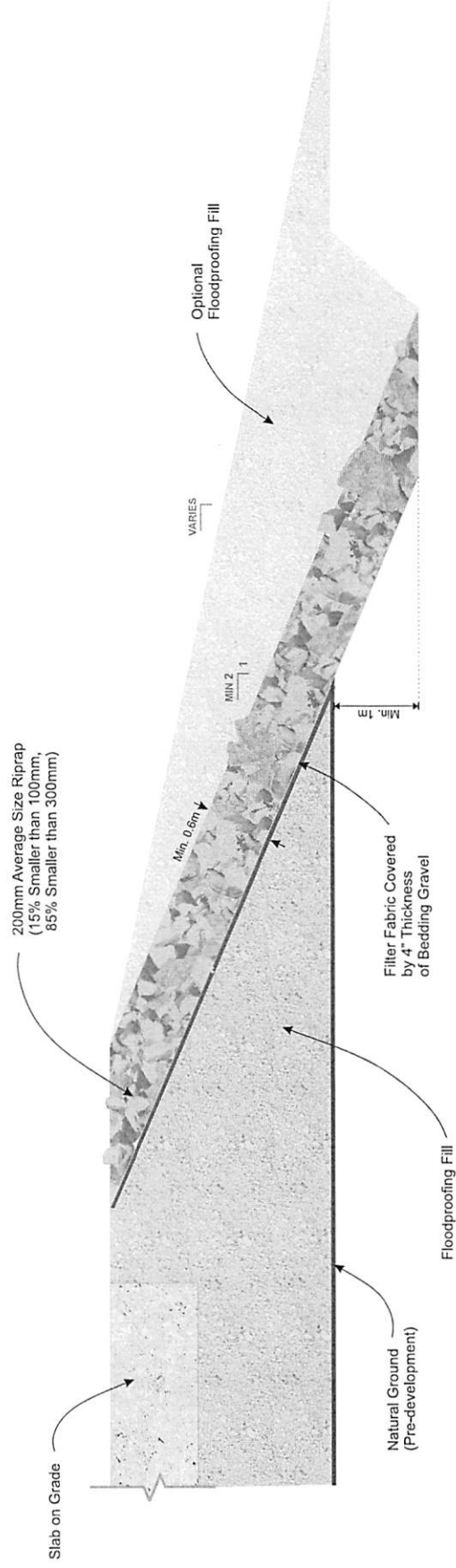
Not To Scale

Conceptual Erosion Protection for Buildings in Squamish River Flood Hazard Area - Structural Elevation

KERR WOOD LEIDAL
ENGINEERING PROFESSIONALS

Detail A

District of Squamish
Dike Breach Erosion Protection



BASIS

For exclusive use on lots where District of Squamish simplified velocity mapping indicates a maximum velocity of less than 2.8 m/s.

Project No. 443-278

Date October 2016

Not to Scale

Erosion Protection for Buildings in Squamish River Flood Hazard Area - Raised Fill

Newlines ADU

Attention: Gabriel Viel-Cotes, Co-Founder
Gabriel.viel.cotes@newlinesadu.com

**RE: Geotechnical Assessment
Single-Family Dwelling
37 Bracken Parkway, Squamish, BC**

Dear Gabriel Viel-Cotes,

1.0 INTRODUCTION

In accordance with your recent authorization in reference to Kontur's Proposal K-261429-PP, Kontur Geotechnical Consultants Inc. ("Kontur") has completed this *Geotechnical Assessment* for the above-referenced project. The purposes of this study were to characterize the site from a geotechnical point-of-view and to provide geotechnical comments and recommendations with respect to the installation of a modular home.

This letter which summarizes the findings of the *Geotechnical Assessment*, has been prepared in accordance with standard and widely accepted geotechnical engineering principles and practices for similar projects in this region. This report does not address any archaeological, environmental, or other engineering considerations related to the project.

Review and use of this letter should be completed in accordance with the attached *Interpretation and Use of Study and Report* document. It is included as an integral part of this report and should be read in conjunction with all parts of this report.

2.0 PROJECT DESCRIPTION

Based on discussions with New Lines ADU, it is understood that the project generally consists of replacing an existing mobile home with a 1,000 sq. ft. modular home.

It is understood that the client intends to use helical piles to support the proposed building.

The subject property is located within a zone identified as a Secondary Floodway, and within Zone C5 of the Cheekeye Fan Debris Flow Hazard, as per the Squamish Integrated Flood Hazard Management Plan. As such, preparation of a geologic hazard assessment report and determination of an appropriate Flood Construction Level (FCL) is required for the proposed development. These items are addressed under separate cover in Kontur's *Geologic Hazard Assessment*.

3.0 METHODOLOGY

The following sources of information were referenced as part of this study:

- Geotechnical exploration completed on June 18, 2026;



- Surficial Geology Map titled *"Surficial Geology and Landslide Inventory of the Middle Sea to Sky Corridor"* open file 5323 prepared by the Geological Survey of Canada;
- Report titled *"Integrated Flood Hazard Management Plan"* (IFHMP) prepared by Kerr Wood Leidal (KWL), dated October, 2017;
- Available information obtained from District of Squamish online web-mapping Application; and,
- Kontur's nearby and relevant experience in the area.

On June 18, 2026, geotechnical exploration consisting of two test pits, designated TP26-01 and TP26-02, were advanced to 2.2m and 3.5m depth, respectively. The test pits were completed using an excavator equipped with a smooth-edged bucket. Approximate locations of the test pits are shown in the attached *Test Hole Location Plan*.

4.0 SITE DESCRIPTION

4.1 General

The subject property covers an approximate area of about 720sq.m located about 8km north of downtown Squamish. The property is rectangular in shape, with plan dimensions of about 36m (aligned east-west) by 20m (aligned north-south). The property is bordered to the north, south and west by neighbouring single-family residential lots, and to the east by Bracken Parkway.

Existing development within the subject property generally consists of a single-level mobile home and a garden shed.

4.2 Surface Conditions

Topography within the subject property generally consists of flat-lying ground. Vegetation generally consists of well-maintained grass cover covering the northern and western portions of the property, with remaining exterior areas consisting of asphalt surfacing.

4.3 Subsurface Conditions

Interpretation of subsurface soil and groundwater conditions at the site are based on published surficial geology maps of the area, Kontur's nearby and relevant experience, and the site reconnaissance/test pits completed as part of this study.

"Surficial Geology and Landslide Inventory of the Middle Sea to Sky Corridor" open file 5323 prepared by the Geological Survey of Canada, the site is underlain by Floodplain Sediments typically comprising sand and silt, commonly including organics underlain, in many places, by gravel. In general, the surficial geology maps of the area and nearby information/experience, are generally consistent with the findings of the geotechnical exploration program completed by Kontur as described in this report.



Conditions encountered within the test pits are summarized in Table 1 below:

Table 1: Test pit excavations

Test Pit ID	Depth (m)		Description
	From	To	
TP26-01	0.0	0.1	(TOPSOIL) ORGANIC SANDY SILT, dark brown-black, moist (loose), surficial grass
	0.1	0.4	SILT, some sand and organics, dark brown, w>PL (Soft)
	0.4	0.8	SILT, some sand to sandy, trace to some organics, brown-grey, w=PL (soft to firm), sand is fine grained, organics consist of rootlets, sand is fine grained - 0.6m: Moisture = 48.4%
	0.8	1.4	SILTY SAND, grey, wet (very loose), sand is fine grained, some brown blotches - 0.9m: Seepage and ongoing sidewall collapse below about 0.9m - 1.1m: Moisture = 41.7%
	1.4	1.8	SAND, some silt and organics, grey, wet (loose), sand is fine grained, organics consist of occasional wood pieces up to 50mm diameter and 300mm length.
	1.8	2.2	GRAVELLY SAND, brown-grey, wet (compact), maximum fragment size of about 100mm - 2.2m: Limit of exploration due to ongoing test pit sidewall collapse
TP26-02	0.0	0.1	(TOPSOIL) ORGANIC SANDY SILT, dark brown-black, moist (loose), surficial grass
	0.1	0.3	(FILL) SILTY SAND, trace organics, brown, moist (loose)
	0.3	0.9	(FILL) GRAVELLY SAND, some cobbles, trace silt, pale brown, moist (compact), maximum fragment size of about 200mm, cobbles are sub-rounded to sub-angular
	0.9	1.3	SILTY SAND, trace to some organics, grey, moist (loose to compact), some silt in areas, sand is fine grained, organics consist of rootlets, roots and decomposed organic clumps - 1.2m: Moisture = 27.2% - 1.3m: Seepage observed from sidewalls



	1.3	1.7	SILT, some sand to sandy, brown-grey, w<PL (firm), trace to some organics/rootlets - 1.5m: Moisture = 41.3%
	1.7	3.3	SILTY SAND, grey, wet (loose), some silt in areas, sand is fine grained
	3.3	3.5	(Inferred description based on machine feedback and mixed/saturated spoils) GRAVELLY SAND, compact, maximum fragment size of about 150mm

Groundwater seepage was encountered between 0.9 to 1.3m depth during test pit excavation. Fluctuations in groundwater conditions should be anticipated at this site which may be influenced by periods of prolonged and/or intense rainfall, rapid snowmelt, and/or nearby land uses.

4.4 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. 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 test pit information only. Variation in stratigraphic conditions should always be expected.

5.0 COMMENTS AND RECOMMENDATIONS

5.1 General

Based on Kontur's understanding of the project, information, and findings described above, the following geotechnical comments and recommendations are provided with respect to the installation of a modular home. It is understood that the client intends to use helical piles to support the proposed building.

It is Kontur's opinion that the significant geotechnical considerations for the project may be related to installation of helical piles with respect to cobbles within subsurface soils.

Subsurface conditions are generally anticipated to consists of shallow topsoil underlain soft of firm silts and very loose to loose sands up to between 1.8 to 3.3m depth, underlain by compact gravelly sand to at least 3.5m depth. Fill soils consisting of gravelly sand, some cobbles was encountered locally within TP26-02 up to about 0.9m depth.

Foundations and other geotechnical aspects of the project should be designed and constructed in accordance with the most recent BC Building Code and the recommendations described in the following sections.

5.2 Special Considerations – Installation of Helical Piles

Fill soils locally encountered within TP26-02 up to 0.9m depth consisted of compact gravelly sand, some cobbles with fragment sizes up to about 200mm. Maximum fragment sizes about 150mm were observed



within the natural gravelly sands encountered below 1.8 and 3.3m depth within TP26-01 and 02 (respectively).

It is considered possible that installation of helical piles may be difficult due to the presence of the above-noted coarse fragments. Removal of larger fragments within the shallow fill layer may be required to facilitate pile advancement. The contractor would need to select the installation for the actual subsurface conditions.

5.3 Design Considerations

5.3.1 Seismic Considerations

The British Columbia Building Code (BCBC) provides guidelines and parameters for seismic design. The 2024 BCBC is the current standard. Therefore, the following seismic design recommendations are developed based on the applicable building code at the time of preparation of this report, that being the 2024 BCBC which uses seismic hazard calculations based on the 2020 National Building Code of Canada.

Based on the 2024 BCBC, the design earthquake corresponds to a 2% probability of exceedance in 50 years which is equivalent to a 1 in 2475-year return period. The Natural Resources Canada website provides interpolated site-specific hazard values and indicates a Peak Ground Acceleration of 0.38g for the subject property.

TABLE A -Spectral Acceleration Values

Sa (0.2)	Sa (0.5)	Sa (1.0)	Sa (2.0)	Sa (5.0)	Sa (10.0)	PGA	PGV
0.84g	0.93g	0.73g	0.48g	0.16g	0.061g	0.38g	0.68m/s

The granular deposits (sands, silty sands and gravelly sands), where situated below the established groundwater level, may have the potential to liquefy under the 2024BCBC design earthquake. The soft portion of the silt deposits may have a potential for cyclic softening during the design earthquake. As a result, this site is classified as *Site Class F – Other Soil*. However, the 2024 BCBC states that for structures on liquefiable soils that have a fundamental lateral period, T_a , of 0.5 seconds or less, the site designation, the corresponding spectral accelerations, and the Peak Ground Acceleration (PGA) values may be determined by assuming the soils are not liquefiable or prone to cyclic softening. On this basis, if it is determined that the proposed structures have fundamental periods of vibrations equal to or less than 0.5 seconds, then the Site Class and corresponding values for PGA and spectral accelerations may be determined based on *Site Class E – Soft Soil*.

5.3.2 Foundation Design

It is understood that the client anticipates support for the proposed building with the use of helical piles.

It is understood that pile design will be provided by others.



Conventional strip and pad footings founded on a minimum 0.6m thick pad of engineered fill placed thereon are also considered suitable to support the proposed additions, however, removal of compressible soils (above gravels) or preloading may be required. Kontur can provide additional recommendations regarding design/constructability considerations for strip/pad footings if required.

Schedule A2 of the IFHMP indicates a simplified design velocity of 0.81 to 2.8 m/s during the design flood event. As such, backfill surrounding proposed foundations must be protected from scour and erosion (refer to attached Schedule F - *Standard Erosion and Scour Protection Details*). Scour protection for deep foundations (helical piles) would require the upper helix to be at least 2m below finished grade.

6.0 FIELD REVIEW

To sign-off on the work, Kontur must be provided the opportunity to review final project designs (not including pile design) or drawings from a geotechnical point-of-view. In addition, Kontur must be provided the opportunity to complete the necessary field reviews during the construction stage of the project. Additional field review would be required if helical piles cannot be installed below 2m depth, or if strip/pad footings are required.

Kontur requires at least forty-eight (48) to seventy-two (72) hours of advanced notice to visit the site when the work is ready for review.

7.0 CLOSURE

The comments and recommendations presented in this letter are based on the referenced information and Kontur's understanding of the project as described herein. If site conditions or project parameters differ from those described in this report, Kontur should be notified promptly to review geotechnical aspects of the project and provide additional or modified comments and recommendations, as deemed appropriate. Contractors should make their own assessments of subsurface conditions at this site and select the construction means and methods that are most appropriate for encountered site conditions.

The subject property is considered 'safe' for the intended purpose, that being the construction of an auxiliary dwelling unit. The term safe specifically refers to the ability of the sub surface soils to support the proposed building within typically tolerable settlement for such buildings, and global slope stability being adequate for static and seismic conditions.

This letter has been prepared for the exclusive use of Newlines ADU / Newlines Contracting and/or their designated agents or consultants for the intended purpose described herein. The district of Squamish may use the information for development and/or building permit purposes. Any use of the information contained in this report 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:

Peter Knott EIT
Geotechnical Engineer-In-Training

Per:

Evan Sykes P.Eng
Principal | Geotechnical Engineer

Attachments: Interpretation and Use of Study and Report
Photographs
Test Pit Location Plan
2020 National Building Code Seismic Hazard Calculation



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 envelopment 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.



Note: Base image extrapolated from District of Squamish online web-mapping application



2025 - 2020 National Building Code of Canada Seismic Hazard Tool

This application provides seismic values for the design of buildings in Canada under Part 4 of the National Building Code of Canada (NBC) 2020 and 2025, as prescribed in Article 1.1.3.1. of Division B of the respective NBC editions.

Seismic Hazard Values

User requested values

Code edition	NBC 2020
Site designation X_s	X_E
Latitude (°)	49.765
Longitude (°)	-123.155

Please select one of the tabs below.

NBC 2020 Additional Values Plots API Background Information

The 5%-damped spectral acceleration ($S_a(T, X)$, where T is the period, in s, and X is the site designation) and peak ground acceleration ($PGA(X)$) values are given in units of acceleration due to gravity (g , 9.81 m/s^2). Peak ground velocity ($PGV(X)$) values are given in m/s. Probability is expressed in terms of percent exceedance in 50 years. Further information on the calculation of seismic hazard is provided under the *Background Information* tab.

The 2%-in-50-year seismic hazard values are provided in accordance with Article 4.1.8.4. of the NBC 2020. The 5%- and 10%-in-50-year values are provided for additional performance checks in accordance with Article 4.1.8.23. of the NBC 2020.

See the *Additional Values* tab for additional seismic hazard values, including values for other site designations, periods, and probabilities not defined in the NBC 2020.

NBC 2020 - 2%/50 years (0.000404 per annum) probability

$S_a(0.2, X_E)$	$S_a(0.5, X_E)$	$S_a(1.0, X_E)$	$S_a(2.0, X_E)$	$S_a(5.0, X_E)$	$S_a(10.0, X_E)$	$PGA(X_E)$	$PGV(X_E)$
0.836	0.591	0.727	0.481	0.164	0.0608	0.382	0.682

The log-log interpolated 2%/50 year $S_a(4.0, X_E)$ value is : **0.2131**

► Tables for 5% and 10% in 50 year values

Download CSV