



Flood Hazard Report – Development & Building Permit Review Master Requirement SPE 106

Purpose

The *Flood Hazard Report* assesses the impact of flood hazards on a proposed development and outlines such conditions as may be required to ensure that the proposed development is safe for the use intended and is consistent with Council adopted policy related to natural hazards.

Background

Development or the use of property may be directly affected by surface water flooding or, indirectly, by elevated ground water levels. Development and properties not directly adjacent to a river or creek or ocean may also be at risk as flooding represents a hazard to a wide area. District Council has adopted policy around natural hazards which can be viewed in the Creek Hazard Development Permit Area Guidelines in Schedule B of the Official Community Plan for details.

In order to avoid unnecessary delays, complications or expense applicants are advised to ask a Plan Checker early in the design stages if a *Flood Report* will be necessary. A *Pre-Application Request for Service* may be required to confirm the requirement for a *Flood Report*. A *Flood Report* will be required if;

- the development is located within the provincially designated Seymour River Floodplain or other Creek Hazard Development Permit Area,
- the development is located adjacent to the designated Seymour River Floodplain or other Creek Hazard Development Permit Area and proposes basements or finished space below Flood Construction Levels,
- the development is located within area subject to 1.0 m of sea level rise as per the Province of BC's *Flood Hazard Area Land Use Management Guidelines* , as amended,
- the development proposes basements or finished space below a known High Water Mark,
- pursuant to s. 56 of the Community Charter the Building Inspector considers that construction would be on land that is subject to flooding or elevated ground water levels.

A building permit application will be accepted on the condition that:

- 1) the *Flood Report* has been submitted by a specialist professional engineer and such engineer certifies, subject to conditions contained within the report, that the land may be used safely for the use intended,
- 2) the *Flood Report* MUST provide a response to all headings identified in the *Flood Report - Terms of Reference* identified below. Incomplete reports will not be found acceptable and will result in delays,

- 3) the Building Inspector has reviewed and accepted the report,
- 4) the owner of the land covenants with the District to:
 - a) use the land only in the manner determined and certified by the engineer as enabling the safe use of the land for the use intended,
 - b) the covenant contains conditions respecting reimbursement by the covenantor for any expenses that may be incurred by the covenantee as a result of a breach of the covenant,
 - c) the covenant be registered under section 219 of the Land Title Act.

Prior to constructing work within 30 metres of the top of bank of a watercourse an applicant will require District of North Vancouver Environmental approval with respect to the removal and importation of soil, tree cutting and proximity to sensitive aquatic areas.

Requirements

Content: Flood Report - Terms of Reference

- Credentials:** *Flood Reports* are to be performed by a specialist professional engineer with experience or training in hydrology, hydro-geology and related hydraulic assessments, or a professional engineer experienced in coastal engineering, as applicable. *Flood Reports* are to be prepared in accordance with Engineers and Geoscientists BC's Professional Practice Guidelines.
- Statutes:** Section 56 of the Community Charter is applicable where the study is undertaken for the purpose of addressing flooding issues for a Building Permit.
- Background Information:** *Flood Reports* shall include a review of available background information.
- Property Description:** *Flood Reports* shall include both legal and street addresses of the subject property, and also a plan showing the location of the property relative to the pertinent creek, river or coastal area. Any existing restrictive covenants relative to land use or natural hazards shall be identified and attached to the report.
- Flood Hazards:** *Flood Reports* shall provide a clear assessment of hazards associated with floods including surface and subsurface water. Uplift, hydrostatic pressure and the affects on perimeter drainage, storm water management and

sanitary drainage must be addressed. The design magnitude of each of these processes will be assessed to a level of accuracy appropriate for the project.

- Coastal Flood Hazards:** For waterfront properties, the risk of flooding and erosion from the sea shall be addressed.

For properties at risk of flooding due to sea level rise, applicants are required to follow the Province of BC's *Flood Hazard Area Land Use Management Guidelines*, as amended. Flood Construction Level and setback requirements for buildings, subdivision, and zoning should allow for sea level rise to the year 2100, i.e. 1.0 m of Global Sea Level Rise, as per the *Guidelines*.

Where risk of river and coastal flooding co-exist, the applicant should account for the combined effects.

- Other Hazards:** Where other hazards, such as rockfall, are apparent, they shall be noted.
- Design Criteria for Floods:** For floods, the design flow shall be the 200-year return period peak instantaneous flow. New culverts should be capable of passing this flow with no surcharging. New bridges should be capable of passing this flow with a minimum of 1 metre of freeboard.
- Safe Certification:** A clear certification, subject to conditions contained in the report, that the land may be used safely for the use intended. The conditions shall be with respect to the siting, structural design and maintenance of buildings, structures and works, the maintenance of planting or vegetation, the placement of landfill and other such conditions respecting the safe use of the land, buildings, structures or works.

Any assumptions regarding future watershed conditions as they relate to the hazard assessments are to be clearly stated.

- Building Setbacks:** Proposed building setbacks shall be clearly defined. In most cases, it would be appropriate to consult with the Environmental Sustainability (Operations) Department in determining setbacks.
- Flood Construction Levels:** Proposed FCL's for proposed building sites shall be clearly defined, preferably in Geodetic Survey of Canada datum. In general, FCL's will be based on the 200-year return period flood criteria, plus a minimum of 0.6m freeboard allowance, plus a reasonable allowance for sedimentation. Behind dykes or other flood protection works, determination of appropriate FCL's will be site-specific.
- Proposed Mitigative Works:** Proposed mitigative works are to be permanent, and shall be designed to a conceptual level for the purpose of report submission.

The proposed works shall not result in transfer of risk to an adjoining property or third party. The location and land ownership for proposed works is also to be noted. Mitigation recommendations should be focused on the lot as opposed to off-site works. Following acceptance of the report, the requirements for design and construction of the works will be defined.

- Environmental Approvals:** Where environmental approvals are required for construction of mitigative works, it may be necessary to obtain such approvals prior to acceptance of the report.
- Maintenance Requirements:** *Flood Reports* shall fully outline short and long term maintenance requirements.
- Report Submission:** *Flood Reports* shall be sealed by the engineer of record. Where required, engineering reports will be included within a restrictive covenant registered against the land title.
- Peer Review:** The District regularly obtains a peer review of creek reports by independent engineering consultants. Any concerns resulting from a peer review will be directed to the engineer of record for consideration. Creek reports will not be accepted until concerns arising from a peer review are satisfactorily resolved.

Section 219 Covenant

- Per sample

Timing: The *Flood Report* must be found acceptable by the Building Inspector prior to a permit application being accepted. The *Section 219 Covenant* must be registered on title prior to permit issuance.

Owner: Retain appropriate professional(s) to prepare *Flood Reports*.
Registered Section 219 Covenant on land title.

Related Requirements/Documents/Forms

Master Requirement SPE107 *Creek Hazard Report*

Contact

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