FLOOD HAZARD AREA

LAND USE MANAGEMENT

GUIDELINES

May 2004

Ministry of Water, Land and Air Protection

Province of British Columbia

Amended by:
Ministry of Forests, Lands, Natural Resource Operations and Rural Development

January 1, 2018

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Section 3.2.6 - August 2011
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Contents

Introduction to Document and Guidelines

This document provides guidelines intended to help local governments, land-use managers and approving officers develop and implement land-use management plans and make subdivision approval decisions for flood hazard areas.

The goals of the provincial "Flood Hazard Area Land Use Management Guidelines" are to reduce or prevent injury, human trauma and loss of life, and to minimize property damage during flooding events. Experience has shown that regulating land development to keep people out of harm's way is the most practical and cost effective way of achieving these goals.

The guidelines are based on the policies and procedures established and refined over the life of the provincial flood hazard management program.

These guidelines have been prepared pursuant to section 2 of the *Environment Management Act* and must be considered by local governments in making bylaws under section 910 of the *Local Government Act*.

The guidelines are divided into five sections:

1.0 Administration – Flood Hazard Land Use Management
2.0 Flood Plain Mapping
3.0 Application – By Hazard Type
4.0 Application – Land Use Specific
5.0 Application – Implementation Measures

The Administration section details ways in which decision-makers can manage flood hazards on a broad or area-wide basis, employing strategies such as flood hazard management plans, bylaws and standards, and during the subdivision process.

The Flood Plain Mapping section details the importance and application of flood plain mapping information.

The Application sections provide the provincial requirements for different types of flooding hazards and different land uses commonly found in BC. These are **minimum** requirements that may be increased by the decision-maker depending on local circumstances.

In the absence of more site-specific studies or information, these guidelines are the recommended provincial minimum requirements for land use management in flood hazard areas.

For certain areas of the province, more site-specific information may be available for the decision-maker's consideration. Sources of site-specific information that may supplement the guidelines include:

- Historical records and descriptions, particularly of previous flooding events at a specific location;
- Flood hazard delineation or management studies;
- Flood plain mapping;
- Engineering and other studies;
- Local government planning documents, such as Official Community Plans and bylaws; and
- Covenants, at the site or in the vicinity.

In addition, new site-specific studies containing professional evaluation, advice and recommendations including mapping, may be required where the risk to life and property is high, where advice is required to meet provincial flood hazard management guidelines or where modified or new protective works are proposed.

1.0 Administration - Flood Hazard Land Use Management

Local governments should consider broad flood hazard management tools to ensure that future land use will be planned and buildings constructed in a manner that will reduce or prevent injury, human trauma and loss of life, and to minimize property damage during flood events.

Appropriate land use management requirements should be included by the statutory decision-maker at certain stages in the planning process. These include:

1.1 Official Community Plans

Official Community Plans (OCPs) must contain general land use policy statements and maps respecting restrictions on the use of land that is subject to hazardous conditions. OCPs should include statements that endorse and emphasize the need to manage development in flood prone areas in order to reduce impacts on people and property.

Under the provisions of section 877 of the *Local Government Act*, plan policies and a hazard schedule are required. See example Form 1 in Appendix B.

1.2 Bylaws and Development Permits

Flood protection measures can be applied to new buildings, manufactured homes and units, modular homes or structures on existing lots. These measures may be incorporated into local government bylaws and decisions under the authority of:

1.2.1 Section 910 of the *Local Government Act,* where a local government may adopt a flood plain bylaw that designates an area as a flood plain, specifies development levels and setback requirements in a designated area and enforces these conditions.

1.2.2 Section 919.1 of the *Local Government Act*, where development permit areas may be designated in an OCP for the protection of development from hazardous conditions.

1.2.3 Section 920 of the *Local Government A*ct, where a development permit area has been designated under the provisions of section 919.1 of the *Local Government Act,* a development permit may specify areas of land that may be subject to flooding, mud flows, torrents of debris, erosion or tsunami that must remain free of development except in accordance with any conditions contained in the permit.

1.2.4 Section 903 of the *Local Government Act* where zoning bylaws partition a municipality into sections for different land use purposes. Section 903 can regulate

parcel configuration, the density of the land use, siting and standards of buildings and structures. These bylaws have been used historically for flood hazard areas to ensure public safety is maintained. However it is preferable that a section 910 bylaw be used.

1.2.5 Section 694 of the *Local Government Act*, where local building regulations are established or under section 699 where the building inspector considers that construction would be subject to flooding, and flood proofing conditions are not established under 1.2.1 to 1.2.5 above.

A sample bylaw format is provided in Form 2 in Appendix B.

1.3 Requests for Modification of Bylaws

Subject to review by and if acceptable to the local government, a flood plain bylaw may be modified. The local government may alter any bylaw condition to best match the flood hazard provided the level of protection is not altered. This discretion extends to the reduction of elevation requirements, where flood plain mapping exists, by the freeboard, provided the subject property is in the flood plain fringe area and there are no major erosion or channel avulsion hazards in the immediate vicinity.

Prior to agreeing to a modification, other exceptions in the surrounding area should be reviewed to ensure consistency and a summary report prepared. Review by the local government may not support modification on technical grounds but the applicant may nevertheless have demonstrated a hardship.

Setback requirements should not be reduced unless a serious hardship exists and no other reasonable option is available. A valid hardship should 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 land use zoning bylaws, cannot occur unless the requirements are reduced.

In order to avoid setting difficult precedents these site characteristics should be unique to the subject property and environs. The economic circumstances or design and siting preferences of the owner should not be considered as grounds for hardship. Before agreeing to a modification, consideration should be given to other options such as the use of alternate building sites, construction techniques and designs (e.g., constructing an additional storey and thereby reducing the size of the ‘building footprint’).

1.4 Subdivision Approval Process

Under the provisions of section 86 of the *Land Title Act*, the approving officer -- when approving a subdivision which may be subject to flooding or erosion -- may require an

engineering report certifying that the land may be used safely for the intended purpose and/or require the subdivider to enter into a covenant under section 219 of the *Land Title Act* to establish flood plain requirements. Similar provisions are available under the *Strata Property Act* and the Bare Land Strata Regulations.

A section 219 covenant is to be registered under the *Land Title Act* and standard covenant formats are shown by Form 3 and Form 4 in Appendix B. Covenant conditions can be established as per Form 5 or where a bare land strata approval is involved, Form 6.

Where the land proposed to be subdivided may not be used safely an approving officer may withhold consent to approve a proposed subdivision. A form letter for this purpose is provided in Form 7 (See section 1.9).

1.5 Covenant Measures

Where consent for approval of subdivision of flood prone land is sought, the proponent may be required to register a restrictive covenant against the title of the property under section 219 of the *Land Title Act.* It is recommended that the covenant specify conditions that would enable the land to be safely used for the use intended. In addition, the following conditions should be included:

1.5.1 Waiver of Liability

1.5.1.1 Where an approving officer gives consent for approval of subdivision of flood prone land, it is recommended that the owner of the land enter into a covenant, to be registered against the land title, requiring flood proofing of buildings and a waiver of liability in favour of the local government and/or the provincial government in the event of any damage caused by flooding or erosion.

1.5.1.2 The waiver procedure may also be requested in considering requests for amendment of flood proofing bylaws in order to permit construction of a building on a legally existing lot, when such reduction gives reasonable grounds for concern in relation to the flood hazard in the area.

1.5.1.3 Where a situation arises in which consent to subdivision would normally be refused due to a high flooding hazard, but it is nevertheless deemed appropriate to allow the subdivision due to extenuating circumstances, consideration should be given to requiring the 'waiver' clause to cover the existing buildings. This would need to be expressly identified and expressed in the conditions of consent.

1.5.2 Priority Charge

Covenant conditions are to be registered with priority over any financial charges requested against the property.

Priority charges are executed through the use of the "Consent and Priority Agreement," and must be signed by prior charges and all parties to the subsequent charge. This Agreement is included in both Form 3 and Form 4 in Appendix B.

1.5.3 Covenant Modification Agreements

A covenant modification agreement is provided in Form 8 in Appendix B.

1.5.4 Affidavit for Witness

An affidavit for witness to a covenant or modification agreement is only required where requested by the grantor. Therefore, it is only necessary to make such arrangement if requested.

1.6 Requests for Modification of Floodproofing Covenants

Subject to review by and if acceptable to, the approving officer and all parties signatory to the covenant, a covenant may be modified. The approving officer may modify any covenant to best match the flood hazard provided the level of protection is not altered. This discretion extends to the reduction of elevation requirements, where flood plain mapping exists, by the freeboard, provided the subject property is in the flood plain fringe area and there are no major erosion or channel avulsion hazards in the immediate vicinity.

Prior to agreeing to a modification, other exceptions in the surrounding area should be reviewed to ensure consistency and a summary report prepared. Review by the approving officer may not support relaxation on technical grounds but the applicant may nevertheless have demonstrated a hardship.

Setback requirements should not be reduced unless a serious hardship exists and no other reasonable option is available. A valid hardship should 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 land use zoning bylaws, cannot occur unless the requirements are reduced.

In order to avoid setting difficult precedents these site characteristics should be unique to the subject property and environs. The economic circumstances or design and siting preferences of the owner should not be considered as grounds for hardship. Before agreeing to a modification, consideration should be given to other options such as the use of alternate building sites, construction techniques and designs (e.g., constructing an additional storey and thereby reducing the size of the ‘building footprint’).

1.7 Crown Land Dispositions

Under the provisions of section 11 of the *Land Act* and provincial “Flood Hazard Area Land Use Management Guidelines”, conditions are established for attachment to leases and other dispositions, see Form 9 in Appendix B.

1.8 Miscellaneous Administrative Measures

1.8.1 Replot of Lot Lines and Consolidation

1.8.1.1 Where a replot of lot lines is considered to be a technical adjustment and does not increase the buildable sites within the flood plain, then the local government flood plain requirements will apply. The provincial guidelines are stated for information purposes on the restrictive covenant. See Form 10 in Appendix B.

Where a subdivision plan creating a new lot occurs, and this lot is subsequently consolidated with another lot, then flood proofing conditions should be attached to the land title of the subdivided parcels and the separate parcel prior to consolidation.

1.8.1.2 The Registrar of Land Titles may accept a reference or an explanatory plan without an accompanying description, where a new parcel is created by the consolidation of adjoining surveyed parcels. As such, the plan does not require approval of the approving officer and, therefore, may not require the attachment of covenant requirements under the provisions of section 86 of the *Land Title Act*.

1.8.2 Benchmarks

Where an approving officer considers a geodetic elevation necessary, the installation of benchmarks may be a condition of consent to subdivision approval in order to assist in the on-site determination of the Flood Construction Level.

1.8.3 Accretions

The applicable flood hazard requirements should apply to any naturally accreted land that has been legally obtained by the upland waterfront property owner.

1.9 Refusal to Consent

A decision maker may withhold consent to a proposed subdivision, bylaw amendment or Crown land disposition where hazard to 'life and limb' exists and cannot be practically alleviated by structural works maintained by the local government and/or flood proofing.

Examples of situations where consent may be withheld, include proposals located:

- In the floodway,
- In the path of a major channel avulsion,
- In the path of a debris flow,
- In an active erosion area,
- Where flood depths exceed 2.5 metres,
- Where flood velocities exceed 1.0 metre per second, and/or
- Where the provision of safe access and egress is not possible.

2.0 Flood Plain Mapping

Local governments must consider relevant flood plain mapping information in making bylaws under section 910 of the *Local Government Act*, as well as in making related decisions regarding flood hazards, including the establishment of Flood Construction Levels. As such, available flood plain mapping information is incorporated into and forms a part of these Guidelines.

A flood plain map delineates the area that can be expected to flood, on average, once every 200 years (called the 200-year flood). It should be noted that:

- A 200-year flood can occur at any time in any given year,
- The indicated flood level may be exceeded, and
- Portions of the flood plain can flood more frequently.

Flood plain maps show the location of the normal channel of a watercourse, surrounding features or development, ground elevations contours, flood levels and flood plain limits (the estimated elevation and horizontal extent of the high water marks of a 200-year flood).

Flood plain mapping information is available for many settled areas of the province. To access information on availability, including links to on-line maps and ordering instructions, visit the following web site: http://srmwww.gov.bc.ca/aib/fpm/index.html

Determination of Designated Flood Levels

The magnitude and water levels associated with the designated flood are determined for each river by using survey and hydrological data.

The magnitude of the designated flood is determined by frequency analysis of past floods supplemented by regional runoff data when required. The water surface profile is then calculated for the designated flood.

The flood plain is delineated by the translation of the flood profile plus freeboard allowance to base mapping to produce the finished flood plain maps.

Historical context

Many of the flood plain maps presently available were developed under a provincial-federal program. The Flood Plain Mapping Program was delivered under the Canada - British Columbia Agreement Respecting Floodplain Mapping from 1987 to 2003. The agreement marked an acceleration of a provincial mapping program that commenced in 1974. Following is a summary of the objectives of the agreement.

The Agreement:

- Restricted both governments from further undertakings (including construction of, or a major addition to, structures or a change in the use of land) in areas that are vulnerable to flooding and are located in designated flood plains;
- Discouraged financial assistance for development of undertakings in flood-prone areas;
- Accommodated measures to encourage local authorities to restrict undertakings in flood-prone areas under their jurisdiction; and
- Required adequate flood proofing measures to have been incorporated into new development in a flood plain after designation to be eligible for disaster assistance.

Other maps, developed under different processes, may be available.

For further information regarding flood plain mapping, please to refer to the web site noted above.

3.0 Application - By Hazard Type

Where relevant flood plain maps, and other relevant flood hazard-related information (such as covenants, bylaws, flood hazard maps and engineering reports) exist, they must be considered.

Where such information is not available, the following minimum requirements should be considered to guide development away from higher flood hazard areas and to allow development to proceed in a safe manner in lower risk areas. These minimum requirements should be registered against the land title as a covenant at the time of subdivision, and/or should be incorporated into local government bylaws.

The following guidelines include recommended minimum flood plain setbacks and flood construction levels.

Flood plain setbacks are established to keep development away from areas of potential erosion and avoid restricting the flow capacity of the floodway. Keeping the floodway clear of development can reduce the risk of damage to neighbouring properties and reduce disruptions to natural river processes, leading to a more balanced and economical approach to managing flood prone areas. Setbacks are measured from the natural boundary unless otherwise specified.

Flood Construction Levels (FCLs) are used to keep living spaces and areas used for the storage of goods damageable by floodwaters above flood levels. In some locations FCLs have been established. Otherwise FCLs are typically referenced as an elevation above the natural boundary.

In cases where the FCL has been determined, it should be taken into consideration, together with an appropriate setback requirement.

The designated flood, and the designated flood level, are used in determining the FCL.

The designated flood means a flood which may occur in any given year, of such magnitude as to equal a flood having a 200-year recurrence interval, based on a frequency analysis of unregulated historic flood records or by regional analysis where there is inadequate streamflow data available.

A designated flood level is the observed or calculated water surface elevation for the designated flood and is used to determine the Flood Construction Level.

In the absence of more site-specific studies or information, these guidelines are the recommended provincial minimum requirements for land use management in flood hazard areas.

3.1 Lakes, Ponds, Marsh Areas and Reservoirs

3.1.1 Lakes

Setback –

Buildings, manufactured homes or units, modular homes or structures (referred to as "buildings" in all subsequent clauses) should be setback at least 15 metres from the natural boundary of any lake.

FCL where a designated flood level has been determined –

Areas used for habitation, business, or storage of goods damageable by floodwaters should be constructed within any building at an elevation such that the underside of the floor system thereof is no lower than the designated flood level of the lake plus freeboard allowance.

FCL where a designated flood level has not been determined –

The FCL for lakes over 15 kilometres in length should be 3.0 metres above the natural boundary of the lake, or any pond, backwater, slough, swamp or marsh area affected by the lake.

3.1.2 Small Lakes, Ponds, Swamps and Marsh Areas

Where a lake is less than 15 kilometres in length and where there is no history of severe flooding or concern for shoreline erosion, and for ponds, swamps or marsh areas:

Setback –

Buildings should be setback at least 7.5 metres from the natural boundary of the lake, pond, swamp or marsh.

FCL –

The elevation requirement may be reduced to 1.5 metres above the natural boundary of the lake, pond or adjacent swamp or marsh area.

3.1.3 Bluffs

Setback –

Where the building site is at the top of a steep bluff and where the toe of the bluff is subject to erosion and/or is closer than 15 metres from the natural boundary, the setback

should be a horizontal distance equal to 3.0 times the height of the bluff as measured from the toe of the bluff.

For practical application, this setback condition will require site-specific interpretation and could result in the use of a minimum distance measured back from the crest of the bluff. This setback may be reduced provided the reduction is supported by a report prepared by a suitably qualified professional.

3.1.4 Reservoirs

Setback –

The setback requirements regarding lakes, ponds and marsh areas (clauses 3.1.1, 3.1.2 and 3.1.3) should generally apply to reservoirs. Some reservoirs have established 'safe lines' in their operating plans that may be used to establish the setback, or site-specific analysis may be required. For larger reservoirs, specific setbacks are established.

FCL –

For smaller reservoirs, the FCL is either an elevation of 1.5 metres above the crest of the spillway or is 0.6 metres above the crest of the dam, whichever is greater. For larger reservoirs, reservoir specific FCLs are established.

3.2 Watercourses

It should be noted that the natural boundary for watercourses includes the best estimate of the edge of dormant or old side channels (see definition in Appendix A).

3.2.1 Standard requirements for ordinary watercourses

Setback –

Buildings should be setback at least 30 metres from the natural boundary of any watercourse, except as noted in sections 3.2.2 to 3.2.8 below.

Where standard dikes exist, setbacks shall be as noted in section 3.6 of these guidelines. Where non-standard dikes exist, setbacks should be developed in consultation with the Inspector of Dikes in order to provide right-of-way for any future dike improvements and/or access.

FCL where a designated flood level has been determined –

Areas used for habitation, business, or storage of goods damageable by floodwaters should be constructed within any building at an elevation such that the underside of the floor system thereof is no less than the Flood Construction Level.

FCL where a designated flood level has not been determined –

The Flood Construction Level should be no lower than 3.0 metres above the natural boundary of any nearby watercourse, except as allowed in section 3.2.3 and 3.2.4.

3.2.2 Increased Requirements for ordinary watercourses

The requirements for a watercourse may be increased where a watercourse has demonstrated extensive flooding and/ or has significant bank erosion and/or depth of flooding:

Setback–

The setback requirements may be increased to an amount greater than 30 metres.

FCL –

The elevation of areas used for habitation, business, or storage of goods damageable by floodwaters should be established within any building at an elevation greater than 3.0 metres above the natural boundary of the watercourse.

3.2.3 Requirements for Smaller Streams

The requirements for small streams may be reduced where the following conditions exist:

- Sufficient discharge records are available to establish the designated flood and/or the designated flood can be otherwise estimated as less than 80 cubic metres per second, and
- The watercourse has no significant history of flooding and/or bank erosion, and/or
- The watercourse is not located on an alluvial or colluvial fan, and/or
- It is deemed appropriate by an approving officer.

Setback –

The setback requirement may be reduced to 15 metres from the natural boundary of the watercourse provided the floodway is not obstructed.

FCL –

The elevation of areas used for habitation, business, or storage of goods damageable by floodwaters should be established within any building at an elevation greater than 1.5 metres above the natural boundary of the watercourse.

3.2.4 Requirements for Very Small Streams

For streams not meeting the definition of “watercourse” and where there is no history of flooding and/or bank erosion and where the watercourse is not located on an alluvial or colluvial fan, the setback and FCL requirements shall be at the discretion of the approving officer.

3.2.5 Decreased Requirements for ordinary watercourses

Setback and FCL –

The requirements for may be reduced where the following conditions exist:

- Sufficient discharge records are available to establish the designated flood and/or the designated flood can be otherwise estimated as greater than 80 cubic metres per second, and
- The watercourse has no significant history of flooding and/or bank erosion, and/or
- The watercourse is not located on an alluvial or colluvial fan, and/or
- It is deemed appropriate by an approving officer.

~~3.2.6 Downstream of Dams~~

Refer to Amended Section 3.2.6 (please see next page)

~~*Setback –*~~

~~Dam upgrading or development restrictions may be necessary if a development proposal increases the Land and Water BC (LWBC) hazard consequence classification for low, high and very high consequence dams (other than dams owned and operated by a major utility). The requirements should be determined on a site-specific basis by a professional engineer in consultation with the dam owner and LWBC.~~

~~Clauses 3.2.1 to 3.2.4 should apply downstream of dams rated with a very low consequence classification as determined by LWBC.~~

3.2.7 Culverts and Bridges

Setback –

Use setbacks specified for the size of the watercourse in question.

FCL –

Where, in the opinion of an approving officer, culverts and bridges immediately downstream of a subject property may become obstructed in times of flood and cause ponding upstream of the bridge or culvert, the FCL for the property should be a minimum of 0.3 metres above the crown of the road.

AMENDMENT

Section 3.2.6 – Flood Hazard Area Land Use Management Guidelines

3.2.6 Downstream of Dams

Dam upgrading and/or development restrictions will be necessary if a development proposal increases the dam's Downstream Consequence Classification per Schedule 1 of the BC Dam Safety Regulation.

The extent of dam upgrading and/or development restrictions shall be determined on a site-specific basis by a qualified professional engineer in consultation with:

- Local government planning and approving officials,
- Ministry of Transportation and Infrastructure development approving officials, if the development occurs in a Regional District,
- Ministry of Forests, Lands, and Natural Resource Operations approving officials, if the development is on Crown Land,
- Dam Safety Officer, and
- Dam owner.

For the locations of all dams regulated by the Ministry of Forests Lands, and Natural Resource Operations (MFLNRO) and information about Dam Safety Officers, please visit the BC Dam Safety Program website (www.env.gov.bc.ca/wsd/public_safety/dam_safety).

For developments downstream of dams not listed on the Dam Safety Program's website (e.g. mining dams - impoundments and diversions, sewage lagoons, etc.), it is the responsibility of local government approving officials to get into contact with the dam owner, responsible provincial agency, and if necessary, a qualified professional engineer to determine the extent of dam upgrading and/or development restrictions.

Clauses 3.2.1 to 3.2.4, regarding building setbacks and flood construction levels for watercourses, shall apply downstream of dams rated with a low consequence classification as determined by the MFLNRO Dam Safety Program.

AMENDED: AUGUST 17, 2011

Ministry of Forests, Lands, & Natural Resource Operations
Flood Safety Section
Resource Stewardship Division
Water Management Branch
Website: www.env.gov.bc.ca/wsd
Mailing Address:
PO Box 9340 Stn Prov Govt
Victoria BC V8W 9M1
Telephone: (250) 387-9962
Location:
3rd Floor, 395 Waterfront Crescent
Victoria BC V8T 5K7

Where road fills and culverts exist that, if obstructed, may result in significant impoundments and/or serious failure and flooding, consideration should be given to engaging a Professional Engineer to assess the risk and provide site-specific flood protection measures for the downstream property(s).

3.2.8 Meandering and Braided Streams

Setback –

Setback requirements should, at a minimum, meet the requirements noted above for the watercourse size and situation. Where the meandering or braiding is significant, consideration should be given to having the requirements determined on a site-specific basis by a suitably qualified professional.

FCL –

Building levels should be set in accordance with requirements detailed in clauses 3.2.1 through 3.2.7.

3.3 Alluvial Fans

Where possible, development of alluvial fans should be discouraged, and the land should be retained in non-intensive uses such as parks, open-space recreation, and agricultural uses.

3.3.1 Standard Requirements

Consent to develop may be granted by an approving officer:

- Where there is no alternative land available, and
- Where an area of an alluvial fan can be shown to be stable because of hydraulic, physical and/or geological conditions.

This approval should be subject to hazard management and flood proofing requirements determined on a site-specific basis. Such requirements may include but are not limited to:

- Development density regulations,
- The identification of the safe building site(s),
- Building elevation and foundation design requirements,
- The construction of on-site and/or off-site protective works, and
- Land use regulations to prevent the alteration of the terrain and features such as landfills, excavations and the construction of new roads and utilities that would alter the hazard rating for the land.

Where a study of the flooding hazard is not available and the hazard is considered significant, an assessment of the land by a suitably qualified professional should be required.

If consent to develop on an alluvial fan is granted:

Setback –

The setback should be determined in accordance with clauses 3.2.1, 3.2.2 and 3.2.8.

FCL –

Where the hazard is low, the building should be elevated a minimum of 1.0 metres above the general elevation of the surrounding ground on concrete foundation and protected from scour.

3.3.2 Training Works to Protect One Property

Where protective works are to be constructed, an Operations and Maintenance Manual should be prepared, access easements and/or right of ways established and an ongoing maintenance program established prior to final development approval. Works are to be designed by a professional engineer. A professional engineer must certify constructed works. See section 5.7 Training Works.

An ongoing maintenance program may be assured through the addition of relevant requirements to the standard flood proofing covenant specified under section 219 of the *Land Title Act*, if the training works are

- Built on private property, and
- Intended to protect only the property of the person (including a strata corporation) owning the training works and the property on which they are located.

3.3.3 Training Works to Protect Multiple Properties

If the training works, when constructed, will protect multiple properties of more than one person, then an ongoing operation and maintenance program and access to structures must be assured by the local government. Works are to be designed by a professional engineer. A professional engineer must certify constructed works. In addition, the training works require the approval of the Inspector of Dikes and, therefore, that office must be contacted for the requirements and approvals. See section 5.7 Training Works.

Approvals under the provincial *Water Act* and federal *Fisheries Act* are also normally required. Local government may also have other requirements.

3.4 Areas Subject to Debris Flows

Development should be discouraged in areas where local knowledge, experience or studies indicate concern that there may be a debris flow hazard.

3.4.1 Professional Evaluation

Consent to develop may be granted, with standard requirements as established for alluvial fans in section 3.3, where:

- There is no other land available, and
- Where an assessment of the land by a suitably qualified professional indicates that development may occur safely.

See section 5.7 Training Works.

Refer to 2018 Amended Sections 3.5 and 3.6.

~~3.5 The Sea~~

~~It should be noted that the natural boundary for coastal areas includes the natural limit of permanent terrestrial vegetation.~~

~~3.5.1 Strait of Georgia~~

~~3.5.1.1 *Standard Requirements*~~

~~*Setback –*~~

~~Buildings should be setback 15 metres from the natural boundary of the sea.~~

~~Landfill or structural support for a coastal development or type of development shall be permitted a setback of 7.5 metres from the natural boundary of the sea where the sea frontage is protected from erosion by a natural bedrock formation or works designed by a professional engineer and maintained by the owner of the land.~~

~~In the case of subdivision the setback should not be reduced unless each building site is located on non-erodible bedrock or local government assumes the maintenance responsibility for works designed by a professional engineer.~~

~~The setback may be increased on a site-specific basis such as for exposed erodible beaches and/or in areas of known erosion hazard.~~

~~*FCL –*~~

~~The FCL shall be at least 1.5 metres above the natural boundary of the sea, and higher than any Flood Construction Level established for specific coastal areas.~~

Refer to 2018 Amended Sections 3.5 and 3.6.

3.5.1.2 *Requirements for Coastal Bluffs*

Setback –

Where the building site is at the top of a steep coastal bluff and where the toe of the bluff is subject to erosion and/or is closer than 15 metres from the natural boundary of the sea, the setback shall be a horizontal distance equal to 3.0 times the height of the bluff as measured from the toe of the bluff.

For practical application, this setback condition will require site specific interpretation and could result in the use of a minimum distance measured back from the crest of the bluff. This setback may be reduced provided the reduction is supported by a report prepared by a suitably qualified professional.

3.5.1.3 *Requirements for Existing Coastal Lots*

Setback –

In the case of the existing lots, where the above setback distances prevent construction, and where it is not possible to provide sufficient protection through works designed by a suitably qualified professional, the approving officer may agree to modifying setback requirements to permit construction provided this is augmented through a restrictive covenant stipulating the hazard, building requirements, and liability disclaimer.

3.5.2 Outside the Strait of Georgia Area

A subdivision application in tsunami prone areas must include a report by a suitably qualified professional who must formulate safe building conditions for each proposed lot based on a review of a summary report titled "Evaluation of Tsunami Levels Along the British Columbia Coast", by Seaconsult Marine Research Ltd., dated March 1988. At a minimum, building conditions should protect improvements from damage from a tsunami of equal magnitude to the March 28,1964 tsunami that resulted from the Prince William Sound, Alaska earthquake.

Setback –

Setback requirements should be established on a site-specific basis and take into account tsunami hazards.

Setback from the natural boundary of the sea must be sufficient to protect buildings and must be at least 30 metres.

FCL –

FCL requirements should be established on a site-specific basis and take into account tsunami hazards.

Reductions to these requirements should only be considered where the building can be built to the FCL on bedrock.

Refer to 2018 Amended Sections 3.5 and 3.6.

3.6 Areas Protected by Standard Dikes

Residential, commercial and institutional developments in areas protected by standard dikes are required to comply with full flood proofing requirements for their respective categories.

Setback –

Buildings should be located a minimum of 7.5 metres away from any structure for flood protection or seepage control or any dike right-of-way used for protection works. In addition, fill for floodproofing should not be placed within 7.5 metres of the inboard toe of any structure for flood protection or seepage control or the inboard side of any dike right-of-way used for protection works.

Any change to these conditions requires the approval of the Inspector of Dikes.

FCL –

Buildings and manufactured homes in areas protected by standard dikes should meet minimum FCLs prescribed for the primary stream, lake or sea adjacent to the dike and the FCL requirements for any internal drainage (minimum ponding elevations).

3.6.1 Secondary sources of flooding

Where there are secondary sources of flooding within diked areas, the appropriate requirements as set out in Clauses 3.1 through 3.5 should be applied. These should include consideration of minimum ponding elevations behind the dike to protect against internal drainage.

AMENDMENT

Section 3.5 and 3.6 – Flood Hazard Area Land Use Management Guidelines

3.5 The Sea

3.5.1 Background and Reference Documents

The content for this Amendment is drawn primarily from, “Climate Change Adaptation Guidelines for Sea Dikes and Coastal Flood Hazard Land Use – Guidelines for Management of Coastal Flood Hazard Land Use”, Ausenco Sandwell, report to BC Ministry of Environment, January 27, 2011 (AS (2011b)) and the companion reports, “Sea Dike Guidelines” and “Draft Policy Discussion Paper”, also dated January 27, 2011.

These 2011 reports, including terminology, definitions and explanatory figures, supplement this Amendment to the “Flood Hazard Area Land Use Management Guidelines”. Definitions for the terms used in this Amendment are provided in Appendix A of AS (2011b). Where there is any inconsistency between the Ausenco Sandwell (2011) reports and this Amendment document, the Amendment document shall govern. These reports are referenced in this Amendment as:

“Draft Policy Discussion Paper” - AS(2011a)
“Guidelines for Management of Coastal Flood Hazard Land Use” - AS (2011b)
“Sea Dike Guidelines” - AS (2011c)

These reports are available on the ministry web page:

http://www.env.gov.bc.ca/wsd/public_safety/flood/fhm-2012/draw_report.html

The definition of and method(s) of determination of Flood Construction Level (FCL) for coastal areas has been modified for the purposes of this Amendment (also see definitions in AS 2011b). The FCL is used to establish the elevation of the underside of a wooden floor system or top of concrete slab for habitable buildings, but does not relate to the crest level of a sea dike.

The management of land use in coastal flood hazards may require flood hazard assessments to be completed by suitably qualified Professional Engineers, experienced in coastal engineering. The standards of practice that these Professionals should follow include those outlined in the most recent revision of the “Professional Practice Guidelines – Legislated Flood Assessments in a Changing Climate in BC”, first published by the Association of Professional Engineers and Geoscientists of BC (APEGBC) in 2012.

The APEGBC Professional Practice Guidelines describe and provide for use of risk assessment methodologies, however, this Amendment does not consider how risk based approaches might be incorporated into sea level rise area planning, determination of setbacks and FCLs, or long term flood protection strategies. Should local governments, land use managers and approving officers choose to base approval decisions on risk assessments prepared by Professional Engineers, the changes in risk over time due to sea level rise must be fully taken into account.

3.5.2 Design and Planning Time Frame

Requirements for buildings, subdivision, and zoning should allow for sea level rise (SLR) to the year 2100.

Land use adaptation strategies as set out in Official Community Plans (OCPs) and Regional Growth Strategies (RGSs) should allow for sea level rise to the year 2200 and beyond.

3.5.3 Recommended Sea Level Rise Scenario for BC

Allow for Global Sea Level Rise of 0.5 m by 2050, 1.0 m by 2100 and 2.0 m by 2200 relative to the year 2000 as per Figure 1.

Adjust for regional uplift and subsidence using the most recent and best information available. Where no information is available, assume neutral conditions (i.e. no uplift or subsidence).

The scenario in Figure 1 is intended to be reviewed every 10 years or sooner if there is significant new scientific information.

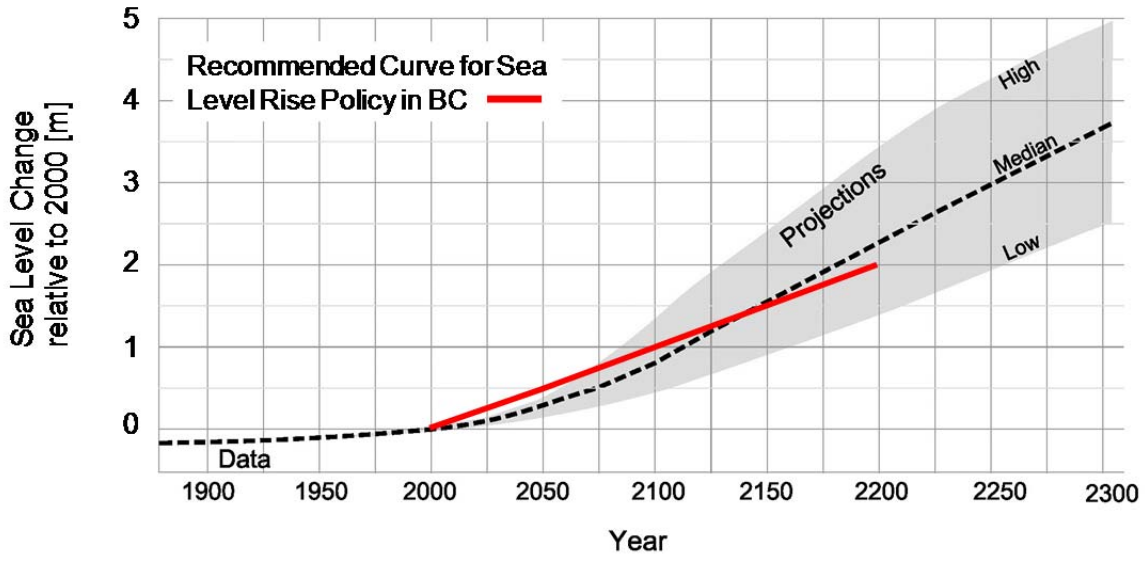

Figure 1. Recommended Global Sea Level Rise Curve for Planning and Design in BC

3.5.4 Sea Level Rise Planning Areas

Local Governments should consider defining SLR Planning Areas and developing land use planning strategies integrating both flood protection (sea dikes) and flood hazard management tools. These areas should include areas exposed to coastal flood hazards, diked areas and inland floodplains adjacent to tidally influenced rivers where potential flood levels will be increased by sea level rise.

As one possible management tool, lands included within SLR Planning areas may be designated by local governments as floodplains under Section 524 of the *Local Government Act*

and if land is so designated, local governments may, by bylaw, specify flood levels and setbacks to address sea level rise.

3.5.5 Strait of Georgia - Areas Not Subject to Significant Tsunami Hazard[1]

3.5.5.1 Standard FCLs and Setbacks

The Year 2100 FCL should be established for specific coastal areas by a suitably qualified Professional Engineer, experienced in coastal engineering. This work could be completed as part of regional floodplain mapping, SLR Planning Area studies, or as part of development approval processes. The Year 2100 FCL should be the minimum elevation for the underside of a wooden floor system or top of concrete slab for habitable buildings, and should be determined (see Figure 2) as the sum of:

- The 1:200, or 1:500[2] Annual Exceedance Probability (AEP) total water level as determined by probabilistic analyses[3] of tides and storm surge;
- Allowance for future SLR to the year 2100;
- Allowance for regional uplift, or subsidence to the year 2100;
- Estimated wave effects associated with the Designated Storm with an AEP of 1:200, or 1:500; and
- A minimum freeboard of 0.6 metres.

Alternatively, the Year 2100 FCL can be determined by a more conservative "Combined Method" as described in the Ausenco Sandwell (2011) reports (see Figure 3). Example calculations of FCLs for specific areas in coastal BC are provided in Table 3-2 AS(2011b) where the FCL is determined as the sum of:

- Allowance for future SLR to the year 2100;
- Allowance for regional uplift, or subsidence to the year 2100;
- Higher high water large tide (HHWLT);
- Estimated storm surge for the Designated Storm with an AEP of 1:200, or 1:500 as per Table 6-1 in AS(2011a);
- Estimated wave effects associated with the Designated Storm; and
- A minimum freeboard of 0.3 metres.[4]

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[1] Refers to "Zone E" as shown on the "Tsunami Notification Zones for BC" map published by Emergency Management BC, November, 2015 and includes the Strait of Georgia, Gulf Islands, Greater Vancouver, Johnstone Strait but not including the east side of the Saanich Peninsula and Greater Victoria.

[2] While a 1:200 AEP is the minimum provincial standard, local governments may decide to adopt more stringent criteria for heavily populated and built-up areas.

[3] Because of the variation along the BC Coast in the availability of reliable long term water level gauge data and site specific effects including uplift, subsidence and wave effects, the decision on selection of an appropriate methodology to determine the FCL is up to the local government jurisdiction based on recommendations from a suitably qualified Professional Engineer, experienced in coastal engineering. Where studies are required to determine sea dike design levels, the design level analyses and dike design must be reviewed and approved by the Inspector, or Deputy Inspector of Dikes, as part of the *Dike Maintenance Act* approval process.

[4] Given that the "Combined Method" provides conservative values for Year 2100 Designated Flood Levels (because the method assumes the Designated Storm occurs in conjunction with a high tide) the freeboard may be reduced from 0.6 m to 0.3 m for this method for situations where the full FCL may be difficult to achieve.

Figure 2.

Probabilistic Method

FCL based on probabilistic analysis of high tide and storm surge.
Illustrative sketch – not to scale.

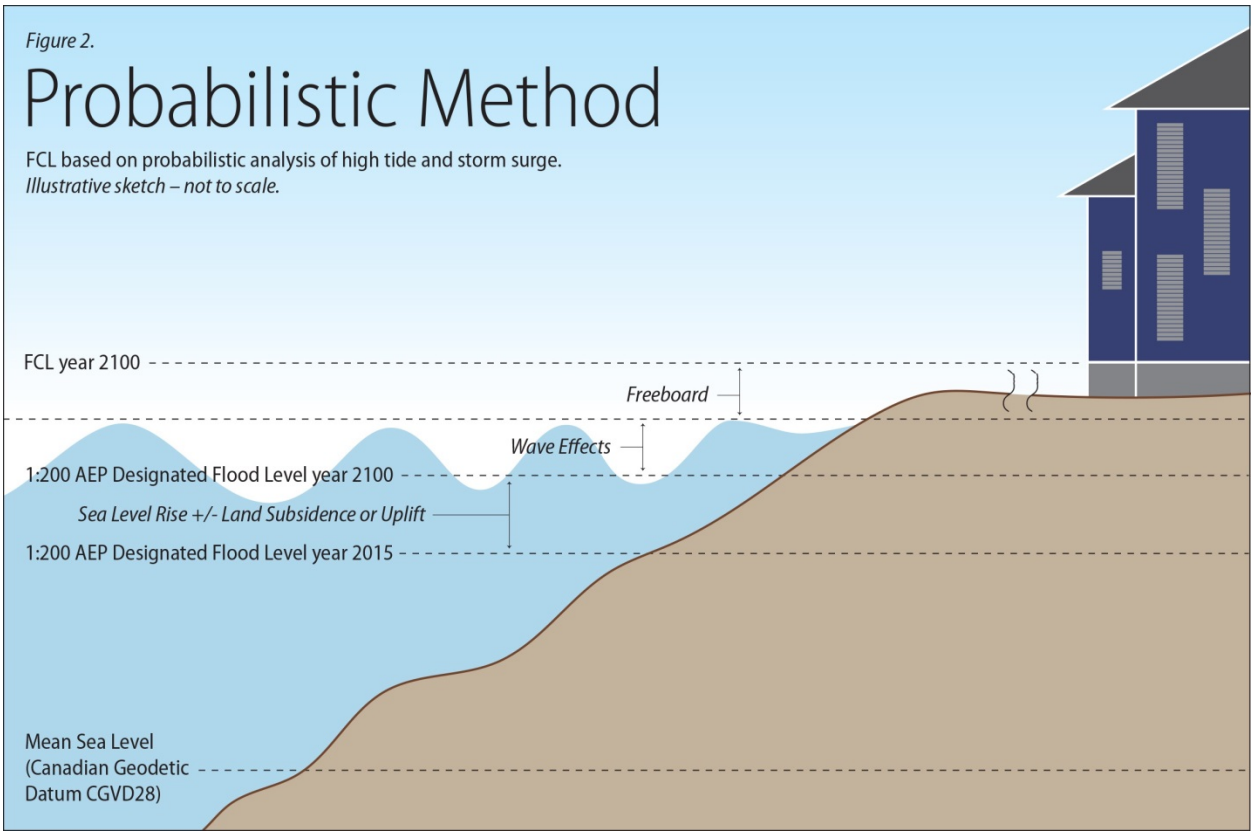
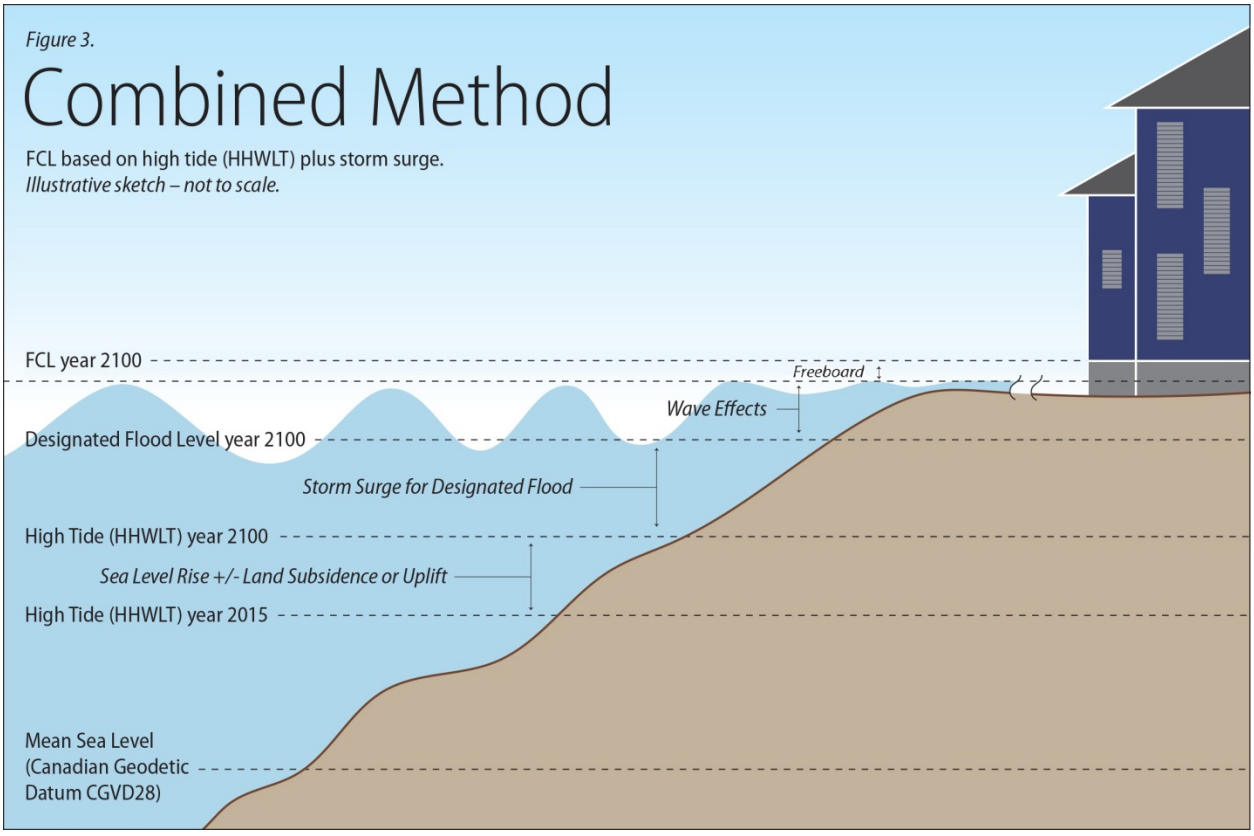


Figure 3.

Combined Method

FCL based on high tide (HHWLT) plus storm surge.
Illustrative sketch – not to scale.



The building setback should be at least the greater of 15 m from the future estimated Natural Boundary of the sea at Year 2100, or landward of the location where the natural ground elevation contour is equivalent to the Year 2100 FCL (refer to Figure 2-2 in AS (2011b) for a definition sketch – except that the Year 2100 Designated Flood Level and future FCL as shown in this sketch can be determined by either probabilistic analyses, or the “Combined Method”).

Where the sea frontage is protected from erosion by a natural bedrock formation, the development approving official may agree to modify setback requirements as recommended by a suitably qualified Professional Engineer experienced in coastal engineering. The Professional Engineer should fully consider all aspects of the coastal flood hazard associated with Year 2100 water levels including potential wave, debris and related splash impacts on buildings. This approval should be augmented through a restrictive covenant describing the hazard and building requirements, and including the Professional Engineer’s report and a liability disclaimer.

The setback may be increased on a site-specific basis such as for exposed erodible beaches and/or in areas of known erosion hazard.

3.5.5.2 Subdivision

All lots created through subdivision should have viable building sites on natural ground that is above the Year 2100 FCL and comply with the setback guidelines noted above.

To regulate redevelopment at the end of the building lifespan, the development approving officer should require a restrictive covenant stipulating that any future reconstruction must meet the FCL and setbacks requirements in force at the time of redevelopment.

Subdivision may be approved within a Sea Level Rise Planning Area in areas where the natural ground is lower than the Year 2100 FCL where the local government has developed and adopted a long term flood protection strategy completed by a suitably qualified Professional Engineer experienced in coastal engineering and referencing applicable professional practice (APEGBC) and provincial guidelines available at the time. The strategy should incorporate mitigation to address all relevant risks including flood risk due to sea level rise to the year 2200 and beyond[5] and is to be comprised of **both** raising of ground elevations with fill and adequate provisions for future dike protection, including sufficient land and/or rights of way for the future dike (also see Appendix 1).

Subdivision may also be approved in areas where the natural ground is lower than the Year 2100 FCL where all of the following conditions have been met:

- The subdivision development involves a maximum of 2 lots;
- The site is located on the coastal floodplain fringe adjacent to high ground;
- The building site ground elevations have been raised to the Year 2100 FCL and the fill extends to and is contiguous with natural ground above the Year 2100 FCL;

[5] The long term flood protection strategy should be reviewed and updated as necessary every 10 years, or as a change to an OCP or RGS warrants. Updates should continue to consider flood risks a minimum of 100 years in the future.

- The fill is adequately protected from the sea by erosion protection works, with consideration of wave impacts associated with Year 2100 sea levels;
- The building setbacks comply with the setback guidelines noted above;
- A suitably qualified Professional Engineer, with experience in coastal engineering has prepared a detailed design for the fill and erosion protection works including a report considering all of the above and has concluded that the site may be suitable for the use intended;
- The Professional Engineers’ report forms part of the restrictive covenant registered on the title of each lot; and
- The restrictive covenant registered on title stipulates that the landowners are responsible for maintenance of the erosion protection works on their own land.

3.5.5.3 Development on Existing Lots

Standard setbacks and elevations apply. To regulate redevelopment at the end of the building lifespan, the development approving official should require a restrictive covenant stipulating that any future reconstruction must meet the FCL and setbacks requirements in force at the time of redevelopment.

On existing lots, if meeting the setback guidelines noted above would sterilize the lot (i.e., not allow even one of the land uses or structures permitted under the current zoning), the development approving official may agree to modify setback requirements as recommended by a suitably qualified Professional Engineer experienced in coastal engineering, provided that this is augmented through a restrictive covenant stipulating the hazard, building requirements, and liability disclaimer.

The Year 2100 FCL requirements would still apply to new habitable building construction.

3.5.5.4 Lots with Coastal Bluffs

For lots containing coastal bluffs that are steeper than 3(H):1(V) and susceptible to erosion from the sea, setbacks should be determined as follows:

1. If the future estimated Natural Boundary is located at least 15 m seaward of the toe of the bluff, then no action is required and the setback should conform with other guidelines that adequately address terrestrial cliff and slope stability hazards.
2. If the future estimated Natural Boundary is located 15m or less seaward of the toe of the bluff, then the setback from the future estimated Natural Boundary should be located at a horizontal distance of at least 3 times the height of the bluff, measured from 15 m landwards from the location of the future estimated Natural Boundary.

In some conditions, setbacks may require site-specific interpretation and could result in the use of a minimum distance measured back from the crest of the bluff. The setback may be modified provided the modification is supported by a report, giving consideration to the coastal erosion that may occur over the life of the project, prepared by a suitably qualified Professional Engineer experienced in coastal engineering.

3.5.6 Outside the Strait of Georgia Area - Areas Subject to Significant Tsunami Hazard[6]

Tsunami setbacks and elevations should be required for new lots created through the subdivision approval process. Tsunami hazard requirements and regulations for existing lots may be determined by local governments on a site specific or regional basis.

The “standard” setbacks and elevations in sections 3.5.5.1 to 3.5.5.4 above apply to all coastal areas outside of the Strait of Georgia, except for new subdivisions subject to significant tsunami hazards, in which case the tsunami setbacks and elevations shall apply. Where the tsunami hazard is low, the greater FCLs and setbacks shall apply.

A subdivision application in a tsunami prone area must include a report by a suitably qualified Professional Engineer, experienced in coastal engineering who must formulate safe building conditions for each proposed lot based on a review of recent Tsunami hazard literature including the report, “Modelling of Potential Tsunami Inundation Limits and Run-Up”, by AECOM for the Capital Regional District, dated June 14, 2013, plus the historical report, “Evaluation of Tsunami Levels Along the British Columbia Coast”, by Seaconsult Marine Research Ltd., dated March 1988.

At a minimum, building conditions should protect improvements from damage from a tsunami of equal magnitude to the March 28, 1964 tsunami that resulted from the Prince William Sound, Alaska earthquake and a possible Cascadia Subduction Zone earthquake.

Setback –
Setback requirements should be established on a site-specific basis and take into account tsunami hazards.

The setback must be sufficient to protect buildings and must be at least 30 metres from the Year 2100 estimated natural boundary.

FCL –
FCL requirements should be established on a site-specific basis and take into account tsunami hazards.

Reductions to these requirements should only be considered where the building can be built to the Tsunami FCL on bedrock.

3.6 Areas Protected by Dikes

Residential, commercial and institutional developments in areas protected by dikes are required to comply with full flood proofing requirements for their respective categories, with a possible exception for development within Sea Level Rise Planning Areas as noted below.

Setback –
Buildings should be located a minimum of 7.5 metres away from any structure for flood protection or seepage control or any dike right-of-way used for protection works. In addition, fill

[6]Refers to “Zones A, B,C and D” as shown on the “Tsunami Notification Zones for BC” map published by Emergency Management BC, November, 2015 and includes the North Coast, Central Coast, and Juan de Fuca Strait including Greater Victoria and the east side of the Saanich Peninsula.

for floodproofing should not be placed within 7.5 metres of the inboard toe of any structure for flood protection or seepage control or the inboard side of any dike right of-way used for protection works, unless approved by the Inspector of Dikes as part of a dike upgrading plan.

Additional dike right of way and building set back requirements should be defined for Sea Level Rise Planning Areas to accommodate the widening and raising of dikes for sea level rise.

Any change to these conditions requires the approval of the Inspector of Dikes.

FCL –
Buildings and manufactured homes in areas protected by dikes should meet minimum FCLs prescribed for the primary stream, lake or sea adjacent to the dike and the FCL requirements for any internal drainage (minimum ponding elevations). FCLs for diked coastal areas may also be determined through a comprehensive, site-specific dike breach modeling study, completed by a suitably qualified Professional Engineer, and based on a minimum 1:200 AEP sea water level in the Year 2100, inclusion of a minimum 0.6 m freeboard above modelled water levels and conservative modelling assumptions.

Relaxation of FCL requirements for new development in coastal areas protected by dikes may be appropriate for Sea Level Rise Planning Areas where the local government has developed and adopted a long term flood protection strategy completed by a suitably qualified Professional Engineer experienced in coastal engineering and referencing applicable professional practice (APEGBC) and provincial guidelines available at the time (see Appendix 1). This relaxation should be augmented through a restrictive covenant stipulating the hazard and protection strategy, building requirements, and liability disclaimer.

3.6.1 Secondary sources of flooding

Where there are secondary sources of flooding within diked areas, the appropriate requirements as set out in Clauses 3.1 through 3.5 should be applied. These should include consideration of minimum ponding elevations behind the dike to protect against internal drainage.

Amended: October 1, 2016

APPENDIX 1 – LONG TERM FLOOD PROTECTION STRATEGY

Section 3.6 states that “Relaxation of FCL requirements for new development in coastal areas protected by dikes may be appropriate for Sea Level Rise Planning Areas where the local government has developed and adopted a long term flood protection strategy completed by a suitably qualified Professional Engineer experienced in coastal engineering and referencing applicable professional practice (APEGBC) and provincial guidelines available at the time.” Similarly section 3.5.2 provides for subdivision approvals in low lying coastal floodplain areas where the local government has developed a long term flood protection strategy. This appendix outlines the steps involved in developing a long-term flood protection strategy and the issues that should be addressed at the various stages of development of the strategy.

1. General

- Relaxation of FCL requirements for new development in the protected area and intensification of development through subdivision of land has significant long term implications. The future reliance on the sea dikes and consequences of dike failure will increase as development occurs and sea level rises. Therefore, the extent of work required to establish a successful long term dike upgrading program is demanding and costly. This approach should only be undertaken where the extent of community development in the floodplain justifies the high cost and level of effort.
- While additional site specific factors and flood hazards may be relevant for specific areas, the criteria and work outlined herein must generally be completed to justify relaxation of requirements.

2. Feasibility Study

The objective of the feasibility study is to help select a conceptual design option or options and to support a decision to proceed with preliminary design for Phase 1. The feasibility study should include the following steps:

- Collect background data and assess information needs including:
    - Wind and wave
    - Geotechnical (including seismic)
    - Land ownership/rights of way
    - Long term subsidence information for the site/area
    - Environmental
    - Proximity and availability of construction materials
- Review regulations and permits required
- Define design parameters
    - Dike safety standards and guidelines
    - Decision on minimum Annual Exceedance Probability (AEP) of design water level
    - Sea level rise scenario(s) and planning horizons (i.e. year 2100 and 2200) based on the Recommended Sea Level Rise Planning Curve presented in Figure 1.
- Develop options and complete conceptual designs. Design options may include:
    - Offshore breakwater, erosion protection and various overtopping designs

  - Wide landfills (i.e.“superdike”concept)
  - Conventional earth dike (minimal use of floodwall closure sections)
  - Sea barrier/tide gate
  - other
- Assess adaptability of option for very long term upgrading (i.e. year 2200)
- Assess environmental impact of options
- Assess social impact of options
- Develop cost estimates
- Develop recommendations for detailed engineering and environmental studies
- Prepare draft report
- Define key stakeholders and engage to get feedback
- Complete public consultation process
- Compare alternatives with respect to cost/ social acceptance/environment
- Develop draft short term and long term implementation plans
- Prepare final report
- Present to local government council/board and funding agencies (Province) for approval in principle

3. Preliminary Design for Phase 1

Preliminary design for a Phase 1 of the flood protection program is required to support funding commitments.[7] The Phase 1 project scope would typically include at least 25% of the dike upgrading work required to meet the year 2100 flood protection requirements.

- Complete detailed engineering studies as recommended by the feasibility study (such as geotechnical, land acquisition, environmental etc.):
- Phasing should be planned so that the minimum design AEP is maintained or exceeded at all times, considering up to date SLR curve information.
- Complete preliminary design for Phase 1
- Prepare detailed cost estimates to support funding commitments by both local and senior governments
- Before any design work is initiated, local governments are encouraged to contact the regional Deputy Inspector of Dikes to discuss proposed design projects.

4. Long Term Flood Protection Strategy

- Outline construction phasing plan – while work can proceed incrementally, preliminary designs and major components (i.e. land assembly) should be completed in no more than 4 phases by 2100. (As previously noted, phasing should be planned so that the

[7] Where subdivision development is being contemplated in areas where the natural ground is lower than the Year 2100 FCL, the long term flood protection strategy is to be comprised of both raising of ground elevations with fill and adequate provisions for future dike protection. Phasing of land filling and dike construction would be established on a site specific basis.

minimum design AEP is maintained or exceeded at all times, considering up to date SLR curve information.)

- Land Ownership and Legal Access – confirm detailed plans to acquire lands for at least Phase 1 as a minimum, and a strategy to acquire lands for Phases 2, 3 and 4 (if needed).
- Dike Operation and Maintenance – prepare detailed operation and maintenance plan.
- *Dike Maintenance Act* (DMA) Approval for Phase 1 – apply for and obtain approval from the regional Deputy Inspector of Dikes
- Financial Plan – confirm funding approval in place for Phase 1 through established cost share programs. Confirm political commitment by both local and senior governments to long term support for the Flood Protection Strategy.

5. Governance

Local governments may wish to establish appropriate governance or committees to provide direction, technical input, and public consultation throughout the process. The province may participate in an advisory capacity, providing guidance and information on provincial policies, standards, regulations and design criteria. The province’s participation does not guarantee approval of applications required under the *Dike Maintenance Act*. Applications will be assessed on their own merit and the decision maker will consider the application within the context of the long term strategy.

4.0 Application - Land Use Specific

Where relevant flood plain mapping information and other flood hazard-related information (such as covenants, bylaws, flood hazard maps and engineering reports) exist, they must be considered. Where the province has provided local governments with written documents and/or agreements approving floodproofing conditions that are different from these guidelines, such approved floodproofing conditions are acceptable and are incorporated as part of these Guidelines for the area referenced in those documents.

Where such information is not available, the following minimum requirements should be considered to guide development away from high hazard areas and to allow development to proceed in a safe manner. These minimum requirements should be placed in the form of a covenant against land titles at the time of subdivision, and/or should be incorporated into local government bylaws.

4.1 Agriculture

4.1.1 Farm Dwellings

Whether or not the area is diked, the following guidelines apply.

Setback –

Setback requirements, based on hazard type as identified in section 3.0, shall apply.

FCL –

Farm dwelling units on parcel sizes 8.0 hectares, or greater, located within the Agricultural Land Reserve, shall be located with the underside of a wooden floor system or the top of the pad of any habitable area (or in the case of a manufactured home the top of pad or the ground surface on which it is located) no lower than 1.0 metre above the natural ground elevation taken at any point on the perimeter of the building.

4.1.1.1 *Where required flood proofing is impractical*

When establishing conditions for areas within the Agricultural Land Reserve, where required flood proofing is impractical (i.e., greater than 2.5 metres elevation) and where protection is provided by standard dikes, owners of existing parcels of land may be given the option of adopting full flood proofing or adopting an elevation which will provide protection against drainage problems associated with storm conditions (minimum ponding elevation). In return owners must agree to a waiver of financial assistance in the case of flood damage to be registered as a covenant against the land title.

Subdivision in areas of flooding depth greater than 2.5 metres requires that the applicant demonstrate how full flood proofing can be achieved. Agricultural Land Reserve lands which are subdivided under Homesite Severance may be required to have a small parcel less than 8.0 hectares. When such subdivision occurs, each lot created is subject to these guidelines including the remainder.

4.1.2 Livestock Housing

Setback –

Setback requirements, based on hazard type as identified in section 3.0, shall apply.

FCL --

Open-sided livestock structures do not require flood proofing by elevation.

Close-sided livestock buildings behind standard dikes do not require flood proofing by elevation.

Closed-sided livestock housing not behind standard dikes shall be located with the underside of the wooden floor system or the top of the pad (or in the case of a manufactured home the top of pad or the ground surface on which it is located) no lower than 1.0 metre above the natural ground elevation taken at any point on the perimeter of the building.

4.1.3 Other Farm Buildings

Setback –

Setback requirements, based on hazard type as identified in section 3.0, shall apply.

FCL –

Flood proofing by elevation is left to discretion of the owner.

4.2 Public Recreation, Institutional Buildings, Parks and Open Space

Setback –

Setback requirements, based on hazard type as identified in section 3.0, shall apply to all structures in this category.

FCL –

Institutional and closed-sided recreational buildings and/or equipment damageable by floodwaters require full flood proofing.

Recreation shelters, stands, campsite washhouses and other outdoor facilities susceptible to only marginal damage by floodwaters do not require flood proofing by elevation.

4.3 Industrial Areas

Setback –

Setback requirements, based on hazard type as identified in section 3.0, shall apply.

Industrial buildings may be granted special relief from this requirement. Setback requirements for certain industrial activities, such as on-loading and off-loading facilities, where the use of the waterfront is a necessary subsidiary part of the operation and would not adversely affect a floodway or significantly increase flood elevations, may be reduced.

FCL –

Industrial uses, other than main electrical switchgear, shall be located with the underside of a wooden floor system or the top of the pad (or in the case of a manufactured home the top of pad or the ground surface on which it is located) no lower than the FCL minus freeboard. Main electrical switchgear shall be no lower than the FCL.

Elevations noted in guidelines should be used for the installation of fixed equipment susceptible to damage by floodwaters. An exception may be made if a suitably qualified professional determines that appropriate measures can be and are taken to provide protection against damage by flooding and erosion. The approving officer reviewing a proposed subdivision plan must approve this exception.

On-loading and off-loading facilities associated with water-oriented industry and portable sawmills do not require floodproofing. Heavy industrial development located behind a standard dike does not require floodproofing.

4.4 Fish Farms

Setback and FCL –

All facilities should meet setback conditions and be flood proofed to the FCL. Where standard dikes protect fish farm facilities, flood proofing is only required relative to any secondary flooding hazard.

4.5 Ancillary Buildings, Carports, Garages, Entryways and Renovations to Existing Buildings

FCL –

Requirements for flood proofing through the use of elevation may be waived for:

- A renovation of an existing building or structure that does not involve an addition,
- That portion of a building or structure that is to be used as a carport, garage or entryway,
- Other minor buildings such as storage buildings, porches and domestic greenhouses.

4.6 Additions to Existing Buildings

Where a building or structure is legally non-conforming with the floodproofing requirements set out in any pertinent bylaw or covenant, it is acceptable to allow an addition, at the original non-conforming floor elevation, that would increase the size of the building or structure by less than 25 percent of the floor area existing at the time of enactment of such floodproofing requirements, provided that the degree of nonconformity regarding setback is not increased.

4.7 Lots Existing Prior to Bylaw Adoption

Where a lot existed prior to the date of adoption of a bylaw, and is protected by a standard dike, and where the difference between the Flood Construction Level and the ground elevation exceeds 2.5 metres, and where the owner has entered into a restrictive covenant with the local government [This covenant should be drawn up by the local government legal advisor], a building may be constructed, reconstructed, moved or extended and a manufactured home or unit, modular home or structure may be located with the underside of the floor system of any area used for habitation, business or storage of goods damageable by floodwaters to a minimum elevation of two point five (2.5) metres above the average ground elevation in the vicinity of the building site nor less than the minimum ponding elevation established for local drainage behind the dike, which ever elevation is higher.

> *Note: The actual required building elevation referenced to geodetic datum will therefore vary from site to site, depending on ground elevation.*

5.0 Application - Implementation Measures

In addition to the requirements set out in sections 3.0 and 4.0, the following general conditions should apply and be included in a subdivision covenant or local authority bylaw, where applicable.

5.1 Manufactured Homes or Units

Setback –

Setback requirements, based on hazard type as identified in section 3.0, shall apply.

FCL –

Manufactured homes or units should be located on a natural ground surface or on the top of a concrete or asphalt pad that is at or above the Flood Construction Level. An exception may be made where a manufactured home or unit is located on, and secured to, a poured-in-place concrete perimeter footing, in which case the FCL shall apply to the top of the footing wall.

5.2 Furnaces, Electrical and Other Fixed Equipment

FCL –

Areas below the FCL should not used for the installation of furnaces, major electrical switchgear, or other fixed equipment susceptible to damage by floodwater.

An exception to this guideline is where standard dikes provide building protection. In these cases furnaces and hot water heaters are permitted below the FCL, but main electrical switchgear should be placed above the FCL.

5.3 Parking

Setback–

Setback requirements, based on hazard type as identified in section 3.0, shall apply.

FCL –

As vehicles can be moved to higher ground, floodproofing may not be necessary to prevent damage from floodwater for parking areas, including enclosed underground parking areas, except that, in the case of an enclosed underground parking area, an

unobstructed means of pedestrian ingress and egress must be provided above the FCL. In addition, signs must be posted at all points of entry notifying users that the parking garage is not protected from inundation by floodwaters.

5.4 Elevation by Landfill

Where landfill is used to raise the natural ground elevation, it should be adequately compacted and the toe of the landfill slope should be no closer to the natural boundary than the prescribed setback. In addition, the face of the landfill slope should be adequately protected against erosion from flood flows, wave action, ice or other debris.

The fill must not adversely impact neighbouring properties by increasing the surface water elevation or directing flows toward those properties.

5.5 Depth of Flooding

Subdivision in areas of flooding depth greater than 2.5 metres requires that the applicant demonstrate how full flood proofing can be achieved and how safe ingress and egress can be achieved during the flood.

5.6 Flood Velocities

Subdivision in areas where flood velocities are in excess of 1.0 metre per second requires that the applicant demonstrate how safe ingress and egress can be achieved during the flood.

5.7 Training Works

An approving officer should require details of the design, construction, operation and maintenance of training works prior to final approval of a subdivision. Works are to be designed by a professional engineer. A professional engineer must certify constructed works.

5.7.1 Training Works to Protect One Property

An ongoing maintenance program may be assured through the addition of relevant requirements to the standard flood proofing covenant registered under section 219 of the *Land Title Act,* if the training works are:

- Built on private property, and
- Intended to protect only the property of the person (including a strata corporation) owning the training works and the property on which they are located.

5.7.2 Training Works to Protect Multiple Properties

If the training works, when constructed, will protect multiple properties of more than one person, then an ongoing operation and maintenance program and registered easements and access to structures must be assured by the local government. In addition, the training works require the approval of the Inspector of Dikes and, therefore, that office must be contacted for the requirements and approvals.

Approvals under the provincial *Water Act* and federal *Fisheries Act* are also normally required. Local government may also have other requirements.

An approved Operation and Maintenance manual for the local government is to be prepared as a condition of subdivision approval and a copy is to be sent to the Inspector of Dikes.

5.8 Erosion Protection Works

Where erosion protection works are required, an approving officer should require details of the design, construction, operation and maintenance of erosion protection works prior to final approval of a subdivision or a relaxation of the requirements in a covenant. Works are to be designed by a professional engineer. A professional engineer must certify constructed works.

5.8.1 Erosion Protection Works to Protect One Property

An ongoing maintenance program may be assured through the addition of relevant requirements to the standard flood proofing covenant registered under section 219 of the *Land Title Act,* if the erosion protection works are:

- Built on private property, and
- Intended to protect only the property of the person (including a strata corporation) owning the erosion protection works and the property on which they are located.

5.8.2 Erosion Protection Works to Protect Multiple Properties

If the erosion protection works, when constructed, will protect multiple properties of more than one person, then an ongoing operation and maintenance program and registered easements and access to structures must be assured by the local government.

Approvals under the provincial *Water Act* and federal *Fisheries Act* are also normally required. Local government may also have other requirements.

An approved Operation and Maintenance manual for the local government is to be prepared as a condition of approval.

APPENDIX A - Definitions

Alluvial Fan - The alluvial deposit of a stream where the stream issues from a steep mountain valley or gorge upon a plain or at the junction of a tributary stream with the main stream.

Approving Officer - The appropriate person appointed under the *Land Title Act.*

Commercial Use - A use providing for the sale or rental of goods or services, for personal services, or for the servicing and repair of goods; and includes retail sales, wholesaling in conjunction with retail sales, commercial and government offices, personal services, commercial schools, household services and household repairs.

Debris Flow - The rapid downslope movement descending steep pre-existing drainage channels of water-saturated soil and debris by true flow processes.

Designated Flood - A flood, which may occur in any given year, of such magnitude as to equal a flood having a 200-year recurrence interval, based on a frequency analysis of unregulated historic flood records or by regional analysis where there is inadequate streamflow data available. Where the flow of a large watercourse is controlled by a major dam, the designated flood shall be set on a site-specific basis.

Designated Flood Level - The observed or calculated elevation for the Designated Flood and is used in the calculation of the Flood Construction Level.

Disposition - Disposition of Crown land by certificate of purchase, grant, lease, licence of occupation, right-of-way, or easement under the *Land Act*.

Flood Construction Level - The Designated Flood Level plus the allowance for freeboard and is used to establish the elevation of the underside of a wooden floor system or top of concrete slab for habitable buildings. In the case of a manufactured home, the ground level or top of concrete or asphalt pad, on which it is located shall be equal to or higher than the above described elevation. It also establishes the minimum crest level of a Standard Dike. Where the Designated Flood level cannot be determined or where there are overriding factors, an assessed height above the natural boundary of the water-body or above the natural ground elevation may be used.

Flood plain - A lowland area, whether diked, flood proofed, or not which, by reasons of land elevation, is susceptible to flooding from an adjoining watercourse, ocean, lake or other body of water and for administration purposes is taken to be that area submerged by the Designated Flood plus freeboard.

Flood proofing - The alteration of land or structures either physically or in use to reduce flood damage and includes the use of building setbacks from water bodies to maintain a

floodway and to allow for potential erosion. Flood proofing may be achieved by all or a combination of the following:
1. building on fill, provided such fill does not interfere with flood flows of the watercourse, and is adequately protected against floodwater erosion;
2. building raised by structural means such as foundation walls, columns, etc.;
3. a combination of fill and structural means.

Floodway - The channel of the watercourse and those portions of the flood plains that are reasonably required to discharge the flood flow of a Designated Flood. A minimum required floodway shall be equal to the width of the channel within the natural boundary plus a minimum setback of thirty metres from the natural boundary on each side of the channel or channels unless otherwise approved.

Freeboard – A vertical distance added to the Designated Flood Level. Used to establish the Flood Construction Level.

Habitable Area - Any room or space within a building or structure that is or can be used for human occupancy, commercial sales, or storage of goods, possessions or equipment (including furnaces) which would be subject to damage if flooded.

Heavy Industry - Includes such uses as manufacturing or processing of wood and paper products, metal, heavy electrical, non-metallic mineral products, petroleum and coal products, industrial chemicals and by-products, and allied products.

Inspector of Dikes - An official of the Ministry of Water, Land and Air Protection as defined under the *Dike Maintenance Act*, RSBC 1996, chapter 95.

Institutional Use - A use providing for public functions and includes federal, provincial, regional and municipal offices, schools, churches, colleges, hospitals, community centres, libraries, museums, jails, courts of law and similar facilities; and specifically excludes public storage and works yards, and public utility uses.

Light or Service Industry - Includes such uses as assembly, fabrication and light manufacturing, warehousing, wholesaling and food processing.

Manufactured Home - A structure manufactured as a unit, intended to be occupied in a place other than at its manufacture, and designed as a dwelling unit, and includes mobile homes, and specifically excludes Recreation Vehicles.

Minimum Ponding Elevation - A minimum construction level assigned to reduce possible flood damage due to ponding of local drainage during a severe local storm.

Natural Boundary - The visible high watermark of any lake, river, stream 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 (*Land Act,* section 1). For coastal areas, the natural boundary shall include the natural limit of permanent terrestrial vegetation. In addition, the natural boundary includes the best estimate of the edge of dormant or old side channels and marsh areas.

Non-conforming - Any existing building located on flood prone land that does not meet flood proofing requirements set out in any pertinent bylaw, regulation or covenant.

Pad – A paved surface on which blocks, posts, runners or strip footings are placed for the purpose of supporting a manufactured home or unit.

Professional Engineer - A person who is registered or licensed under the provisions of the Engineers and Geoscientists Act, RSBC 1996, chapter 116.

Recreation Use - A use providing for indoor or outdoor recreation and includes parks, playgrounds, and sports facilities.

Recreation Vehicle - Any structure, trailer or vehicle used or designed to be used for living or sleeping purposes and which is designed or intended to be mobile on land, whether or not self-propelled.

Setback – A withdrawal of a building or landfill from the natural boundary or other reference line to maintain a floodway and to allow for potential land erosion.

Standard Dikes - Those dikes built to a minimum crest elevation equal to the Flood Construction Level and meeting standards of design and construction approved by the Ministry of Water, Land and Air Protection and maintained by an ongoing authority such as a local government body.

Training Works - Any wall, dike or protective structure used to prevent a stream from leaving its channel at a given location. This includes any debris flow training structures including basins, trash racks, or other works.

Tsunami - A sea wave generated by tectonic or volcanic activity.

Watercourse - 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.

APPENDIX B - Standard Forms

Form 1	Official Community Plan Policies
Form 2	Standard Bylaw Format
Form 3	Section 219 Covenant including Priority Agreement and Affidavit for Witness Form for Approval within Organized Municipality
Form 4	Section 219 Covenant including Priority Agreement and Affidavit for Witness Form for Area where Approval Authority is Ministry of Transportation and Highways
Form 5	Subdivision Approval Format
Form 6	Bare Land Strata Approval
Form 7	Subdivision – Refusal to Consent
Form 8	Modification of Covenant (to be used where covenant conditions are changed)
Form 9	Lease – Disposition Referral Form
Form 10	Lot Line Adjustment

OFFICIAL COMMUNITY PLAN POLICIES

Version Date: _____

The goals of the provincial Flood Hazard Area Land Use Management Guidelines are:

i) to protect against the loss of life; and

ii) to minimize property damage, injury and trauma associated with flooding events.

These goals are reflected in the relevant Provincial statutes concerning land use and subdivision.

In preparing this plan the establishment of land use intensities and designations for flood prone lands should be cognizant of the flooding susceptibility and the degree of flood risk. Agriculture, parks and open-space recreation are land uses which are considered appropriate for flood prone lands as the threat to life and property is low. Other designated uses for new development should be based on the degree of flood risk with residential use being the least acceptable in unprotected flood prone areas. In particular, multi-family residential and manufactured home uses should be avoided. Where development is presently located in floodplains or current zoning permits new development, future construction in such areas should be floodproofed.

It is requested that the following policy statement be included in that section of the plan concerning hazardous lands:

"To protect against the loss of life and to minimize property damage associated with flooding events the Regional Board or Council encourages agricultural, park and open-space recreational uses of flood susceptible lands. Where floodable lands are required for development, the construction and siting of buildings and manufactured homes to be used for habitation, business or the storage of goods damageable by floodwaters shall be floodproofed to those standards specified by the Ministry of Water, Land and Air Protection."

Lands which are known to be floodable should be adequately described in the text of the plan and shown on a hazard schedule. As additional lands within this plan area, which would not be identified on this hazard schedule, may also subject to flooding and other geological hazards the following note should be displayed on this hazard schedule:

"Note: Boundary lines depicting flood prone lands are approximate only. Additional lands subject to flooding and erosion which may be present have not been identified on this map."

STANDARD FORMAT
FLOODPROOFING REQUIREMENTS IN BYLAWS PURSUANT TO SECTION 910 OF THE LOCAL GOVERNMENT ACT
AND DESIGNATION ORDERS

Version Date: _____

"Pursuant to Section 910(1) of the *Local Government Act*, areas of the **local authority** designated as floodplain are as follows:

(1) The floodplain of the **watercourse** in the vicinity of the **local authority** as shown on Drawing No. _____, Sheets ___ to ___.

(2) Designation of all other floodplain areas of the **local authority** are described by the following provisions (except where the Flood Construction Level has been determined in response to a site-specific situation) until such time as floodplain mapping is prepared."

The following are the suggested definitions and flood control provisions for inclusion:

"[Note: The purpose of these conditions is to reduce the risk of injury, loss of life, and property damage due to flooding and erosion However, the **local authority** does not represent to the owner or any other person that any building constructed or manufactured home or unit located in accordance with the following conditions will not be damaged by flooding or erosion.]

1. Definitions

For the purpose of this section the following definitions shall apply:

Alluvial Fan means the alluvial deposit of a stream where it issues from a steep mountain valley or gorge upon a plain or at the junction of a tributary stream with the main stream.

Designated Flood means a flood, which may occur in any given year, of such magnitude as to equal a flood having a 200-year recurrence interval, based on a frequency analysis of unregulated historic flood records or by regional analysis where there is inadequate streamflow data available. Where the flow of a large watercourse is controlled by a major dam, the designated flood shall be set on a site specific basis.

Designated Flood Level means the observed or calculated elevation for the Designated Flood and is used in the calculation of the Flood Construction Level.

Flood Construction Level means the Designated Flood Level plus the allowance for freeboard and is used to establish the elevation of the underside of a wooden floor system or top of a concrete slab for habitable buildings. In the case of a manufactured home, the ground level or top of a concrete or asphalt pad, on which it is located shall be no lower than the above-described elevation. It also establishes the minimum crest level of a Standard Dike. Where the Designated Flood Level cannot be determined or where there are overriding factors, an assessed height above the natural boundary of the water body or above the natural ground elevation may be used.

Floodproofing means the alteration of land or structures either physically or in use to reduce or eliminate flood damage and includes the use of elevation and /or building setbacks from water bodies to maintain a floodway and to allow for potential erosion.

Freeboard means a vertical distance added to the Designated Flood Level and is used to establish the Flood Construction Level.

Habitable Area means any room or space within a building or structure which is or can be used for human occupancy, commercial sales, or storage of goods, possessions or equipment (including furnaces) which would be subject to damage if flooded.

Heavy Industry includes such uses as manufacturing or processing of wood and paper products, metal, heavy electrical, non-metallic mineral products, petroleum and coal products, industrial chemicals and by-products, and allied products.

Light or Service Industry includes such uses as assembly, fabricating, light manufacturing, warehousing, wholesaling and food processing.

Manufactured Home means a structure manufactured as a unit, intended to be occupied in a place other than at its manufacturer, and designed as a dwelling unit, and includes mobile homes, and specifically excludes recreation vehicles.

… 3

Natural Boundary means the visible high watermark of any lake, river, stream 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 (Land Act, Section 1). In addition, the natural boundary includes the best estimate of the edge of dormant or old side channels and marsh areas.

Pad means a paved surface on which blocks, posts, runners or strip footings are placed for the purpose of supporting a manufactured home or unit.

Setback means a withdrawal of a building or landfill from the natural boundary or other reference line to maintain a floodway and to allow for potential land erosion.

Standard Dikes means those built to a minimum crest elevation equal to the Flood Construction Level and meeting standards of design and construction approved by the Ministry of Water, Land and Air Protection and maintained by an ongoing authority such as a local government body.

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.

2. Setback Requirements

Pursuant to section 910 (4) of the *Local Government Act*, no landfill or structural support required to support a floor system or pad, shall be constructed, reconstructed, moved, extended or located:

within _____ metres of the natural boundary of the sea, a lake, a swamp, pond or any structure for flood protection or seepage control or of any dike right-of-way;

within _____ metres of the natural boundary of _____;

within _____ metres of the natural boundary of any other watercourse.

3. Elevation Requirements

a. Pursuant to section 910 (4) of the *Local Government Act*, no building, manufactured home or unit, modular home or structure or any part thereof shall be constructed, reconstructed, moved, extended or located with the underside of a wooden floor system or top of a concrete slab of any area used for habitation, business, or storage of goods damageable by floodwaters, or in the case of a manufactured home or unit the ground level or top of the concrete or asphalt pad on which it is located:

lower than elevation _____ metres Geodetic Survey of Canada datum for locations adjacent to _____ Lake;

lower than the Flood Construction Level for the _____ where it has been determined, or where it has not been determined or a site-specific Flood Construction Level has not been determined;

nor lower than _____ metres above the natural boundary of _____;

nor lower than _____ metres above the natural boundary of the sea, a lake, swamp or pond;

nor lower than _____ metres above the natural boundary of any other watercourse.

b. The required elevation may be achieved by structural elevation of the said habitable, business, or storage area or by adequately compacted landfill on which any building is to be constructed or manufactured home or unit located, or by a combination of both structural elevation and landfill. No area below the required elevation shall be used for the installation of furnaces or other fixed equipment susceptible to damage by floodwater.

c. Where landfill is used to achieve the required elevation stated in Clause 3.a. above, no portion of the landfill slope shall be closer than the distances in Clause 2 from the natural boundary, or the inboard toe of any structure for flood protection or seepage control, or the inboard side of any dike right-of-way, and the face of the landfill slope shall be adequately protected against erosion from flood flows, wave action, ice or other debris.

d. Foundations of construction in alluvial fan areas shall be designed by a Professional Engineer to ensure that structures are anchored to minimize the impact of flood, sediment and erosion damage; footings are extended below scour depth, or fill materials are armoured where elevation is achieved by fill, to protect against scour, erosion and flood flows.

4. Other Requirements

Clause 3 shall not apply to:

a. a renovation of an existing building or structure that does not involve an addition thereto; or an addition to a building or structure that would increase the size of the building or structure by less than 25 percent of the floor area existing at the date of adoption of Bylaw No. _____ (first bylaw containing floodproofing conditions);

b. that portion of a building or structure to be used as a carport or garage;

c. farm buildings other than dwelling units and closed-sided livestock housing. Farm dwelling units on parcel sizes 8.0 hectares or greater and within the Agricultural Land Reserve are exempted from the requirements of Clause 3.a. but if in a floodable area shall be elevated one (1) metre above the natural ground elevation. Closed-sided livestock housing behind Standard Dykes as approved by the Inspector of Dikes is exempted from the requirement to floodproof but if not behind Standard Dykes shall be elevated one (1) metre above the natural ground elevation;

d. light or heavy industrial development which is required to floodproof to the Designated Flood Level;

e. heavy industry behind Standard Dykes;

f. on-loading and off-loading facilities associated with water-oriented industry and portable sawmills. Main electrical switchgear shall be placed above the Flood Construction Level.

LAND TITLE ACT
FORM C
(Section 219.81)

Province of
British Columbia
GENERAL INSTRUMENT-PART 1 (This area for Land Title Office Use) Page 1 of _____ pages

1. APPLICATION: (Name, address, phone number and signature of applicant, applicant's solicitor or agent)

_____

(Signature of Authorized Agent)

2. PARCEL IDENTIFIER(S) AND LEGAL DESCRIPTION(S) OF LAND:*
(PID) (LEGAL DESCRIPTION)

3. NATURE OF INTEREST:*

Description	Document Reference (Page and paragraph)	Person Entitled to Interest

4. TERMS: Part 2 of this instrument consists of (select one only)

(a) Filed Standard Charge Terms ☐ D.F. No.
(b) Express Charge Terms ☐ Annexed as Part 2
(c) Release ☐ There is no Part 2 of this instrument

A selection of (a) includes any additional or modified terms referred to in Item 7 or in a schedule annexed to this instrument. If (c) is selected, the charge described in Item 3 is released or discharged as a charge on the land described in Item 2.

5. TRANSFEROR(S):*

Name of Transferor, Address

6. TRANSFEREE(S): (Including postal address(es) and postal code(s)) *

Name of Municipality, Address

7. ADDITIONAL OR MODIFIED TERMS: *

8. EXECUTION(S): ** This instrument creates, assigns, modifies, enlarges, discharges 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.

Officer Signature(s)	Execution Date			Party(ies) Signature(s)
	Y	M	D	_____ Name of Transferor _____ Name of Municipality _____

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. 1979, c. 116, 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.

* If space insufficient, enter "SEE SCHEDULE" and attach schedule in Form E.
** If space insufficient, continue executions on additional page(s) in Form D.

THIS AGREEMENT made this _____ day of _____, 20___

BETWEEN: _____

_____

(hereinafter called the "Grantor")

OF THE FIRST PART

AND:

(name of Municipality), _____
having an office at (address)_____

British Columbia _____

(hereinafter called the "Grantee")

OF THE SECOND PART

WHEREAS the Grantor is the registered owner in fee simple of the following lands in the Province of British Columbia, more particularly known and described as:

(legal description) _____

(hereinafter called the "Lands");

AND WHEREAS the Grantor proposes to subdivide the Lands, according to a plan of subdivision completed and certified correct on the _____ day of _____, 20___, by _____ , British Columbia Land Surveyor, a copy of which is attached hereto as Schedule 'A', into the following lots:

_____

(hereinafter called the "Lots");

AND WHEREAS a covenant under section 219 of the *Land Title Act* is required as a condition of the consent to approval of the subdivision of the Lands by the Approving Officer under section 86 of the *Land Title Act*;

AND WHEREAS section 219 of the *Land Title Act* provides that there may be registered as a charge against the title to any land a covenant in favour of the Grantee and a municipality that land is to be used in a particular manner or that land is not to be subdivided except in accordance with the covenant;

NOW THEREFORE THIS AGREEMENT WITNESSETH that in consideration of the sum of ONE ($1.00) DOLLAR of lawful money of Canada and other good valuable consideration paid by

the Grantee to the Grantor, the receipt of which is hereby acknowledged, the Grantor does hereby covenant and agree with the Grantee under section 219 of the *Land Title Act* of the Province of British Columbia as follows

1. The Grantor is aware of and, on behalf of himself or herself and his or her heirs, executors, administrators, successors and assigns, hereby acknowledges that there is a potential flood danger to the Lots.

2. The Grantor, on behalf of himself or herself and his or her heirs, executors, administrators, successors and assigns, hereby covenants and agrees with the Grantee, as a covenant in favour of the Grantee pursuant to section 219 of the *Land Title Act*, it being the intention and agreement of the Grantor that the provisions hereof be annexed to and run with and be a charge upon the Lots, that from and after the date hereof:

    a. No building, manufactured home or unit, modular home or structure shall be constructed, reconstructed, moved, extended or located within _____ metres of the natural boundary of (name of watercourse).

    b. No area used for habitation, business or storage of goods damageable by floodwaters and no furnace or other fixed equipment damageable by floodwaters shall be located within any building, modular home or structure at an elevation such that the underside of the floor system is less than _____ metre(s) above the natural boundary of _____ or elevation _____ metres Geodetic Survey of Canada datum or _____ metre(s) above the natural ground elevation taken at the perimeter of the building.

    In the case of a manufactured home or unit, the ground level or top of concrete or asphalt pad on which it is located shall be no lower than the above described elevation.

3. Where landfill is used to raise the natural ground elevation, the toe of the landfill slope shall be no closer to the natural boundary than the setback requirement given in paragraph (2) above. The face of the landfill slope shall be adequately protected against erosion from flood flows (wave action, ice, or other debris). The required elevation may be achieved by structural elevation of the said habitable, business, or storage area or by adequately compacted landfill on which any building, modular home or structure is to be constructed or manufactured home or unit located, or by a combination of both structural elevation and landfill, provided, that no area below the required

elevation shall be used for the installation of furnaces or other fixed equipment damageable by floodwaters.

4. The Grantor, on behalf of himself or herself and his or her heirs, executors, administrators, successors and assigns, acknowledges that the Grantee does not represent to the Grantor, nor to any other person that any building, modular home, manufactured home or unit, improvement, chattel or other structure, including the contents of any of them, built, constructed or placed on the Lots will not be damaged by flooding or erosion and the Grantor, on behalf of himself or herself and his or her heirs, executors, administrators, successors and assigns, with full knowledge of the potential flood or erosion danger and in consideration of the approvals given by the Grantee hereby:

   a. agrees to indemnify and to save harmless the Grantee and the Grantee's employees, servants or agents from all loss, damage, costs, actions, suits, debts, accounts, claims and demands which the Grantee or any of the Grantee's employees, servants or agents, may suffer or incur or be put to arising out of or in connection with any breach of any covenant or agreement on the part of the Grantor or his or her heirs, executors, administrators, successors and assigns contained in this Agreement or arising out of or in connection with any personal injury, death or loss or damage to the Lots, or to any building, modular home, manufactured home or unit, improvement, chattel or other structure, including the contents of any of them, built, constructed or placed on the Lots (including existing non-conforming buildings)*, caused by flooding, erosion or some such similar cause; and

* To be inserted where Guideline 4.6 applies

   b. does remise, release and forever discharge the Grantee and the Grantee's employees, servants or agents from all manner of actions, causes of action, suits, debts, accounts, covenants, contracts, claims and demands which the Grantor or any of his or her heirs, executors, administrators, successors and assigns may have against the Grantee and the Grantee's employees, servants or agents for and by reason of any personal injury, death or loss or damage to the Lots, or to any building, modular home, manufactured home or unit, improvement, chattel or other structure, including the contents of any of them, built, constructed or placed on the Lots, caused by flooding, erosion or some such similar cause.

5. 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 Lots and shall enure to the benefit and be binding upon the Grantor, his or her heirs, executors, administrators, successors and assigns and the Grantee and its assigns.

6. Nothing in this Agreement shall prejudice or affect the rights, powers and remedies of the Grantee in relation to the Grantor, including his or her heirs, executors, administrators, successors and assigns, or the Lots 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 First Grantee as if this Agreement had not been made by the parties.

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

8. 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*.

9. The Grantor shall do or cause to be done all things and execute or cause to be executed all documents and give such further and other assurance which may be reasonably necessary to give proper effect to the intent of this Agreement.

10. a. The Grantor or any of his or her heirs, executors, administrators and assigns, as the case may be, shall give written notice of this Agreement to any person to whom he or she proposes to dispose of one of the Lots, which notice shall be received by that person prior to such disposition.

    b. For the purposes of this paragraph the word "dispose" shall have the meaning given to it under section 29 of the *Interpretation Act*, R.S.B.C. 1996, c.238

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

12. 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.

13. This agreement shall be interpreted according to the laws of the Province of British Columbia.

14. 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 on the day and year first above written.

Signed by)
in the presence of:)
)
_____)
Witness) _____
) Grantor
)
_____)
Address)
)
_____)
Title or Occupation)

The Corporate Seal of _____)
)
_____ (Name of Municipality _____)
)
was hereunto affixed in the presence of:) (c/s)
)
_____)
)
_____)

This is the instrument creating the condition of Covenant pursuant to section 219 of the *Land Title Act* by the Grantor referred to herein and shown on the Print and Plan annexed hereto as Schedule 'A' and initialled by me.

_____
Approving officer

(A Consent and Priority Agreement may be required to gain priority for the Section 219 Covenant over financial charges. See below.)

CONSENT AND PRIORITY AGREEMENT

(liens, charges and encumbrances)

WHEREAS _____ (the "Chargeholder") is the holder of a _____ registered in the _____ Land Title Office under No. _____ (the "Charge") encumbering the lands described in the attached Section 219 Covenant (the "Covenant").

Therefore this Consent and Priority Agreement witnesses that the Chargeholder hereby:

1. approves of, joins in and consents to the registration of the Covenant;
2. covenants and agrees that the Covenant is binding upon and takes priority over the Charge; and
3. postpones the Charge and all of its right, title and interest thereunder to the Covenant in the same manner and to the same effect as if the Covenant had been dated, executed and registered prior to the Charge.

IN WITNESS WHEREOF the Chargeholder has executed this Consent and Priority Agreement on the attached Form C.

FORM C
(Section 219.81)

Province of
British Columbia
GENERAL INSTRUMENT-PART 1 (This area for Land Title Office Use) Page 1 of _____ pages

1. APPLICATION: (Name, address, phone number and signature of applicant, applicant's solicitor or agent)

_____

(Signature of Authorized Agent)

2. PARCEL IDENTIFIER(S) AND LEGAL DESCRIPTION(S) OF LAND:*
(PID) (LEGAL DESCRIPTION)

3. NATURE OF INTEREST:*

Description	Document Reference (Page and paragraph)	Person Entitled to Interest

4. TERMS: Part 2 of this instrument consists of (select one only)

(a) Filed Standard Charge Terms ☐ D.F. No.
(b) Express Charge Terms ☐ Annexed as Part 2
(c) Release ☐ There is no Part 2 of this instrument

A selection of (a) includes any additional or modified terms referred to in Item 7 or in a schedule annexed to this instrument. If (c) is selected, the charge described in Item 3 is released or discharged as a charge on the land described in Item 2.

5. TRANSFEROR(S):*

Name of Transferor, Address

TRANSFEREE(S): (Including postal address(es) and postal code(s)) *
- Her Majesty the Queen in right of the Province of British Columbia as represented by the Minister of Transportation, Parliament Buildings, Victoria, British Columbia V8V 1X5, and

- Name of Municipality, Address (if applicable)

7. ADDITIONAL OR MODIFIED TERMS: *

8. EXECUTION(S): ** This instrument creates, assigns, modifies, enlarges, discharges 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.

Officer Signature(s)	Execution Date			Party(ies) Signature(s)
	Y	M	D	
				_____ Name of Grantee under Covenant HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA, by its authorized signatory _____ _____ Name of Municipality (if applicable)

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. 1979, c. 116, 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.

* If space insufficient, enter "SEE SCHEDULE" and attach schedule in Form E.
** If space insufficient, continue executions on additional page(s) in Form D.

THIS AGREEMENT made this _____ day of _____, 20___

BETWEEN: _____

_____

(hereinafter called the "Grantor")

OF THE FIRST PART

AND: Her Majesty the Queen in Right of the Province of British Columbia as represented by the Minister of Transportation, Parliament Buildings, Victoria, British Columbia , V8V 1X5

OF THE SECOND PART

(hereinafter called the "Second Grantee")

AND:

(name of Regional District), _____
(where Regional District party to Clause 4)

having an office at (address) _____

British Columbia (OR OTHER) _____

(hereinafter called the "Second Grantee")

OF THE THIRD PART

WHEREAS the Grantor is the registered owner in fee simple of the following lands in the Province of British Columbia, more particularly known and described as:

(legal description) _____

(hereinafter called the "Lands");

AND WHEREAS the Grantor proposes to subdivide the Lands, according to a plan of subdivision completed and certified correct on the _____ day of _____, 20___, by _____ , British Columbia Land Surveyor, a copy of which is attached hereto as Schedule 'A', into the following lots:

_____

(hereinafter called the "Lots");

AND WHEREAS a covenant under section 219 of the *Land Title Act* is required as a condition of the consent to approval of the subdivision of the Lands under section 86 of the *Land Title Act*;

AND WHEREAS section 219 of the *Land Title Act* provides that there may be registered as a charge against the title to any land a covenant in favour of the First Grantee and the Second Grantee

(hereinafter called the "Grantees") that land is to be used in a particular manner or that land is not to be subdivided except in accordance with the covenant;

NOW THEREFORE THIS AGREEMENT WITNESSETH that in consideration of the sum of ONE DOLLAR ($1.00) of lawful money of Canada and other good valuable consideration paid by the Grantees to the Grantor, the receipt of which is hereby acknowledged, the Grantor does hereby covenant and agree with the Grantees under section 219 of the *Land Title Act* of the Province of British Columbia as follows:

1. The Grantor is aware of and, on behalf of himself or herself and his or her heirs, executors, administrators, successors and assigns, hereby acknowledges that there is a potential flood danger to the Lots.

2. The Grantor, on behalf of himself or herself and his or her heirs, executors, administrators, successors and assigns, hereby covenants and agrees with the Grantees, as a covenant in favour of the Grantees pursuant to section 219 of the *Land Title Act*, it being the intention and agreement of the Grantor that the provisions hereof be annexed to and run with and be a charge upon the Lots, that from and after the date hereof:

    a. No building, manufactured home or unit, modular home or structure shall be constructed, reconstructed, moved, extended or located within _____ metres of the natural boundary of (name of watercourse).

    b. No area used for habitation, business or storage of goods damageable by floodwaters and no furnace or other fixed equipment damageable by floodwaters shall be located within any building, modular home or structure at an elevation such that the underside of the floor system is less than _____ metre(s) above the natural boundary of _____ or elevation _____ metres Geodetic Survey of Canada datum or _____ metre(s) above the natural ground elevation taken at the perimeter of the building.

    In the case of a manufactured home or unit, the ground level or top of concrete or asphalt pad on which it is located shall be no lower than the above described elevation.

3. Where landfill is used to raise the natural ground elevation, the toe of the landfill slope shall be no closer to the natural boundary than the setback requirement given in paragraph (2) above. The face of the landfill slope shall be adequately protected against erosion from flood flows (wave action, ice, or other debris). The required elevation may be achieved by structural elevation of the said

habitable, business, or storage area or by adequately compacted landfill on which any building, modular home or structure is to be constructed or manufactured home or unit located, or by a combination of both structural elevation and landfill, provided, that no area below the required elevation shall be used for the installation of furnaces or other fixed equipment damageable by floodwaters.

4. The Grantor, on behalf of himself or herself and his or her heirs, executors, administrators, successors and assigns, acknowledges that the Grantee does not represent to the Grantor, nor to any other person that any building, modular home, manufactured home or unit, improvement, chattel or other structure, including the contents of any of them, built, constructed or placed on the Lots will not be damaged by flooding or erosion and the Grantor, on behalf of himself or herself and his or her heirs, executors, administrators, successors and assigns, with full knowledge of the potential flood or erosion danger and in consideration of the approvals given by the Grantees hereby:

   a. agrees to indemnify and to save harmless the Grantees and the Grantees' employees, servants or agents from all loss, damage, costs, actions, suits, debts, accounts, claims and demands which the Grantees or any of the Grantees' employees, servants or agents, may suffer or incur or be put to arising out of or in connection with any breach of any covenant or agreement on the part of the Grantor or his or her heirs, executors, administrators, successors and assigns contained in this Agreement or arising out of or in connection with any personal injury, death or loss or damage to the Lots, or to any building, modular home, manufactured home or unit, improvement, chattel or other structure, including the contents of any of them, built, constructed or placed on the Lots (including existing non-conforming buildings)*, caused by flooding, erosion or some such similar cause; and

* To be inserted where Guideline 4.6 applies

   b. does remise, release and forever discharge the Grantees and the Grantees' employees, servants or agents from all manner of actions, causes of action, suits, debts, accounts, covenants, contracts, claims and demands which the Grantor or any of his or her heirs, executors, administrators, successors and assigns may have against the Grantees and the Grantees' employees, servants or agents for and by reason of any personal injury, death or loss or damage to the Lots, or to any building, modular home, manufactured home or unit, improvement, chattel or other structure, including the contents of any of them, built,

constructed or placed on the Lots, caused by flooding, erosion or some such similar cause.

5. 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 Lots and shall enure to the benefit and be binding upon the Grantor, his or her heirs, executors, administrators, successors and assigns and the Grantees and their assigns.

6. Nothing in this Agreement shall prejudice or affect the rights, powers and remedies of the Grantees in relation to the Grantor, including his or her heirs, executors, administrators, successors and assigns, or the Lots 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 Grantees as if this Agreement had not been made by the parties.

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

8. 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*.

9. The Grantor shall do or cause to be done all things and execute or cause to be executed all documents and give such further and other assurance which may be reasonably necessary to give proper effect to the intent of this Agreement.

10. a. The Grantor or any of his or her heirs, executors, administrators and assigns, as the case may be, shall give written notice of this Agreement to any person to whom he or she proposes to dispose of one of the Lots, which notice shall be received by that person prior to such disposition.

    b. For the purposes of this paragraph the word "dispose" shall have the meaning given to it under section 29 of the *Interpretation Act*, R.S.B.C. 1996, c.238

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

12. 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.

13. This agreement shall be interpreted according to the laws of the Province of British Columbia.

14. 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 on the day and year first above written.

Signed by)
in the presence of:)
)
_____)
Witness)
) _____
_____) Grantor
Address)
)
_____)
Title or Occupation)

Signed on behalf of Her Majesty the Queen)
in Right of the Province of British Columbia)
as represented by the Minister of)
Transportation or his or her duly authorized) _____
designate in the presence of:) Minister of Transportation or his or
) her duly authorized designate
_____)
Witness)
_____)
Witness)
_____)
Title or Occupation)

The Corporate Seal of _____)
)
_____)
)
was hereunto affixed in the presence of:) (c/s)
)
_____) (Regional District)
)
_____)

This is the instrument creating the condition of Covenant pursuant to section 219 of the *Land Title Act* by the Grantor referred to herein and shown on the Print and Plan annexed hereto as Schedule 'A' and initialled by me.

_____
Approving Officer, Ministry of Transportation

(A Consent and Priority Agreement may be required to gain priority
for the Section 219 Covenant over financial charges. See below.)

CONSENT AND PRIORITY AGREEMENT

(liens, charges and encumbrances)

WHEREAS _____ (the "Chargeholder") is the holder of a _____ registered in the _____ Land Title Office under No. _____ (the "Charge") encumbering the lands described in the attached Section 219 Covenant (the "Covenant").

Therefore this Consent and Priority Agreement witnesses that the Chargeholder hereby:

1. approves of, joins in and consents to the registration of the Covenant;
2. covenants and agrees that the Covenant is binding upon and takes priority over the Charge; and
3. postpones the Charge and all of its right, title and interest thereunder to the Covenant in the same manner and to the same effect as if the Covenant had been dated, executed and registered prior to the Charge.

IN WITNESS WHEREOF the Chargeholder has executed this Consent and Priority Agreement on the attached Form C.

SUBDIVISION APPROVAL FORMAT

Version Date: _____

File:
Date:

Applicant
_____
_____
_____
_____
_____

Dear Sir/Madam:

Re: Proposed Subdivision of _____
(name of watercourse)

This letter is in reply to your correspondence of _____. As the Approving Officer, consent is hereby given, pursuant to Section 86 of the Land Title Act, to your application for subdivision approval of the above-mentioned plan of subdivision, subject to the applicant entering into a covenant registrable under Section 219, which shall run with the land and shall put into effect the following conditions for the proposed lot to be created and the remainder:

"1. Hereafter, no building, manufactured home or unit, modular home or structure, shall be constructed, reconstructed, moved, extended or located within _____ metres of the natural boundary of the (name of watercourse).

2. Hereafter, no area used for habitation, business, or storage of goods damageable by floodwaters shall be located within any building, modular home of structure at an elevation such that the underside of the floor system thereof is less than _____ metres above the natural boundary of (name of watercourse).

In the case of a manufactured home or unit, the ground level or top of concrete or asphalt pad on which it is located shall be no lower than the above described elevation.

3. The required elevation may be achieved by structural elevation of the said habitable, business, or storage area or by adequately compacted landfill on which any building is to be constructed or manufactured home or unit located, or by a combination of both structural elevation and landfill. No area below the required elevation shall be used for the installation of furnaces or other fixed equipment susceptible to damage by floodwater. Where landfill is used to raise the natural ground elevation, the toe of the landfill slope shall be no closer to the natural boundary than the setback requirement given in condition (1) above. The face of the landfill slope shall be adequately protected against erosion from flood flows (wave action, ice or other debris).

… 2

4. The owner acknowledges that neither the provincial government nor the local authority have represented to the owner or any other person that any building constructed or manufactured home located in accordance with paragraphs (1) and (2) herein will not be damaged by flooding or erosion, and the owner covenants and agrees not to claim damages from the provincial government and (name of municipality) and not to hold the provincial government and (name of municipality) responsible for damages caused by flooding or erosion to the land or to any building, improvement, or other structure built, constructed or placed upon the said lands and to any contents thereof."

These covenant conditions are to be registered with priority over any financial charges registered against the property.

The following declaration is to be endorsed on the subdivision plan:

> The registered owners designated hereon hereby acknowledge that the land affected by this plan may be subject to flooding and declare that they have entered into a covenant in favour of the provincial government and the local authority [as applicable], under Section 219 of the Land Title Act.

_____
(covenantor)

dated at _____, _____, 20__.

The covenant must be tendered with the application to deposit the subdivision plan. The covenant must have the following statement typed or stamped on it and signed by the Approving Officer:

> This is the instrument creating the condition or covenant entered into under Section 219 of the Land Title Act by the registered owner(s) referred to herein and shown on the print of plan annexed hereto and initialled by me.

_____
Approving Officer
(cite Authority)

ALLUVIAL FAN means the alluvial deposit of a stream where it issues from a steep mountain valley or gorge upon a plain or at the junction of a tributary stream with the main stream.

APPROVING OFFICER means the appropriate person appointed under the *Land Title Act*.

COMMERCIAL USE means a use providing for the sale or rental of goods or services, for personal services, or for the servicing and repair of goods; and includes retail sales, wholesaling in conjunction with retail sales, commercial and government offices, personal services. commercial schools, household services and household repairs.

DEBRIS FLOW means the rapid downslope movement down steep pre-existing drainage channels of water-saturated soil and debris by free flow processes.

DESIGNATED FLOOD means a flood which may occur in any given year, of such magnitude as to equal a flood having a 200-year recurrence interval, based on a frequency analysis of unregulated historic flood records or by regional analysis where there is inadequate streamflow data available. Where the flow of a large watercourse is controlled by a major dam, the designated flood small be set on a site-specific basis.

DESIGNATED FLOOD LEVEL means the observed or calculated elevation for the Designated Flood and is used in the calculation of the flood construction level.

DESIGNATED OFFICIAL means any official of British Columbia to whom signing authority has been given.

DISPOSITION means disposition of Crown land by certificate of purchase, grant, lease, licence of occupation, right-of-way, or easement under the *Land Act*.

FLOOD CONSTRUCTION LEVEL means the Designated Flood Level plus the allowance for freeboard and is used to establish the elevation of the underside of a wooden floor system or top of concrete slab for habitable buildings. In the case of a manufactured home, the ground level or top of concrete or asphalt pad on which it is located shall be no lower than the above described elevation. It also establishes the minimum crest level of a Standard Dike. Where the Designated Flood Level cannot be determined or where there are overriding factors, an assessed height above the natural boundary of the waterway or above the natural ground elevation may be used.

FLOODPLAIN means a lowland area, whether diked, floodproofed, or not, which, by reasons of land elevation, is susceptible to flooding from an adjoining watercourse, ocean, lake or other body of water and for administration purposes is taken to be that area submerged by the designated flood plus freeboard.

FLOODPROOFING means the alteration of land or structures either physically or in use to reduce or eliminate flood damage and includes the use of building setbacks from water bodies to maintain a floodway and to allow for potential erosion. Floodproofing may be achieved by all or a combination of the following:

1. Building on fill, provided such fill does not interfere with flood flows of the watercourse and is adequately protected against floodwater erosion;
2. Building raised by structural means such as foundation walls, columns, etc.;
3. A combination of fill and structural means.

FLOODWAY means the channel of the watercourse and those portions of the floodplains which are reasonably required to discharge the flood flow of a designated flood. A minimum required floodway shall be equal to the width of the channel within the natural boundary plus a minimum setback of thirty metres from the natural boundary on each side of the channel or channels unless otherwise approved.

FREEBOARD means a vertical distance added to the Designated Flood Level and is used to establish the Flood Construction Level.

HABITABLE AREA means any room or space within a building or structure which is or can be used for human occupancy, commercial sales, or storage of goods, possessions or equipment (including furnaces) which would be subject to damage if flooded.

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

INSPECTOR OF DIKES means an official of the Ministry of Water, Land and Air Protection as defined under *The Dike Maintenance Act*, RS Chapter 99 of the Province of British Columbia.

INSTITUTIONAL USE means a use providing for public functions and includes federal, provincial, regional and municipal offices, schools, churches, colleges, hospitals, community centres, libraries, museums, jails, courts of law and similar facilities; and specifically excludes public storage and works yards, and public utility uses.

LIGHT OR SERVICE INDUSTRY includes such uses as assembly, fabrication and light manufacturing, warehousing, wholesaling and food processing.

MANUFACTURED HOME means a structure manufactured as a unit, intended to be occupied in a place other than at its manufacturer, and designed as a dwelling unit, and includes mobile homes, and specifically excludes recreation vehicles.

MINIMUM PONDING ELEVATION means a minimum construction level assigned to reduce possible flood damage due to bonding of local drainage during a severe local storm.

NATURAL BOUNDARY means the visible high watermark of any lake, river, stream 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 (*Land Act*, Section 1). In addition, the natural boundary includes the best estimate of the edge of dormant or old side channels and marsh areas.

NON-CONFORMING means any existing building located on floodprone land which does not meet floodproofing requirements set out in any pertinent bylaw, regulation or covenant.

PAD means a paved surface on which blocks, posts, runners or strip footings are placed for the purpose of supporting a manufactured home or unit.

PROFESSIONAL ENGINEER means a person who is registered or licensed under the provisions of the *Engineers and Geoscientists Act*, 1996, RS Chapter 116 of the Province of British Columbia.

RECREATION USE means a use providing for indoor or outdoor recreation and includes parks, playgrounds, and sports facilities.

RECREATION VEHICLE means any structure, trailer or vehicle used or designed to be used for living or sleeping purposes and which is designed or intended to be manufactured on land, whether or not self-propelled.

SETBACK means a withdrawal of a building or landfill from the natural boundary or other reference line to maintain a floodway and to allow for potential land erosion.

STANDARD DIKES means those built to a minimum crest elevation equal to the flood construction level and meeting standards of design and construction approved by the Ministry of Environment and Parks and maintained by an ongoing authority such as a local government body.

TRAINING WALLS means any wall, dike or protective structure used to prevent a stream from leaving its channel at a given location.

TSUNAMI means a sea wave generated by tectonic or volcanic activity.

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.,.

SUBDIVISION APPROVAL FORMAT
BARE LAND STRATA REGULATIONS

Version Date: _____

File:
Date:

Applicant
_____
_____
_____
_____
_____

Dear Sir/Madam:

Re: Application for Approval of Proposed Bare Land Strata Plan of
_____
(name of watercourse)

This letter is in reply to your correspondence of _____. As the Approving Officer, consent is hereby given, pursuant to Section 3 of the Bare Land Strata Regulations, as amended, for the approval of the above-mentioned Bare Land Strata Plan, subject to the applicant entering into a covenant registrable under Section 219, which shall run with the land and shall effect the following conditions for each strata lot to be created, including the common property and any remainder:

(continue as for standard approval Form 5)

SUBDIVISION REFUSAL TO CONSENT

Version Date: _____

File:
Date:

Applicant
_____
(address) _____
_____

Dear Sir/Madam

Re: Proposed Subdivision _____
(name of watercourse)

This letter is in reply to your correspondence dated _____, 20___. Under the authority of Section 86 of the *Land Title Act* or Section 3 of the Bare Land Strata Regulations, as amended, as the Approving Officer, consent for the approval of the above proposed plan of subdivision or the application for approval of the above proposed bare land strata plan is hereby withheld.

(If desired, give reason for decision by describing the flood hazard and continue as follows.)

In order for this decision to be reconsidered, the following steps would have to be taken:

1. A comprehensive engineering study would have to be undertaken to investigate the hazard and identify what (if any) engineering works could be constructed to suitably mitigate these hazards. Such works would likely be very costly.

2. Assuming suitable engineering works were identified, maintenance of such works by an ongoing authority must be arranged. The construction of the works would have to precede the approval of the proposed plan of subdivision or proposed bare land strata plan.

(Alternatively, you may wish to consider the submission of an alternate scheme in which lots are created outside the hazard area.)

If you require any further information, please contact _____.

Yours truly,

Approving Officer

cc: Building Inspector, local government

FORM C
(Section 219.81)

Province of
British Columbia
GENERAL INSTRUMENT-PART 1 (This area for Land Title Office Use) Page 1 of _____ pages

1. APPLICATION: (Name, address, phone number and signature of applicant, applicant's solicitor or agent)

_____

(Signature of Authorized Agent)

2. PARCEL IDENTIFIER(S) AND LEGAL DESCRIPTION(S) OF LAND:*
(PID) (LEGAL DESCRIPTION)

3. NATURE OF INTEREST:*

Description	Document Reference (Page and paragraph)	Person Entitled to Interest
Modification of Covenant		

4. TERMS: Part 2 of this instrument consists of (select one only)

(a) Filed Standard Charge Terms ☐ D.F. No.
(b) Express Charge Terms ☐ Annexed as Part 2
(c) Release ☐ There is no Part 2 of this instrument

A selection of (a) includes any additional or modified terms referred to in Item 7 or in a schedule annexed to this instrument. If (c) is selected, the charge described in Item 3 is released or discharged as a charge on the land described in Item 2.

5. TRANSFEROR(S):*

6. TRANSFEREE(S): (Including postal address(es) and postal code(s)) *

7. ADDITIONAL OR MODIFIED TERMS: *

8. EXECUTION(S): ** This instrument creates, assigns, modifies, enlarges, discharges 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.

Officer Signature(s)	Execution Date			Party(ies) Signature(s)
	Y	M	D	_____ Name of Grantee under Covenant HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA, by its authorized signatory _____ _____ Name of Municipality

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. 1979, c. 116, 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.

* If space insufficient, enter "SEE SCHEDULE" and attach schedule in Form E.
** If space insufficient, continue executions on additional page(s) in Form D.

MODIFICATION OF COVENANT NO.

THIS AGREEMENT made this _____ day of _____, 20__

BETWEEN: _____

_____

(hereinafter called the "Grantor")

OF THE FIRST PART

AND:

_____

_____

(hereinafter called the "Grantee")

OF THE SECOND PART

WHEREAS the Grantor is the registered owner in fee simple of the following lands in the Province of British Columbia, more particularly known and described as:

_____

_____

(hereinafter called the "Lands");

By an agreement dated as of the _____ day of _____, 20__ and registered in the _____ Land Title Office under Number(s) _____ against Lot _____, the Grantor granted a covenant, pursuant to section 219 of the *Land Title Act* of British Columbia, in favour of the Grantee (hereinafter called the "Covenant");

The parties hereto have agreed to modify and amend the Covenant, as hereinafter provided:

NOW THEREFORE THIS AGREEMENT WITNESSETH that in consideration of the sum of ONE DOLLAR ($1.00) of lawful money of Canada and other good valuable consideration paid by the Grantee to the Grantor, the receipt of which is hereby acknowledged, the Grantor does hereby covenant and agree with the Grantee under Section 219 of the Land Title Act of the Province of British Columbia as follows:

1. The Covenant is hereby modified and amended, effective as of the date hereof, as follows:

   a.

   b. etc.

2. This Agreement shall be read and construed in conjunction with the Covenant and, except as modified and amended by this Agreement, the Covenant shall continue in full force and effect.

3. This Agreement and everything contained herein shall be binding upon and enure to the benefit of the respective heirs, administrators, successors and assigns of the parties hereto.

IN WITNESS WHEREOF the parties hereto have executed this Agreement on the day and year first above written.

Signed by)
in the presence of:)
)
_____)
Witness) _____
) Grantor
)
_____)
Address)
)
_____)
Title or Occupation)

The common seal of _____)
)
_____)
)
was hereunto affixed in the presence of:) (c/s)
)
_____)
Authorized Signatory)

Signed on behalf of Her Majesty the Queen)
in Right of the Province of British Columbia)
as represented by the Minister of)
Transportation or his or her duly authorized) _____
designate in the presence of:) Minister of Transportation or his or
) her duly authorized designate
_____)
Witness)
_____)
Witness)
_____)
Title or Occupation)

The Corporate Seal of the Grantee)
was hereunto affixed in the presence of:) (c/s)
)
_____)
)
_____)

STANDARD FORMAT – LEASE – DISPOSITION REFERRAL FORM

Version Date: _____

File:
Date:

Re: Lease or Disposition of _____

I have for reply your referral of _____, 20___, regarding an application _____ for _____ purposes, in the name(s) of _____ covering _____.

The Approving Officer recommends that the following conditions be written into the _____
_____.

OR

The Ministry recommends that the following conditions be written into the terms of the fee simple sale agreement and should be registered as a covenant under the provisions of Section 219 of the *Land Title Act* in perpetuity. Covenant conditions are to be registered with priority over any financial charges registered against the property.

(. . . . continue as for Form 5, Clauses 1 to 4 incl.)

If you require any further information, please contact: _____.

cc: _____

SUBDIVISION APPROVAL FORMAT
LOT LINE ADJUSTMENT

Version Date: _____

File:
Date:

Applicant
_____
_____
_____
_____

Dear Sir/Madam:

Re: Proposed Subdivision _____
(name of watercourse)

This letter is in reply to your correspondence of _____. As the Approving Officer, consent is hereby given, pursuant to Section 86 of the Land Title Act, for the approval of the above-mentioned plan of subdivision, subject to the applicant entering into a covenant registrable under Section 219, which shall run with the land and shall effect the following conditions for the proposed lot to be created and the remainder:

"1. Hereafter, no building, manufactured home or unit, modular home or structure, shall be constructed, reconstructed, moved, extended or located within _____ metres of the natural boundary of the (name of watercourse).

2. Hereafter, no area used for habitation, business, or storage of goods damageable by floodwaters shall be located within any building, modular home or structure at an elevation such that the underside of the floor system thereof is less than _____ metres above the natural boundary of (name of watercourse).

   In the case of a manufactured home or unit, the ground level or top of concrete or asphalt pad on which it is located shall be no lower than the above described elevation.

3. The required elevation may be achieved by structural elevation of the said habitable, business, or storage area or by adequately compacted landfill on which any building is to be constructed or manufactured home or unit located, or by a combination of both structural elevation and landfill. No area below the required elevation shall be used for the installation of furnaces or other fixed equipment susceptible to damage by floodwater. Where landfill is used to raise the natural ground elevation, the toe of the landfill slope shall be no closer to the natural boundary than the setback requirement given in condition (1) above. The face of the landfill slope shall be adequately protected against erosion from flood flows (wave action, ice, or other debris).

4. Conditions 1 to 3 above will not be enforced as conditions of subdivision approval unless a further subdivision is applied for, at which time these conditions will apply only to development on new lots created.

   (continue as for standard approval format with 'save harmless', etc.)