

# Streams and Ravines

**This brochure provides information to landowners and builders about constructing near streams and ravines. It explains how development can be carried out to protect fish and wildlife habitat, and reduce the risk of erosion.**

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*"This information is provided for convenience only and is not in substitution of applicable City Bylaws or Provincial or Federal Codes or laws. You must satisfy yourself that any existing or proposed construction or other works complies with such Bylaws, Codes or other laws."*

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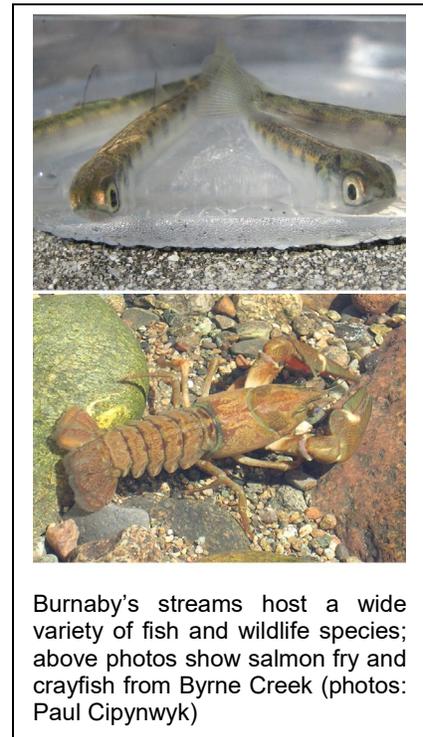
These guidelines apply to any landowner seeking to develop within 30m of a stream or freshwater wetland/shoreline. Streamside Leave Areas may be between 15m and 30m for Class A fish-bearing watercourses, or between 5m and 30m for Class B non-fish-bearing watercourses. The Planning Department determines the Leave Area required for a specific site.

## 1. What are Streams and Ravines?

A "stream" is a watercourse or freshwater ecosystem that supports fish or flows into fish habitat. It includes creeks, streams, rivers, lakes, ponds, wetlands, and even some ditches. (If you are not sure if a particular watercourse is a 'stream,' contact the City Planning Department). A 'ravine' is a steep-sided gully containing a stream.

## 2. Burnaby's Streams and Waterways

The City of Burnaby has over 140km of open streams and associated wetlands, and two major lakes (Burnaby Lake and Deer Lake). Most streams in the City flow to the Fraser River – either directly or via the Burnaby Lake/Brunette River system. A small number of streams flow to Burrard Inlet in Northern Burnaby. Many of the City's watercourses have been straightened, ditched or enclosed in storm drain pipes to accommodate roads and development. Yet, many still support fish and other aquatic life. The streams are also home to birds and wild life, including the great blue heron, beavers and waterfowl.



Burnaby's streams host a wide variety of fish and wildlife species; above photos show salmon fry and crayfish from Byrne Creek (photos: Paul Cipynwyk)

## 3. Why Protect Streamside Vegetation?

Streamside vegetation is critical for healthy streams and to protect neighbouring properties. Building a suitable distance away from a stream reduces the risk of channel erosion and flooding. Forests, wetlands and healthy soils filter and clean rainwater run-off before it reaches

the stream. Streamside vegetation drops food and nutrients into streams for fish and provides shade to cool the water. Fallen trees within the channel slow the flows of water and provide sheltered places for fish and other aquatic animals. Healthy vegetation stabilizes stream banks and prevents excessive erosion. These features make streams functional and productive, allowing them to support aquatic life.

#### **4. Legal Requirements for Managing Land near Streams and Ravines**

The federal *Fisheries Act* is a long-standing and powerful Act dedicated to protecting fish and fish habitat. Anyone harming fish habitat may be subject to criminal prosecution under the Act. The provincial *Fish Protection Act* and *Riparian Areas Regulation* require that municipalities follow a set methodology to determine stream setbacks. The City of Burnaby meets or exceeds this requirement with its Streamside Protection and Enhancement Area Bylaw (Section 6.23 of the Zoning Bylaw). This Bylaw establishes setbacks for development; applications for variances are reviewed by the City's Environmental Review Committee.

#### **5. Steps for Building near Streams and Ravines**

The following steps are to be followed if you are proposing to carry out development within a streamside Leave Area. "Development" includes constructing a new building, re-constructing an existing building (except as outlined in Section 6), or undertaking other development, including constructing paved areas, retaining walls, sheds, septic systems or clearing vegetation.

##### ***A. Is your proposed development located within 30m of the top of bank of a stream or top of bank of a ravine?***

As part of a building permit application, a surveyor must identify the *top of bank* of any stream or ravine located within 30m of your proposed development.

The "top of bank" is identified as:

- The point nearest the stream where there is a break in slope where the slope beyond this break is flatter than 3:1 (horizontal to vertical) for at least 15m.
- The top of bank of a *ravine* is also determined by these criteria, but may be located a greater distance from the stream.
- In low gradient areas where there is no definitive change in slope, as above, the top of bank is equivalent to the 'edge of the active floodplain.' A qualified environmental professional or City staff member may need to determine where this boundary is located.

Note that the 30m is the *maximum* streamside Leave Area that may apply to the site; depending on the site characteristics, a smaller Leave Area may apply. To determine the exact Leave Area requirements for the stream in question, contact the Planning Department, 3<sup>rd</sup> Floor, City Hall at 604-294-7400. They will help you interpret the exact setback requirements by reviewing watercourse type and existing development patterns.

This Leave Area boundary must then appear on your survey plans for the building permit application.

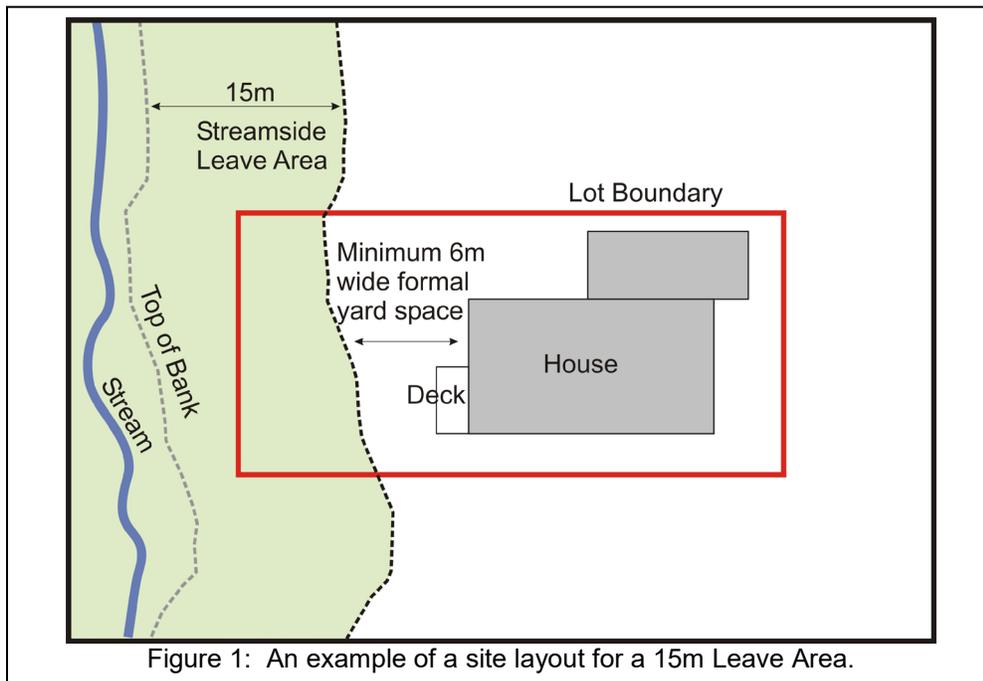
**Note:** the City has a process to review development applications if implementation of the Leave Area would make the property undevelopable. (See below).

If you have internet access, the Burnaby webmap at <http://webmap.city.burnaby.bc.ca> can help you find out more about the location of streams. Click through the menu options to access aerial photographs, lot boundaries, general contour information and stream location.

If the proposed development does not require a Building Permit, contact the City Planning Department to find out what is required to comply with the Streamside Bylaw.

## ***B. Designing Your Site Layout***

Begin your development site layout by drawing the required Leave Area as advised by the Planning Department on your survey plans. Then locate the dwelling, all ancillary buildings, patios, driveway and lawn outside the Leave Area. The only exception is if there is already a building with foundation located within the Leave Area, and it is to remain (see Section 6).



The Leave Area should consist of native trees and vegetation. If the Leave Area is at the rear of the property, a minimum 6m backyard building setback area is recommended between the Leave Area and any buildings. The 6m backyard building setback is to allow use and enjoyment of the property and access around the building without encroaching into the Leave Area.

The Leave Area boundary should be marked with a permanent fence or barrier to separate it from the rest of the yard.

## ***C. Applying for a Building Permit***

Once the layout is complete, submit your surveyed site plan to the Building Department. Your site plan should include:

- Top of bank or top of ravine bank;
- Streamside Leave Area;
- Existing building footprints;
- Proposed building footprints; and
- Formal back yard area.

## 6. Re-development Sites and Existing Buildings

On older, previously developed properties, it may be very difficult to develop the lot while respecting the Leave Area. In these situations, the landowner/builder should work on a site layout that attempts to maximize the Leave Area. Each of these re-developments is unique and will require review through the City Planning Department and potentially the Environmental Review Committee (ERC). The ERC will typically look favourably on applications where:

- All new development is located as far from the top of bank as possible;
- If relaxation of the Leave Area boundary is proposed in one area, it is widened in another, so that the averaged setback remains the same;
- Streamside enhancement planting and/or other ecological restoration is included in the site plan, demonstrating an overall improvement to the habitat area;
- For large or complex sites, proponents should consider hiring an Environmental Consultant to prepare a thorough review and restoration plan.

To apply for a variance or relaxation of the required streamside Leave Area, work with City Planning Staff to complete one of the two **Leave Area Variance Forms** available from the Planning Department, 3<sup>rd</sup> Floor, City Hall. Please note that review by the Environmental Review Committee will normally take a minimum of four (4) to six (6) weeks.

**Note:** The Streamside Bylaw (Zoning Bylaw 6.23, Section 5) allows that existing permanent structures (buildings with foundations) located within a Leave Area may be repaired or reconstructed on their existing foundations, as long as:

- the re-construction entails less than 75% of the value of the structure above the foundations;
- the resulting repair/re-construction does not increase the lateral encroachment into the Leave Area; and
- the existing foundation is retained.

Proposals involving demolition/reconstruction or new development within a Leave Area require a submission to the Environmental Review Committee. The City ensures that lots remain developable under the prevailing zoning, and staff can assist with site planning to meet the intent of the Bylaw.

## 7. Construction Concerns

Special care must be taken to protect Streamside Leave Areas during site developments. The following measures should be taken:

1. **Protection Fencing.** Before construction starts, place protection fencing (chain link, metal framed or bright-orange snow fencing) along the Leave Area boundary to ensure that vegetation is not damaged during construction. All contractors need to be advised to stay out of this area.
2. **Tree Protection.** Work with the City Landscape Technician to protect significant trees on the site, particularly within the Leave Area. Large cuts or fills within the root-zone of the tree may kill or injure the tree, resulting in the costly removal of the tree by the property owner. The City Landscape Technician will assist you in identifying critical root

zones that should be protected through tree protection fencing (e.g. bright orange snow fencing).

3. **Run-off management.** During construction, do not allow any sediment, soil, cement, grout, oil, grease or other contaminants to enter the stream or storm drains in the street. Use the following preventative measures:
  - a. Minimize time-periods where bare soil is exposed. Retain as much vegetation on the site as possible.
  - b. Cover soil stockpiles with plastic to prevent soil being washed away.
  - c. Keep a clean site. Do not allow soil or sediments to migrate onto sidewalks or streets.
  - d. During construction periods protect catch basins on the adjacent street, by installing filter cloth, sandbags or synthetic liners.
  - e. Do not dewater the site into watercourses or onto City streets or storm drains.

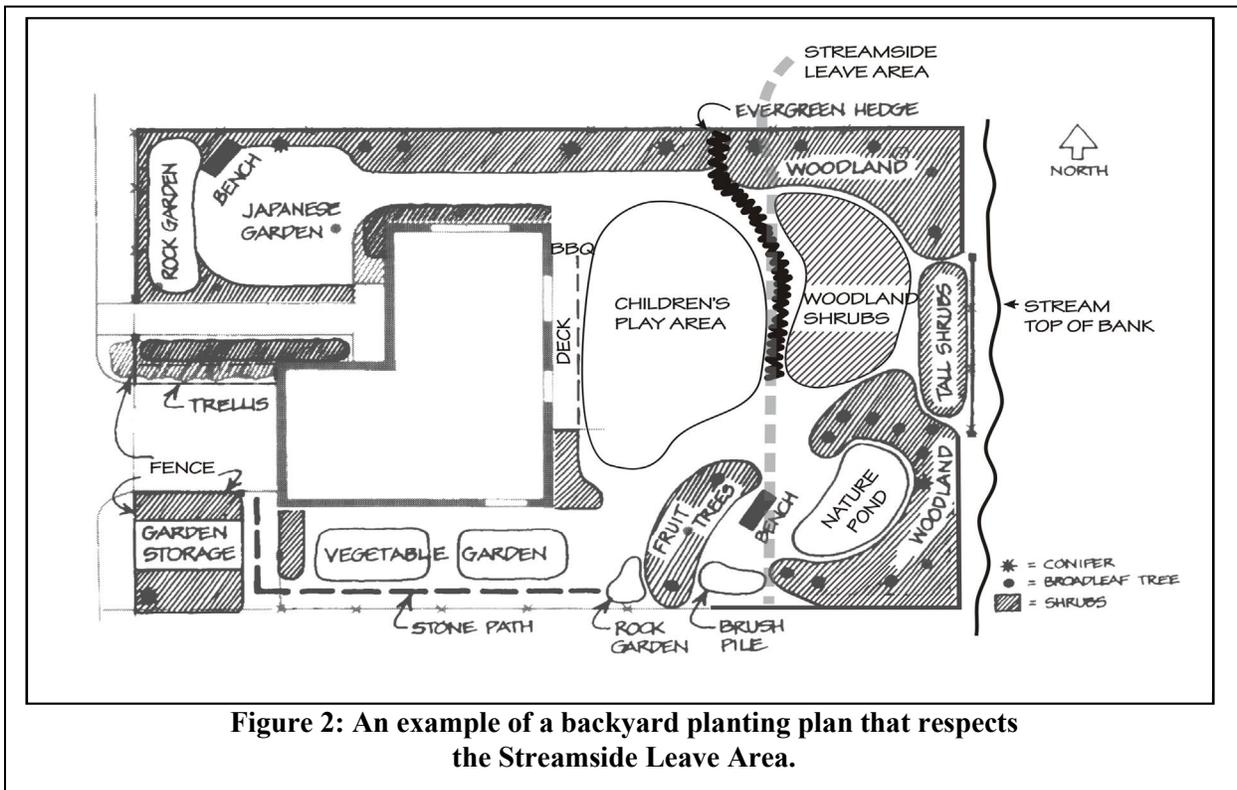


Figure 2: An example of a backyard planting plan that respects the Streamside Leave Area.

## 8. Living near Streams and Ravines

Landowners living near streams and ravines play an important role in protecting environmental and geotechnical values. Here are some tips:

1. **Garden Design.** Design your garden in zones with a natural Streamside Leave Area zone of native vegetation transitioning to your formal yard (lawn, patio, decks, etc). Try to keep your formal backyard activities away from the natural streamside zone (Figure 3). Fencing and hedging can be used to separate these areas.
2. **Native Planting.** Throughout your garden, make streamside plants part of your landscaping scheme. Use native plants, as much as possible, as they are well-adapted to local weather

and provide food and nutrients for fish, birds and other wildlife. Turf grass is not a good choice in streamside Leave Areas as it provides little shade or cover, and its short roots don't hold soil well.

3. **Hazard Trees.** If you are concerned about the safety of any trees in the Streamside Leave Area, contact the City Landscape Technician at (604-294-7921) to advise on hazard tree removal. The Technician will authorize removal of hazard trees, so long as there is replanting of additional replacement trees.
4. **Use of Leave Areas.** Limit your access to the streamside Leave Areas and enjoy it from afar. Pathways and bridges can cause erosion or de-stabilize stream banks.
5. **Composting.** Do not dispose of yard waste or lawn clippings into Streamside Areas. Yard waste takes a long time to decompose, may smother vegetation and can de-stabilize stream and ravine banks. Instead, use the City's Free Green Waste Pick-up by leaving yard waste out with the garbage and recycling.
6. **Natural Forest Debris.** Remove household garbage and composting from streamside Leave Areas, but leave in place natural debris that has fallen from the forest. If you are concerned that natural debris is blocking water flow and threatening to flood the creek, please contact City Engineering at 604-294-7460.
7. **Rainwater Run-Off.** Manage run-off from paths and downspouts by dispersing it over a vegetated area in your garden, but not close to the stream. Do not discharge your storm drain to the top of a ravine or stream bank because it can cause erosion and slumping.

## 9. More information

The following provides additional information regarding streamside protection and development:

- For more information about building near streams and ravines and streamside protection, contact the Burnaby Planning Department at 604-294-7400.
- To obtain a Building Permit, contact the Burnaby Building Department at 604-294-7130, and review the following Building Department information bulletins:
  - [Building Permit Application Requirements for New Single and Two Family Dwellings](#)
  - [Legal Survey Requirements for Single and Two Family Dwellings](#)
- To report a spill or discolouration in a stream or discuss run-off erosion or flooding concerns, contact the Burnaby Climate Action and Energy Division (Corporate Service Department) at 604-294-7850.
- To discuss hazard tree issues, contact the Burnaby Landscape Technician at 604-294-7921

The following guides provide excellent, easy-to-read information on streamside vegetation and backyard management. Reference copies are available at the City of Burnaby Planning Department, 3<sup>rd</sup> Floor City Hall and City Libraries:

- **On the Living Edge: Your Handbook for Waterfront Living** (2002) by Sarah Kipp and Clive Callaway. <http://www.livingbywater.ca>.
- **Naturescape British Columbia: Caring for Wildlife Habitat at Home** (1995) [http://www.naturescapebc.ca/naturescape/Provincial\\_Guide\\_2003.pdf](http://www.naturescapebc.ca/naturescape/Provincial_Guide_2003.pdf)