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# icona properties Anmore South Development

Environmental stewardship  
and habitat conservation

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# Overview

The Burrard Inlet Marine Enhancement Society (BIMES) is an environmental stewardship group that has been actively monitoring and enhancing environmentally sensitive habitat in the Port Moody and Anmore area of the Burrard Inlet for 47 years. BIMES is responsible for the restoration of Pacific salmon to Mossom and Schoolhouse North creeks and ongoing work on Suterbrook Creek. We operate a community hatchery where we raise, care for, and release 150,000 chum, coho and pink salmon annually into our local creeks. Conservation hatcheries like Mossom Creek play an important role in ensuring all citizens have an opportunity to actively participate in improving the environmental health of their community. Community hatcheries like Mossom Creek play an important role in ensuring all citizens have an opportunity to actively participate in the protection and enhancement of their community as well as function as key contributors to local environmental education programs.



## Background

Stewardship volunteers have been active in the area since 1978. The volunteer work has focused primarily on restoring local salmon populations, work carried out under the guidance of Fisheries and Oceans Canada, and has expanded to include habitat enhancement such as the creation of spawning habitat in lower Mossom Creek and the rebuilding of the Schoolhouse Creek North fish ladder to improve upstream migration and reduce impediments for returning salmon. In addition to this work, BIMES has kept extensive records of plant and wildlife in the area, some gathered through weekly logs and wildlife cameras and also through intensive, expert-assisted surveys such as the [2017 Bioblitz that identified 377 different species](#) of flora and fauna, including hundreds of new species, species of conservation concern, and introduced species in the area.





Objective

To work with iconic properties to ensure the best possible outcome for fish, wildlife and watershed values in Anmore South and surrounding areas.



## Challenges to be met

- 1 Site hydrology and water quality are maintained to pre-development standards or improved in areas of previous/historical disturbances.
- 2 Forest stands remain continuous and intact with additional protection of riparian areas and special attention to leveraging native plantings within developed areas.
- 3 Wildlife is not displaced and building considerations include designs that protect or enhance wildlife in the area and retain existing wildlife corridors.
- 4 Riparian habitat is recognized as important for protecting and maintaining the integrity of local streams and the aquatic life they inhabit.
- 5 Community recreation considers nature first and efforts are made to preserve sensitive areas for future generations with thoughtful design.

A photograph of a small, clear stream flowing through a dense forest. The water is shallow and flows over numerous large, smooth rocks covered in vibrant green moss. The surrounding vegetation is thick and lush, with various shades of green. In the background, a wooden structure, possibly a bridge or a walkway, is partially visible, partially obscured by hanging moss and ferns. The overall scene is serene and natural.

**What we want for Anmore South:  
to maintain and enhance the areas  
environmental integrity.**

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# Water


## water quality and quantity

One of the most important mandates of an environmentally sound development is to ensure the overall site hydrology and water quality are maintained. This is imperative for fish and riparian health and maintain watershed functionality at its predevelopment best. Mis-management of water during and after development can cause flash flooding and increased sediment deposition events resulting in alterations to the natural creek features and values as well as potential direct effects to fish and other aquatic wildlife.

We know from past developments in the area that poor design and construction practices can drastically alter these, and many other, critical ecosystem processes







*“When rain falls on a forest floor, less than 1% flows directly overland into watercourses. About 55% soaks into the ground, moving into the groundwater or travelling through the ground into lakes and streams. About 45% is absorbed by plants or evaporates from the ground. **Land development changes this water balance**, creating hard impervious surfaces such as roads, parking lots and roofs. Following typical development, about 25%–75% of the rainfall goes directly into the stream via storm drains. This creates problems in streams and creeks as the increased water quantity can cause erosion and destroy wildlife habitat, while the water quality deteriorates if the storm water contains oils and other pollutants from the roads and driveways. Groundwater supplies also suffer as there is less groundwater recharge.”*

(excerpt from [Stormwater Planning: A Guidebook for British Columbia](#))



## Water quality and quantity

Changes to site hydrology and water quality can have devastating effects on riparian habitat and fish health. This is one of the most important aspects of any development taking place in Anmore. We know how detrimental a poor site design can be both during construction and post development.

1

Design the site so that the natural hydrological cycles (hydrographs, groundwater-surface water interactions) are maintained during and after development. Water should be retained on site similar to their natural system prior to development.

2

Incorporate features that will minimize impervious surface and encourage groundwater recharge, such as narrower road widths, vegetated swales and pervious paving materials.

3

Use of storm drains to manage waste water is not be acceptable, any potential for household or commercial discharge should be managed as sewage. Car washing, oil spills, paint, etc should not have opportunities to enter any type of storm drain system on site.



## Water quality and quantity continued

4

Local streams and/or wetlands must not receive unmanaged stormwater discharge as the increased flows can significantly increase erosion. Preference would be for all stormwater to be collected in rain gardens, filtered and returned back to the system naturally.

5

Any new plantings around the development should have a soil plan to ensure maximum water retention on site. This should align with current best practices. Plantings should follow a similar plan to [Portland's Green Streets initiative](#).

6

Use of riprap ditches should be avoided on site, but alternatives, including maintaining forest cover and utilizing [naturalized stormwater design](#), will need to be developed to manage extreme rain events that happen in the Anmore Valley periodically.

7

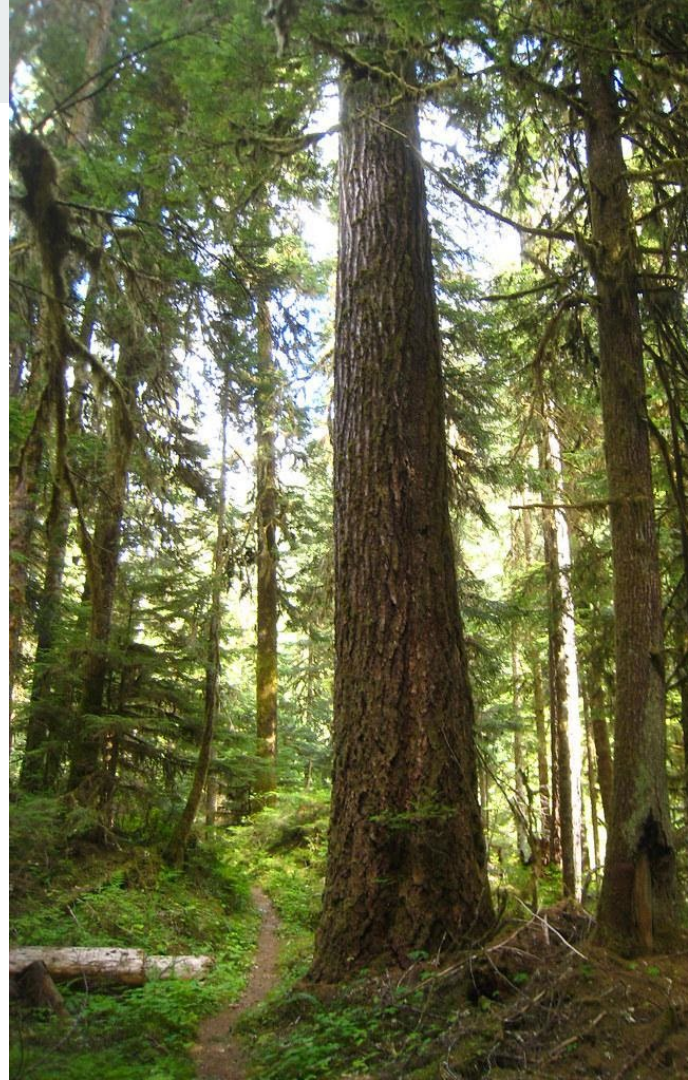
During construction Village of Anmore must mandate the use of real time water quality monitoring companies like FlowLink to provide real time water quality testing and any water on construction site is not permitted to be discharged unless it meets municipalities environmental standards especially PH levels.

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# Forest

## Forest cover and green streets

Mossom and Schoolhouse North creeks have their headwaters originating from Eagle Mountain. Both creeks run through mainly contiguous second growth [coniferous dominated] mixed forest down to their outlets that drain to the Burrard Inlet below Ioco Road. While the watershed supports dominant, maturing overstory species typical of the Coastal Western Hemlock biogeoclimatic zone of the South Coast (Douglas-fir, Western Redcedar, Western Hemlock and Bigleaf Maple), the area was logged extensively in the late 1800s and again in the early 1970s. While still recovering from past disturbances, this forested landscape helps protect against impacts of climate change and provides important connectivity for a number of large mammals such as Mule Deer, Cougar, Bobcat and American Black Bear.





## Forest cover and green streets

- 1 Maximize the tree retention on site beyond current bylaw requirements. It is critical that tree retention on site is maximized, that stands of trees are protected in a continuous way, and tree retention is prioritized over replacement.
- 2 Riparian zone should be extended. We consider the current RAR to be a minimum standard and expect a larger buffer of forest to be retained around watercourses designated with the riparian zone.
- 3 Retention of wildlife trees. Live or dead trees with special characteristics that provide valuable habitat for the conservation or enhancement of wildlife should be retained. Characteristics include large diameter and height for the site, current use by wildlife, declining or dead condition, value as a species, valuable location and relative scarcity.
- 4 Replacement of trees and plants should be with native species specific to the Lower Mainland. Landscaping should use 'Green Street' principles and encourage native plantings wherever possible.



# Wildlife

## Protection of existing wildlife

Wildlife needs habitat to live in with safe passage to move in and out of any area. Development should include consideration for how animals are moving through the area and using the area to live. This includes larger species of Mule Deer and Black Bear, as well as smaller amphibians such as Northwestern Salamanders.



### Wildlife corridors

Wildlife corridors provide animals with an opportunity to move freely between two or more habitat patches or habitat types in an otherwise fragmented landscape. Corridors must be suitably wide, with appropriate habitat features to provide security cover during movement. Development and roads should avoid these corridors and zones, and mitigation will be required where roads and other developments transect the corridor. (Clarke et al 2004)



## Protection of existing wildlife

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### Dark skies

Attention should be paid to lighting choices and dark sky principles adopted for exterior lighting and for pathways.

### Wildlife friendly design

Garbage should be centralized and bear safe. Bird friendly glass should be used to deter bird strikes. Nesting boxes for birds and bats should be incorporated into park areas.

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3



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4

### Boardwalks and fencing

Sensitive habitat areas should be protected with boardwalks, fencing and signage.





## Fish habitat

Mossom and Schoolhouse North creeks are home to several species of Pacific salmon, including Chum, Coho and Pink, as well as resident Coastal Cutthroat Trout. Pacific salmon are a keystone species that support over 130 other species on our west coast. Their presence in this area is a sign of a healthy watershed.

Mossom Creek has been used as an indicator system since 1999 by Metro Vancouver Regional District (GVSD) for monitoring watershed health (based primarily on parameters such as riparian forest integrity, percent of total impervious area, stream channel complexity and aquatic diversity). Mossom Creek has the highest level of riparian forest integrity and the lowest percentage of total impervious area of the 19 test subwatersheds. It is categorized as Excellent, a Class A stream, and is the only one of the nineteen in this category.







## Protecting fish habitat

1

Riparian buffers should apply applicable standards (e.g., Riparian Area Protection Regulation or alternative) that will protect the features, forms, and function of applicable drainages. We would like to see an increased buffer along all streams and riparian areas in the development that exceed agreed upon best practices in B.C.

2

Split rail or chain link fencing should be employed to keep people and pets out of sensitive areas and creek crossings should be minimized. Educational signage should be used to inform people about why areas are off limits.

3

Viewing platforms and boardwalks should be used to allow for access to the area without disturbing vegetation. Any bike trails or hiking trails should be designated and structures used (split rails, fallen log barriers, etc) to deter cut throughs that might cut across or disturb riparian area.

4

Fish, in particular salmonids, are sensitive to changes in water quality (e.g., by way of pollution, stream temperature, dissolved oxygen) and hydrological conditions, all influenced by alterations to healthy riparian function. Aquatic and riparian habitat should not only be preserved, but enhanced where possible. Previous storm surges and site alterations may have caused flattening of creek areas or spawning gravel and woody debris to be washed away. An assessment of the riparian area should be made prior to development to identify enhancement opportunities.



Looking ahead

Environmental stewardship requires a balance of responsible use and protection of the natural environment through conservation and the implementation of sustainable practices.

BIMES appreciates the opportunity to share our knowledge of the area and how it can contribute to accountable development that will protect the ecological values that make this area so special.



## Burrard Inlet Marine Enhancement Society

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This document was compiled with input from volunteer members of Mossom Creek Hatchery and the BIMES Board of Directors.