

Opportunities

- Reduce beach erosion and the associated costs of ongoing infrastructure repair.
- Prevent the need for continuous artificial beach nourishment

2006

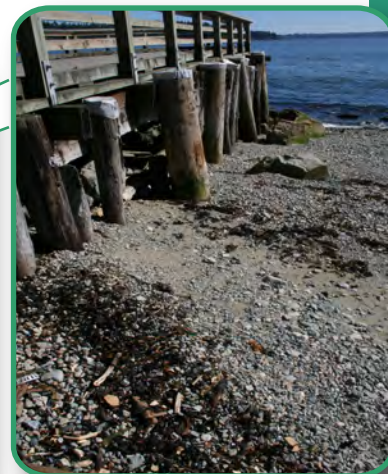


Soft wave protection, such as wave trips, tombolas and berms 'roughen' the shoreline, returning it to a more natural state. Shoreline roughening works with coastal processes to provide long term protection from waves and prevention of erosion, creating a self-sustaining shoreline.

Achievements

- Use of boulders to guide and trap sediments on the beach, with lasting effect.
- Restoration of a self-sustaining and naturally protective shoreline.

2010



Wave trips, tombolas and boulders protect the upper shore from waves, increase the beach profile and trap and stabilize fine sediments. They work with coastal processes to restore the shoreline to a more naturally protective and sustainable state and provide stable habitat for a wide range of marine species.

Summary

There has been a high level of sediment loss at Lawson Creek resulting in a reduction of fish habitat and public beach access. Enhancements to the shoreline and the creek have restored the area to a more natural state, improved wildlife habitats, developed natural shoreline protection and created a greater public amenity.

Status

Conceived 2006. Major works 2007-2008. There is ongoing habitat monitoring.

Public Amenities

- Public Access
- Environmental Engagement



Shoreline Protection

- Wave Trips
- Sediment Transport
- Shoreline Roughening



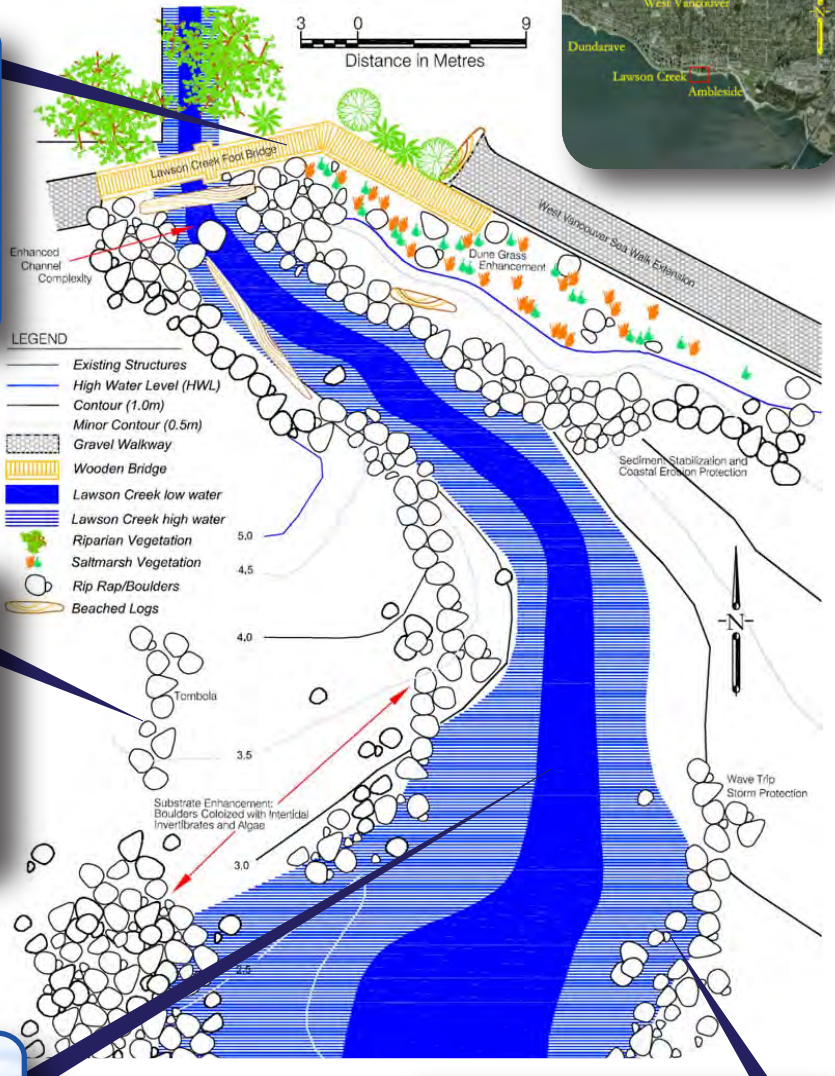
Habitat Development

- Stream Enhancement
- Habitat Boulders
- Salt Marsh



Economic Benefits

- Stream Enhancement
- Beach Stabilization



West Vancouver would like to thank the following organizations for their support:

Opportunities

- Prevent unstable substrate from being swept out to sea by waves, currents and high velocity creek flow, and to encourage natural deposition of creek sediments.

2006



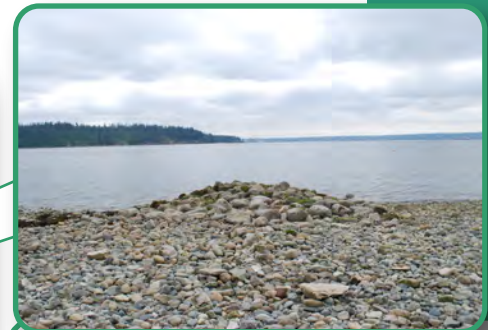
Fine sediments are easily swept along the beach and out to sea by currents, waves and high velocity

culvert flows. As waves hit the shore at an angle, sediments are swept laterally along the beach, in a process known as 'longshore drift'. If there is no stable 'toe' at the end of the beach the sediments will then be carried off-shore to deeper waters.

Achievements

- Redirecting the creek channel deflects creek sediments onto the upper shore.
- Groups of boulders, called tombolas, interrupt longshore drift and trap sediments on the beach.

2010



By redirecting the creek channel to slow the flow of water, creek sediments are deflected onto the upper shore. Large boulders stabilize the sediments and increase the beach profile, providing natural resistance to waves. Strategically placed tombolas work with natural coastal processes and provide long term benefits, as they interrupt longshore drift and trap fine sediments carried along by waves and currents.

Opportunities

- Reduce coastal erosion and storm damage by returning the shoreline to a more natural state.
- Replace the hard-faced, vertical seawall with more effective sea defence measures.

2006



A hard-faced, vertical sea wall may provide some protection for shore line developments, but it can actually contribute to beach erosion in the long term as, instead of disrupting wave energy, it reflects waves full-force back down the beach. Returning the shoreline to a more natural state provides sustainable and improved protection.

Achievements

- Replacement of the hard-faced vertical seawall with a a natural sloping, irregular shoreline.
- Restoration of a self-sustaining and naturally protective shoreline.

2010



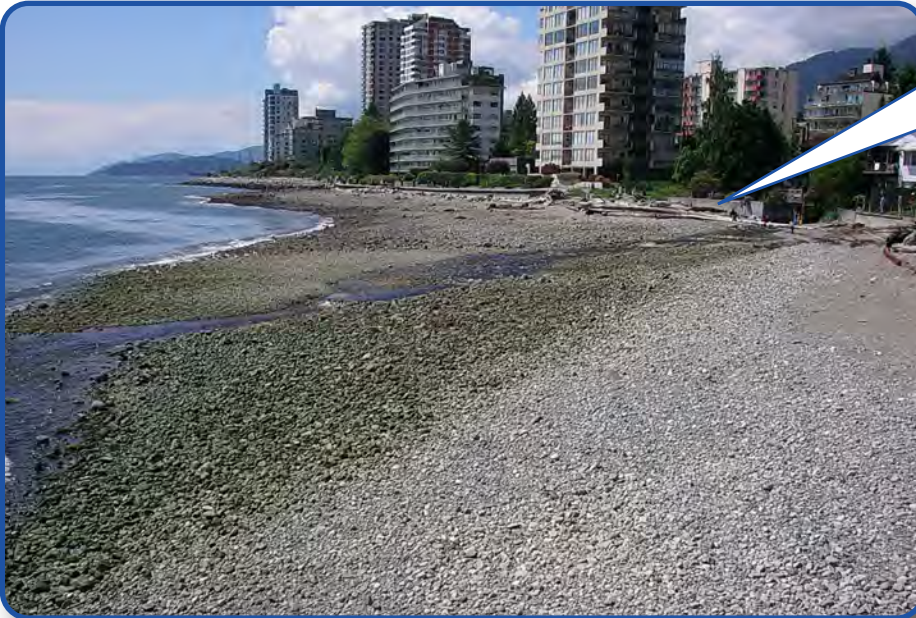
Large woody debris and boulders were used to create a more natural sloping, irregular shoreline which diffuses, rather than reflects, wave energy thereby reducing beach erosion. Using natural materials and working with coastal processes to restore the shoreline provides long-term benefits and sustainability while creating valuable natural habitat for marine species.



Opportunities

- Prevent erosion by reducing the ene of waves reaching the beach.
- Implement natural sea defences that are more effective and will have long term benefit.

2006



A low profile beach has little resistance to beach erosion. Waves that are not disrupted on the lower shore may reach the fine sediment of the upper shore with little loss of energy. Those that strike the hard-faced sea wall are reflected back down the beach, as they gain momentum with gravity their erosive power increases.

Achievements

- Boulders positioned along the lower shore 'trip' waves and diffuse their energy.
- The 'wave trips' act like a natural rocky shore providing long-term protection.

2010

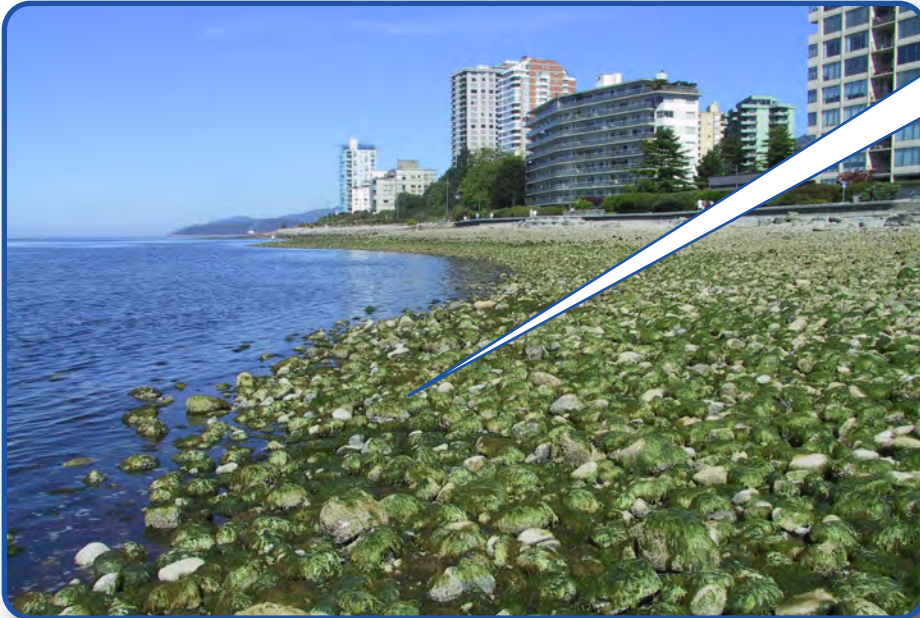


Large boulder 'wave trips' were positioned along lower shore. Waves travelling in-shore strike the wave trips and then break, diffusing their energy. Wave trips act like a natural rocky shore line, reducing the power of waves before they reach the upper shore, they provide a long term solution to erosion and create habitat for many intertidal species.

Opportunities

- Improve the existing habitat by stabilizing beach sediments.
- Increase biodiversity by creating new habitats and colonization opportunities.

2006



The unstable cobble substrate provided little opportunity for marine species other than green algae and barnacles. To improve biodiversity, stable intertidal and subtidal substrate was required create habitat for to various key species such as kelp and mussels.

Achievements

- Large habitat boulders were positioned along the shoreline to provide attachment opportunities and habitat for a range of marine plants and animals.

2010



Habitat boulders were placed along the inter- and subtidal zones to provide opportunities for algae, kelp, barnacles, mussels and other marine species to colonise.



As the new habitats mature more species arrive. Biologists conduct regular surveys to monitor species populations and the health of the ecosystem.

Opportunities

- Improve the ecological and aesthetic value of the Seawalk by recreating natural habitat.
- Reconnect the Seawalk and nearshore developed areas with the shoreline.

2006



Salt marshes are important natural habitats. As a protective buffer between the sea and the land they stop pollutants and run off, stabilize fine sediments and provide important habitat for many birds and insects, and cycle nutrients onto the shore. An isolated patch of dune grass was located by the creek channel.

Achievements

- Recreation of a natural salt marsh habitat to improve biodiversity and add aesthetic value.
- Creation of a natural bridge between the Seawalk trail and the shoreline.

2010



Dune grass, Pacific silverweed and beach pea were used to create a salt marsh habitat between the trail and the beach. The new habitat connects the trail with the shore, creates important habitat for birds and insects and provides plant and insect debris to the creek and shoreline, which is an important source of food for fishes. The complex root systems of salt marsh plants also help to stabilize fine sediments.

Opportunities

- Restore stream channel by increasing depth and complexity.
- Return Lawson Creek to a more natural state as a salmon bearing stream.

2006



Erosion at the site had resulted in shallow, unstable channels across the beach. Areas of the creek channel became choked with debris, creating physical barriers to fishes. Riffle pools, boulders and large woody debris create places for migrating fish to feed, rest and hide from predators.

Achievements

- Stream depth was improved and the channels were reinforced with large boulder riprap.
- Boulders and logs were used to create complex and diverse fish habitat.

2010



The channel was deepened and boulders along the banks prevent erosion. Logs and boulders create riffle pools, meanders and shelter providing important habitat for fishes, especially salmon. From 2003- 2005 no salmon were reported in Lawson Creek; the year following the project the West Vancouver Streamkeepers Society recorded 51 salmon.

Opportunities

- Reconnect the public with the shoreline and creek habitat by providing better access.
- Improve the continuity of the West Vancouver Seawalk by providing access through the site.

2006



The Seawalk path was disconnected with the shoreline at Lawson Creek, a street detour directed pedestrians to 18th Street. This project aimed to improve access across the site and to the shoreline with the creation of a new trail along the elevated upper shore. A pedestrian footbridge was constructed across Lawson Creek.

Achievements

- Physical connection of the Seawalk to the shoreline with a new trail and elevated uppershore.
- Creation of an artisanal footbridge across the creek to provide safe pedestrian access.

2010



With funding from the West Vancouver Community Foundation, West Vancouver Shoreline Preservation Society, and a bequest from the Lansell family, a footbridge was built using materials reclaimed from the beach. The bridge and new trail connect with the rest of the Seawalk, providing safe pedestrian access across the site, the creek and to the shoreline.

Opportunities

- Raise awareness of the importance of Lawson Creek as fish habitat
- Fully utilise all opportunities to connect the public with the local environment.

2006



Close to Ambleside and a family park, Lawson Creek is a popular public amenity offering a great opportunity to increase public engagement with the shoreline and raise awareness of the importance of creeks and watersheds in salmon conservation, reaching many people.



Achievements

- Creation of permanent signage to introduce Lawson Creek as important salmon habitat.
- Development of physical opportunities for public engagement with the habitat.

2010



Permanent signage at the bridge raises awareness about the importance of Lawson Creek as a salmon habitat.

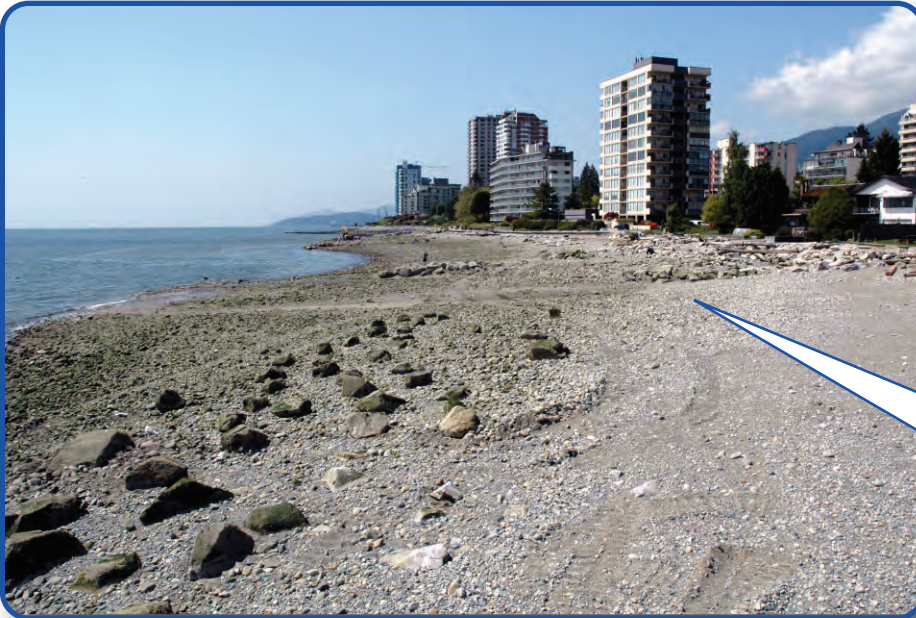


Look-out posts, better access to the shoreline and new salt marsh habitat create opportunities for the public to stop and engage with the environment.

Opportunities

- Reduce beach erosion and the associated costs of ongoing infrastructure and habitat repair.
- Prevent the need for continuous artificial beach nourishment

2006



Beach erosion by wave action is a vicious circle; as the beach is diminished the rate of erosion increases, weakening sea-defences.



Artificial beach nourishment is a temporary measure, by working with natural coastal process a long term and self-sustaining solution can be implemented.

Achievements

- Use of boulders to guide and trap sediments on the beach, with lasting effect.
- Restoration of a self-sustainable and naturally protective shoreline.

2010



Boulders placed along the midshore guide and trap sediments carried by currents and waves, replenishing and rebuilding the beach gradually but over a long term basis.



As the beach profile increases it further stabilises the sediments, interrupts the historical cycle of erosion and provides more protection to shoreline developments.

Opportunities

- Restore Lawson Creek as high-value fish habitat.
- Encourage migratory salmon back to Lawson Creek by improving the habitat.

2006



Ideal fish habitat is complex, including shelter, riffle pools, and meanders. Wave erosion and the unstable substrate on at Lawson Creek had caused stream channels to collapse, devaluing the creek as fish habitat. Preservation of spawning channels is critical to the conservation of salmon and trout.

Achievements

- Creation of permanent signage to introduce Lawson Creek as important salmon habitat.
- Structural development of opportunities for public engagement with the habitat.

2010



The changes to Lawson Creek have already had a positive effect; in the three years

since the project 78 salmon have been recorded, a significant increase from 6 observed between 2003 and 2006.



Improved freshwater and intertidal habitat will help maintain a healthy and diverse

ecosystem and support the local fishing, leisure and tourism industries.