

Lakeside Living

Better than bulkheads

Bulkheads can create problems for salmon.

Do all lakeshore properties need a bulkhead?

No. Protecting your shoreline depends on the amount of exposure, the slope, length of fetch, how you use your shoreline - or how you would like to use your lakeshore.

Why bulkheads are bad for salmon

Which types of bulkheads pose problems for salmon?

Vertical wall bulkheads cause the greatest environmental damage. These can be straight concrete walls, gunnite applied over natural walls or cliffs, wood walls, or rip-rap rock walls.



Photo, Shapiro & Associates



Photo and design: The Watershed Co.

How do bulkheads create problems for salmon?

Bulkheads create deeper water with steeper gradient and a coarser bottom substrate. Waves naturally travel along a horizontal plane, dissipating energy over distance and as they hit shallower bottom, rocks, or shoreline vegetation. But if a wave is suddenly stopped by a vertical wall, the wave energy will increase in amplitude as it reflects off the wall and it is added to by subsequent incoming waves. Instead of moving on a horizontal plane, the wave energy moves up and down, and something has got to give. This causes sediment at the base of the wall to get scoured out. The finer sands are removed as the gravel gets eroded away and the bottom substrate gets coarser. The result is a beach that is much deeper and steeper. Baby salmon need shallow beaches with a gentle gradient to hide from predators that hunt in deeper waters. Bulkheads result in a sudden drop off, which is bad for salmon and people of all ages.



Photo and design: The Berger Partnership



Photo and design: The Watershed Co

The scouring action can also cause failure of the bulkhead as the base erodes away. Vertical wall bulkheads can accelerate erosion on neighboring properties if they are not tied into the same bulkhead system. The result is a continuous hardening of the lakeshore.

Rip-rap rock walls can create problems by providing habitat for predators that feed on young Chinook. Fish that feed on juvenile salmon, such as sculpins and bass, hide in the rock crevasses where they can ambush unsuspecting baby fish.



Photo and design: The Berger Partnership

Better than bulkheads

Are there alternatives to vertical wall bulkheads to protect your shoreline?

Yes, shoreline designers have come up with engineered solutions to "soften" the shoreline, while still protecting it from erosion. These features employ the use of terracing, large flat rocks, shallow pools, logs, and vegetation to prevent erosion and provide an attractive, usable shoreline.



Photo and design: Waterfront Construction

Build a Beach

To reduce the slope where a vertical wall bulkhead exists, the shoreline can be pulled back, creating a shallower grade. In its place a beach cove is created.

Often the top of a vertical wall bulkhead forms a harsh edge or is occupied by a section of lawn that is rarely used. This can be a dangerous place to golf or have small children play. The alternative is a beach that may be more usable. By pulling the shoreline back, the homeowner isn't really losing property but converting it to a new format, which can be quite attractive and very functional, especially in terms of improving access to the water. As the water along this modified shore will be shallower, it becomes easier and safer to access.

Alternatives to vertical wall bulkheads can be better for fish

- Less turbulence.
- Shallower grade.
- Protection from predators.
- Finer sandy bottom.
- Increased food source.

Benefits for property owners

- Easier access to beach and water, especially nice if you have a kayak or human-powered craft.
- Shallow gradient shore and water can be safer, especially if you have small children.
- More usable shoreline with beach and cove.
- Reduced maintenance.
- Potential for increased property values.
- The pride and pleasure knowing that there are baby salmon rearing off your shore.

Plants, logs, and rocks

Skillful shoreline designers and contractors can combine the use of logs, rocks, and vegetation to stabilize the shoreline and create an attractive lakeshore landscape.

High Beach Cove

The shoreline can be more useful for young fish and homeowners with creation of a high beach cove.