

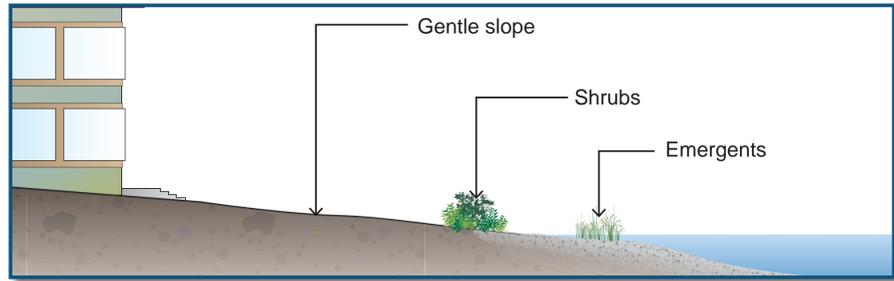
SHORELINE STABILIZATION

Design stabilization to imitate natural shorelines

Avoidance feasible - no need for stabilization. Start Here

Vegetation

Install plants to help reduce erosion and improve habitat.

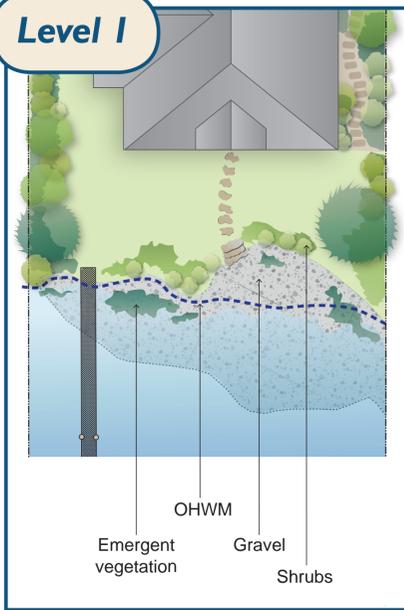


Increasing level of stabilization allowed when avoidance or lesser form of stabilization is not feasible. A determination of feasible alternatives shall consider the following factors:

- Slope
- Ability to mitigate
- Wave height
- Nearshore depth
- Fetch
- Wind direction
- Risk to structure
- Cost

Soft Stabilization

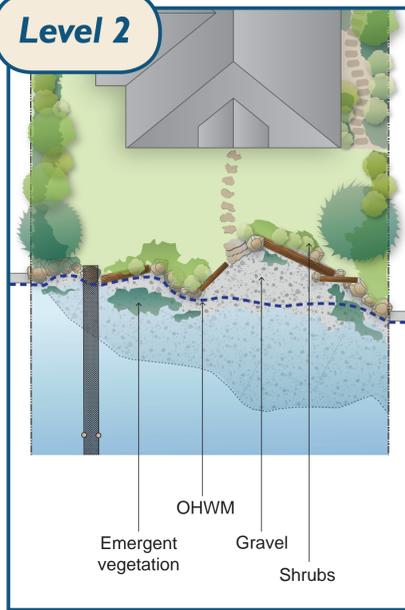
Level 1



Bioengineering

Use bioengineering techniques such as slope contouring, beach nourishment, and planting.

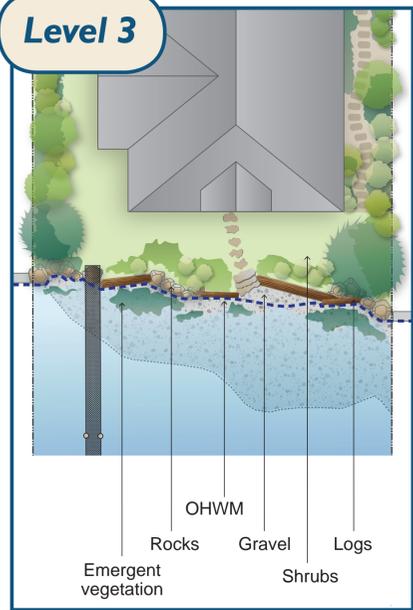
Level 2



Rock and Wood

Semi-natural arrangements of rock and wood, with transition to neighbors' bulkheads.

Level 3



Rigid Structure

Semi-natural arrangements of rock and wood, with greater rigidity to protect primary structure and adjacent properties.

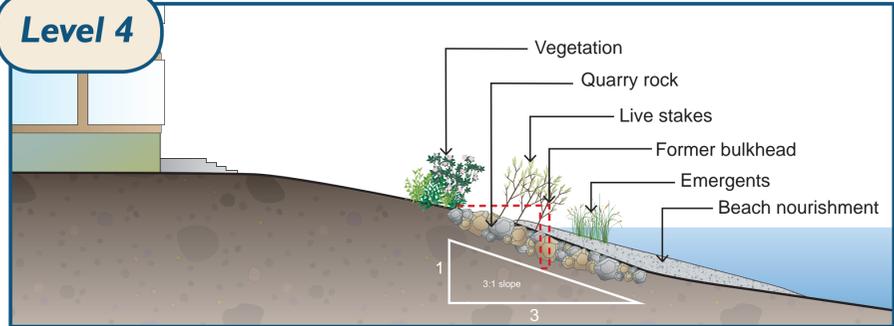
Avoidance infeasible or doing a major repair? Start Here

Hard Stabilization

3:1 Slope

Shallow-sloped bulkhead paired with some bioengineering elements.

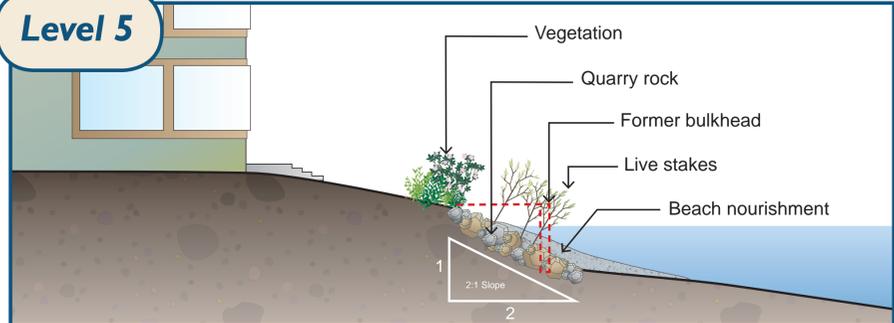
Level 4



2:1 Slope

Modest-sloped bulkhead with narrow vegetation enhancement at toe or top of bulkhead.

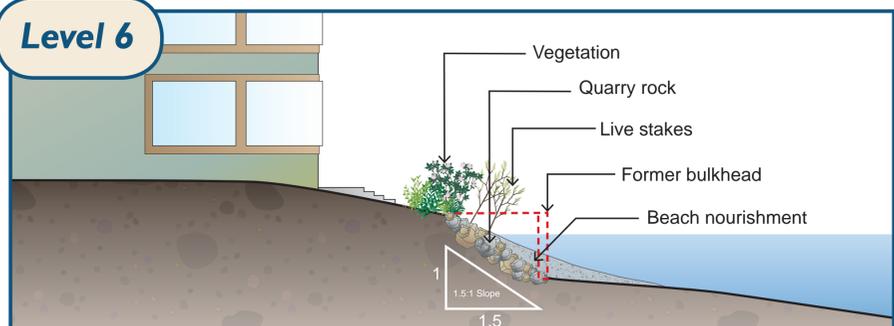
Level 5



1.5:1 Slope

Traditional bulkhead at sites with a primary structure $\leq 10'$ from OHWM.

Level 6



Don't miss this!

A mix of hard and soft stabilization techniques may be used on different portions of a single property.

Graphics adapted from Seattle Green Shorelines.