



Shoreline stabilization:

Bulkheads, armoring, and soft engineering

WAC: Ecological impacts of shoreline stabilization

- Beach starvation
- Habitat degradation
- Sediment impoundment
- Exacerbation of erosion
- Ground water impacts
- Hydraulic impacts
- Loss of shoreline vegetation
- Loss of large woody debris
- Restriction of channel movement and creation of side channels
- Localized erosion at the footings of bulkheads

Soft engineering (vegetation enhancement, upland drainage control, gravel placement) typically has smaller impacts than hard engineering (riprap, bulkheads, seawalls).

Seattle's existing regulations

- Development must be located and designed to minimize the need for shoreline stabilization
- Where impacts can't be avoided, mitigation may be approved.
- Natural beach protection is “encouraged and preferred” (but no specific provisions are given).



Seattle's existing regs. continued

- Shoreline Master Program (1987) allows bulkheads as conditional or special uses in all zones, provided that they do not “detrimentally redirect littoral drift, waves, currents, or sediments...”
- ECA provisions (2006) prohibit new bulkheads except for continued operation of a water-dependent or water-related use. Major repairs are prohibited unless necessary for continued WDWR use, or if soft engineering won't work.
- Problems with both sets of regulations – need to be revised and combined.

Proposed regulations: natural shoreline stabilization

- Clarify: all natural shorelines are exempt from substantial development permits.
- Clarify: natural shoreline projects may extend waterward of ordinary high water to create stable shoreline slopes.



Proposed regulations: natural shoreline stabilization

- Establish a checklist for “green shorelines,” and consider an expedited permitting process for qualifying projects.
- Create an ongoing shoreline exemption for beach nourishment associated with natural shoreline stabilization.



Proposed regulations: bulkheads

- Projects not meeting a certain threshold on the green shorelines checklist will be treated as conditional use bulkheads.
- New or replacement bulkheads are allowed to protect primary structures for any permitted use when there is a demonstrated need and soft engineering isn't sufficient.
- Clarify meaning of “demonstrated need”: geotechnical report documenting a threat to primary structures within three years, or where waiting will reduce opportunities for better approaches

Proposed regulations: bulkheads

- If repairs exceed 50% of bulkhead within 5 years or enlarge the structure, treat as a new bulkhead.
- For single-family residential, only provide exemptions for new bulkheads protecting primary structures, not “appurtenant structures.”



Discussion questions

- Do the proposals effectively encourage alternatives to hard engineering?
- Do they allow new armoring where it is necessary?
- Do they allow maintenance and/or replacement where they are necessary?

