

# Building better docks



## “What’s the goal—shade or no shade?”

Permitting agencies encourage plants that hang over the water, but discourage overwater structures because they shade the water. So what’s the difference?

Natural shorelines provide complex habitat: varied sediment sizes, dappled shade, leaves, twigs, branches, logs, and varying depths. All of these factors help juvenile fish by providing shelter and food sources. Shoreline development, especially bulkheads and docks, tend to simplify habitat. It creates large, homogenous swaths, with shallow-water areas alternating between full sun (between docks) and full shade (under docks). Essentially, speckled or patchy shade can be beneficial for salmon, but conventional docks are the equivalent of a dark alley.

More complex landscapes such as those promoted by green shoreline practices provide more habitat diversity, which in turn supports relatively high biological diversity. Simplified built landscapes provides homogenous habitat, and only support a few species.

People are often surprised to learn that docks can have a major impact on fish. While problems sometimes arise from toxic preservatives leaching off older docks, the bigger issue is that overwater structures change underwater light conditions, affecting the behavior of juvenile salmon and their predators. Regulators and the construction industry have worked together to address this problem, and new dock-building practices have dramatically decreased impacts on the nearshore environment.

Since water moves freely underneath docks, it seems logical that they are not barriers for fish. In fact, research shows that migrating smolts tend to swim around docks rather than underneath them. It is thought that this helps juvenile salmon avoid bass and other predators that hide in the dark shade under these structures. Taking this behavior into consideration, it is apparent that the 2,700+ docks around Lake Washington can add up to taxing and potentially dangerous detours for smolts. The docks add distance to a salmon’s migration to the Ship Canal, and they push much of that migration out into deeper water where small fish are more vulnerable to predation.

Research suggests certain modifications to docks that can improve conditions for salmon while maintaining access for people.

## Making construction clean and green

Like any construction along the shoreline, building or renovating a dock presents a potential disturbance to sensitive shoreline habitat. However, taking the following steps can decrease the impact:

- 1 Work with a contractor who is conscientious about preventing spills and minimizing disturbance of sediments, following Best Management Practices.
- 2 Carefully select wood preservatives for any lumber that will have contact with the water, or use untreated wood. The worst preservatives, creosote and pentachlorophenol, are now banned, but most of the remaining options contain arsenic or copper, which also pose threats to aquatic organisms. Nontoxic alternatives can be difficult to find and are not yet approved under International Building Code. Fortunately, untreated Douglas fir and galvanized or epoxy-coated steel piles last a long time in freshwater.
- 3 Use decking materials that will not require toxic finishes and cleaning agents. No matter how careful you are in applying these chemicals, they end up in the lake. Metal, fiberglass or plastic grating, recycled plastic lumber, and naturally rot-resistant wood can help avoid the problem. For wood needing finishes, look for the least toxic product for the job. The signal word (“poison,” “warning,” “caution,” etc.) at the top of the label gives a general sense of the potential hazards. Avoid products labeled “poison” or “warning” if possible, as these indicate a relatively high hazard level.
- 4 Schedule construction within approved work windows to minimize disturbance to threatened species. These windows are determined based on the nesting season for bald eagles and the migration patterns of salmon. Work windows vary from one part of the lake to another. You will get information for your area during the application process for Hydraulic Project Approval (HPA) from the Washington Department of Fish and Wildlife (see “Getting Permits”).

## Let the sun shine in

Juvenile Chinook salmon have a complicated relationship with docks. As fry, Lake Washington salmon tend to congregate under docks during the day. This can protect them from bird predation, but may make it easier for larger fish to get them. Additionally, during their migration as smolts, docks present an obstacle for salmon to swim around. Allowing more light under docks is thought to help salmon during both the fry and smolt life stages. There are several ways to improve the light conditions under a dock:

- 1 Use grated decking with openings that allow light to pass through.
- 2 Make ramps and walkways narrower, ideally 4’ or less for walkways and 3’ or less for ramps.
- 3 Do not use “skirts,” i.e., boards on the sides of the dock that extend down to the water. Multiple agencies prohibit skirts because of their effect on light in the nearshore area.
- 4 Design the dock such that the bottom of the entire structure is at least 18” above ordinary high water.
- 5 Use structural beams such as glu-lams, which allow longer spans between piles.
- 6 Avoid overwater lights that will be on all night. Although salmon need light during the day, artificial light makes them more vulnerable to predation at night.

These guidelines are highlights of a regional general permit for dock construction issued by the Army Corps of Engineers. Complying with these guidelines can substantially speed up the federal review and permitting for your dock (see “Getting Permits”).

Photo and design: Anchor Environmental







## Estimated costs & maintenance

A survey conducted by Seattle Public Utilities found that most lakefront homeowners prefer vegetation and beaches over bulkheads, but they assume that green shorelines are more expensive than armoring. So what do these projects really cost? It varies, but in general, green shorelines cost about the same as conventional bulkheads. Up-front design, permitting, and construction costs tend to be slightly lower, but maintenance costs make up the difference.

There is an enormous range of costs for shoreline construction. The price for any given renovation depends on site characteristics, the professionals that design and build your project, and, to a large extent, your preferences. Also, cost estimates presented here are based on 2008 rates – actual costs fluctuate.

### Bulkhead removal

If your site has an existing bulkhead, the cost to remove it is the same whether you are replacing it with a new bulkhead or an alternative. Costs typically range from about \$30 to \$125 per linear foot, depending on bulkhead material and site access.

### Design and Construction

Green shorelines project tend to cost slightly less for design and permitting, since they tend to require fewer revisions to meet regulatory conditions. “We’ve found that natural shoreline projects sail through the permitting process. We frequently get permits in three months or less, while bulkhead projects can take up to a year,” says one designer who specializes in residential beach restoration. A faster permitting process translates to less money spent sending your designer or contractor to government offices.

Once the old bulkhead has been removed to make way for construction, slope bioengineering or beach construction cost about the same as a new bulkhead, while riprap generally costs somewhat less.

### Maintenance

Maintenance and long-term costs represent important differences between conventional approaches and green shorelines. While residential bulkheads typically require no maintenance over the course of their 25-50 year life spans, green shorelines may require periodic beach nourishment (see “Full Beaches”).

Although they require upkeep, beaches and bioengineered shorelines have an important long-term advantage: while bulkheads settle, weaken, and eventually fail, the alternatives can last indefinitely if maintained properly. Aside from supplementary gravel and any replacement plants needed during the establishment period, no large future investments are likely to be needed.

### Several factors help determine whether your project is likely to fall at the low end or high end of the possible cost range:

- 1 Grading:** Projects that require large volumes of cut or fill are more expensive than those that do not require major excavation.
- 2 Access:** If your shoreline can be accessed by land, costs will be lower than they would be for sites that require equipment to be brought by water.
- 3 Planting plan:** Planting in the fall and using native plants can bring down costs. Both strategies decrease the need for irrigation and improve plant survival, reducing the need for replacement plantings in the first year.
- 4 Project size:** While larger projects cost more as a whole, they carry lower costs per unit. That is, cost per linear foot of a 70’ long beach will be less than that of a 25’ long beach. Along these lines, working with a neighbor to renovate both shorelines at the same time can substantially lower construction costs for each project.

note



Bulkhead removal costs			
SITE ACCESS	BULKHEAD MATERIAL (REMOVAL)		
	Wood	Riprap	Concrete
Accessible from land and water	\$30-40 per linear foot	\$45-60 per linear foot	\$95-110 per linear foot
Accessible from water only	\$40-55 per linear foot	\$55-80 per linear foot	\$100-125 per linear foot

Shoreline construction costs (as of 2008)					
Cost Category	CONVENTIONAL TREATMENTS		GREEN SHORELINES		
	Solid bulkheads	Riprap	Beach Establishment	Slope bioengineering	Docks
Capital Costs	Average rock or concrete bulkhead is \$350 to \$400 per linear foot, sheetpile is \$800+ per linear foot	Average riprapped bank is \$125 to \$200 feet per linear foot	Average beach establishment is \$200 to \$500 per linear foot	Average bioengineering project is \$200 to \$500	Average new dock costs \$100 to \$130 per square foot
Design and Permitting	10-15% of capital costs for larger projects (greater than \$100K), 20-25% for smaller projects		7-12% of capital costs for larger projects (greater than \$100K), 15-20% for smaller projects		Similar to bulkheads
Maintenance	No maintenance is usually required for 25-50 year life span of projects		Sand replenishment at a 1-5 year frequency, gravel at a 5-10 years, both \$3 to \$6 per square foot of beach – with proper maintenance, project can last indefinitely		Similar to bulkheads



# Choosing a shoreline professional



Design: The Watershed Company

Almost all shoreline projects, aside from minor landscaping above the water line, will require some hired help from one or more professionals. These individuals use their training and experience to help you navigate the technical details of designing, permitting, building, and maintaining a durable, attractive shoreline. The professionals that you hire help determine how smoothly your design and permitting processes will go, as well as the final outcome of your project. It is worth taking extra care at the outset to find the right professional for you.

Depending on your time, budget, and the specifics of your site, you may find yourself looking for a landscape architect, landscape designer, engineer, contractor, and/or permit specialist. Some companies do all of these things, and others specialize in one. Start by identifying your priorities for your new waterfront. Make a list of features or qualities that you like, either from this guidebook or from projects that you have seen around the lake.

Talk to friends and neighbors who have undertaken recent shoreline work. Their experiences can give you leads, or can help you cross candidates off your list. After identifying several candidates, ask to see photos of recent work or to visit any of their projects. Be sure to tell them that you are interested in a green shorelines or “soft engineering” approach for your project so they can show you the most relevant examples. Inquire specifically about the practices that each contractor uses to minimize impacts on the shoreline environment. Once you have narrowed the list down to three or four companies, invite representatives to your property to get personalized recommendations and estimates.

As you interview potential designers or contractors, assess their experience as well as their willingness to help you realize your vision for the project. Make sure that you are confident in their abilities and that you will be able to have a collaborative relationship.

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# Getting permits

The permitting process can be daunting for any shoreline project. Agencies at local, state, and federal levels review shoreline plans to ensure that development in and around shorelines will protect safety, the aquatic environment, endangered species, and water quality. The resulting multilayered regulatory process can seem confusing and overwhelming. Fortunately, help is available.

Staff from the agencies listed in “Contacts” can help you navigate through specific requirements. The Governor’s Office of Regulatory Assistance can also provide guidance: Call 1-800-917-0043 or visit [www.ora.wa.gov](http://www.ora.wa.gov) for free support regarding environmental permits and permitting processes.

Additionally, jurisdictions at all levels are working to encourage the kinds of practices highlighted in this guidebook. Many of them already have some regulations that favor green shorelines, and most are working to make the process smoother for shoreline restoration. If you follow the recommendations in this guidebook, the permitting process is likely to be noticeably easier and faster. Good design and thorough documentation are always necessary for obtaining permits, but proposed projects that feature beaches and plantings will tend to be more successful than those that emphasize armoring.

**Any project that involves work in, over, under, or adjacent to water requires review from three levels. Each project may be required to obtain the following permits from the following agencies:**

## 1 Local jurisdiction (your city or King County)

- Shoreline substantial development permit or exemption
- Environmentally Critical Area permit
- State Environmental Policy Act (SEPA) permit or exemption
- General construction permits

## 2 State agencies

- Washington State Department of Fish and Wildlife
  - Hydraulic Project Approval (HPA)
- Washington Department of Ecology
  - Section 401 Water Quality Certification
  - Coastal Zone Management Certification
  - NPDES Stormwater General Permit

## 3 United States Army Corps of Engineers

- Discharge of Dredge or Fill Material, Section 404 Permit
- Work for Structures in Navigable Waters, Section 10 Permit

## Application materials

In most cases, the permitting process will be handled by your project designer or contractor. Information that they will need to provide with the application includes:

- 1 Joint Aquatic Resources Permit Application (JARPA) form. In an effort to streamline permitting, multiple agencies have worked together to develop a single application form. The form is currently used by WDFW, Department of Ecology, and the Corps, and it may be used by some local jurisdictions in the future. Find the form and more information at <http://www.epermitting.org/default.aspx>.
- 2 Plans and, if applicable, surveys of existing conditions.
- 3 Plans for proposed construction, including plan (aerial) view and cross sections. The JARPA specifies an 8½”x 11” copy for fax and public notice purposes, but larger plans are required for most local reviews. Each municipality has its own standards for drawings, so be sure to research these before preparing your application packet.
- 4 Photos or aerial photos of existing conditions may be helpful.
- 5 Any additional studies or specifics you already have for your site—erring on the side of too much information will help your application get through the process faster. For example, if one agency requires you to conduct a geotechnical study or biological evaluation, include the results in all of your permit applications.

Many permit reviews are delayed while agencies wait for additional information from applicants. Remember to review application requirements, use the most current forms, provide all the required information, and obtain all the necessary signatures before attending a permit review meeting.

**Permit application timeline**

Permitting takes time. It is ideal to start the permit application process a full year before the desired work start date. While green shorelines projects are sometimes permitted in as little as three months, the process can be lengthy since several steps have to occur in a specific sequence.

Before you draw any plans, start by reviewing local permitting rules, Corps and WDFW design guidelines, and information requested on the JARPA form. Find out if there are any examples, conditions, or concerns for your specific type of project. Also understand what work windows are and how they might affect your project timeline (see “Building Better Docks”).

Once you and your designer complete a concept design for your project, meet with your local agency for early design guidance and review of your preliminary plans. Taking this step before completing plans will save time and money.

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Since Corps permits are the most complex, consider submitting your applications to both the Corps and local jurisdiction at the same time. As part of its review process, the Corps is required to consult with other agencies such as the Washington State Department of Ecology (DOE), tribal agencies, NOAA Fisheries, and the United States Department of Fish and Wildlife. Except for the DOE, you probably will not work directly with these other agencies. DOE will begin formal review of your application once it receives official notification from the Corps.

**Tips to facilitate the Army Corps permit process**

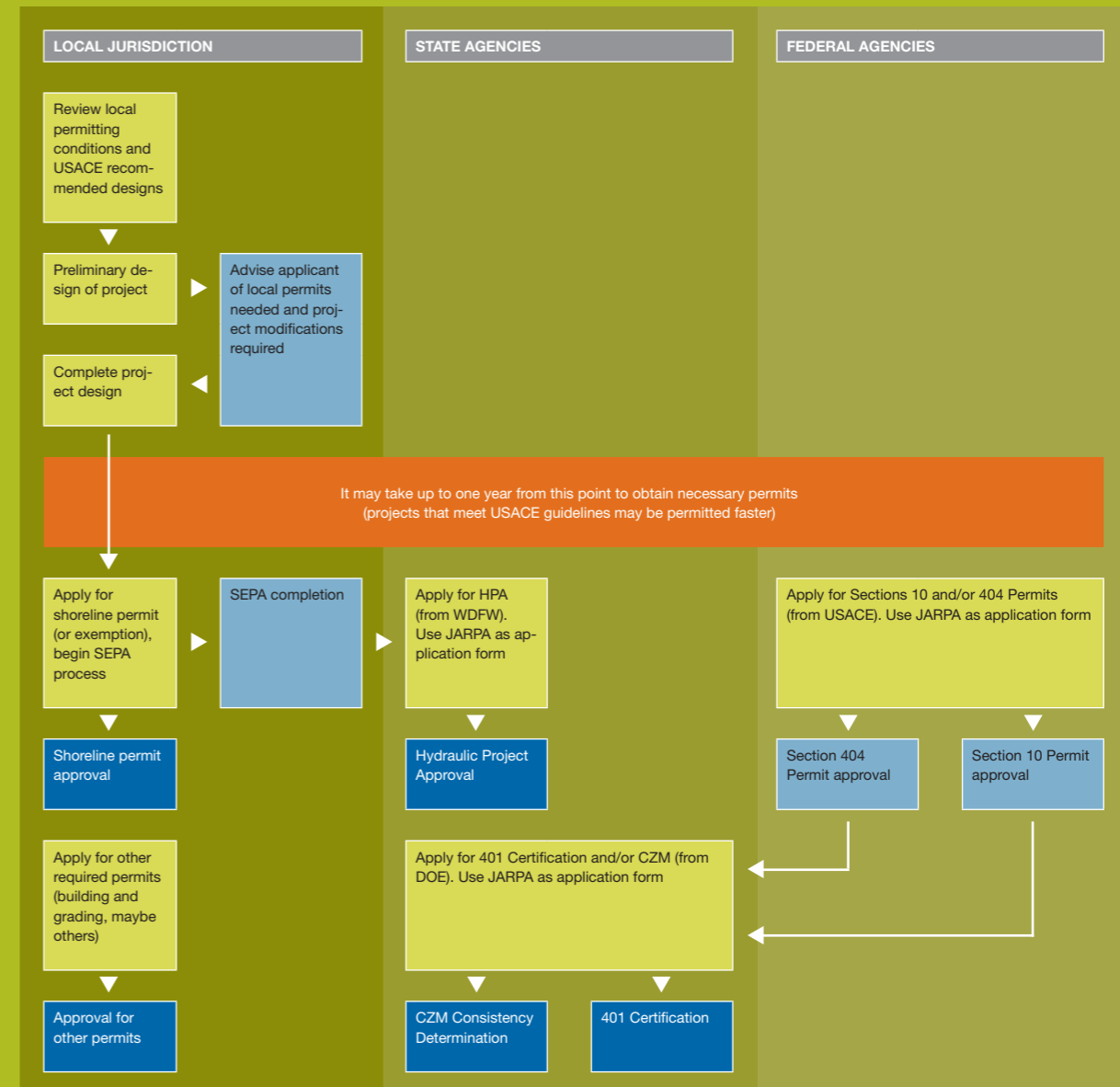
The Corps has written several documents that can accelerate the process of getting federal permits. Most significant for green shoreline projects is a “Programmatic Biological Evaluation” for shoreline restoration that the Army Corps wrote in collaboration with NOAA Fisheries and the U.S. Fish and Wildlife Service. It includes criteria for cut beaches, fill beaches, and bulkhead plantings. If your project meets the conditions listed, you will be able to forgo the site-specific Endangered Species Act analysis, which is typically the most involved part of getting federal permits. To determine whether your project meets the programmatic conditions, visit: <http://www.nws.usace.army.mil/PublicMenu/Menu.cfm?sitename=REG&pagename=Programmatics>

Also, a Regional General Permit (RGP3) provides clear guidelines for docks on Lake Washington and Lake Sammamish, most of which are outlined in “Building Better Docks.” If you can demonstrate that your proposed project meets the conditions of RGP3, it will greatly simplify the Corps review. To download RGP3, visit: [http://www.nws.usace.army.mil/PublicMenu/Menu.cfm?sitename=REG&pagename=mainpage\\_RGPs](http://www.nws.usace.army.mil/PublicMenu/Menu.cfm?sitename=REG&pagename=mainpage_RGPs)

The Corps has a series of general permits known as Nationwide Permits for activities that have minimal environmental impact. If your project does not meet the criteria of RGP3, Nationwide Permits 3, 13, and 27 may help streamline permitting. For more information, visit: [http://www.nws.usace.army.mil/PublicMenu/Menu.cfm?sitename=REG&pagename=What\\_is\\_NWP](http://www.nws.usace.army.mil/PublicMenu/Menu.cfm?sitename=REG&pagename=What_is_NWP)

The flow chart provided here represents the process for a typical residential shoreline project. It does not cover every possible variation that can arise for specific projects.

**Schematic of the permitting process for residential shoreline projects on Lake Washington**



Design and Photo: J.A. Brennan Associates



- Applicant's responsibility
  - Permitting agency's responsibility
  - Permitting complete
- CZM - Coastal Zone Management
  - DOE - WA Department of Ecology
  - HPA - Hydraulic Project Approval
  - JARPA - Joint Aquatic Resources Permit Application
  - SEPA - WA State Environmental Policy Act
  - WDFW - WA Department of Fish & Wildlife
  - USACE - US Army Corps of Engineers



## Resources

The following publications and websites served as sources for this guidebook. They include additional information based on shoreline restoration efforts around the country. For links to these sites and more, please visit the Green Shorelines website, [www.seattle.gov/dpd/GreenShorelines](http://www.seattle.gov/dpd/GreenShorelines).

### Lakeside Living (King County)

[www.govlink.org/watersheds/8/action/lakeside-living](http://www.govlink.org/watersheds/8/action/lakeside-living)

### Salmon-Friendly Gardening (City of Seattle)

[www.seattle.gov/util/Services/Yard/Natural\\_Lawn\\_&\\_Garden\\_Care/Salmon\\_Friendly\\_Gardening/index.asp](http://www.seattle.gov/util/Services/Yard/Natural_Lawn_&_Garden_Care/Salmon_Friendly_Gardening/index.asp)

### Lakescaping for Water Quality and Wildlife (Minnesota Department of Natural Resources),

by Carrol Henderson, Carolyn Dindorf, and Fred Rozumalski. May be purchased online at [www.comm.media.state.mn.us/bookstore/bookstore.asp](http://www.comm.media.state.mn.us/bookstore/bookstore.asp)

### Slope Stabilization and Erosion Control (Washington State Department of Ecology)

[www.ecy.wa.gov/programs/sea/pubs/93-30/index.html](http://www.ecy.wa.gov/programs/sea/pubs/93-30/index.html)

### Alternative Bank Protection Methods for Puget Sound Shorelines (Department of Ecology)

[www.ecy.wa.gov/biblio/0006012a.html](http://www.ecy.wa.gov/biblio/0006012a.html)

### Native Plant Resources Directory (King County)

[green.kingcounty.gov/GoNative](http://green.kingcounty.gov/GoNative)

### Puget Sound Shoreline Stewardship Guidebook (Puget Sound Action Team)

[www.kingcounty.gov/environment/watersheds/central-puget-sound/shoreline-stewardship-guidebook.aspx](http://www.kingcounty.gov/environment/watersheds/central-puget-sound/shoreline-stewardship-guidebook.aspx)

### The Shoreline Stabilization Handbook: Lake Champlain and Other Inland Lakes (Northwest Regional Planning Commission)

[www.nrpcvt.com/nrpcvt/shoreline.html](http://www.nrpcvt.com/nrpcvt/shoreline.html)

### Green Home Remodel series (City of Seattle)

In particular, see “Landscape Materials” and “Hiring a Pro.” [www.seattle.gov/dpd/GreenBuilding/SingleFamilyResidential/Resources/RemodelingGuides/default.asp](http://www.seattle.gov/dpd/GreenBuilding/SingleFamilyResidential/Resources/RemodelingGuides/default.asp)

### The Water’s Edge: Helping fish and wildlife on your waterfront property (Wisconsin Department of Natural Resources)

[www.dnr.wi.gov/fish/pubs/thewatersedge.pdf](http://www.dnr.wi.gov/fish/pubs/thewatersedge.pdf)

### Governor’s Office of Regulatory Assistance,

including documents such as a Aquatic Permitting Fact Sheet, a Permit Handbook, permit schematics, and an on-line permit questionnaire, [www.ora.wa.gov](http://www.ora.wa.gov)

### Army Corps of Engineers permit process overview

[www.nws.usace.army.mil/PublicMenu/Menu.cfm?sitename=REG&pagename=mainpage\\_Permit\\_Applicant\\_Info](http://www.nws.usace.army.mil/PublicMenu/Menu.cfm?sitename=REG&pagename=mainpage_Permit_Applicant_Info)

## Contacts

### United States Army Corps of Engineers, Seattle District Office

Mailing Address:  
P.O. Box 3755  
Seattle, WA 98124

Street Address:  
4735 E. Marginal Way South  
Seattle, WA 98134  
(206) 764-3742  
[www.nws.usace.army.mil](http://www.nws.usace.army.mil)

### Washington Department of Fish and Wildlife, Region 4

1775 12th Ave NW  
Issaquah, WA 98027  
(425) 313-5660  
[www.wdfw.wa.gov/reg/region4.htm](http://www.wdfw.wa.gov/reg/region4.htm)

### Department of Ecology, Northwest Regional Office

3190 160th Ave SE  
Bellevue, WA 98008  
(425) 649-7000  
[www.ecy.wa.gov](http://www.ecy.wa.gov)

### Governor’s Office of Regulatory Assistance

1-800-917-0043  
[www.ora.wa.gov](http://www.ora.wa.gov)

### City of Seattle, Department of Planning and Development

700 5th Ave., Suite 2000  
Seattle, WA 98124  
(206) 684-8600  
[www.seattle.gov/dpd/Permits/default.asp](http://www.seattle.gov/dpd/Permits/default.asp)

### City of Mercer Island, Development Services

9611 SE 36th St.  
Mercer Island, WA 98040  
(206) 275-7605  
[www.ci.mercer-island.wa.us/SectionIndex.asp?SectionID=43](http://www.ci.mercer-island.wa.us/SectionIndex.asp?SectionID=43)

### City of Bellevue, Development Services

450 110th Ave. NE  
P.O. Box 90012  
Bellevue, WA 98009  
(425) 452-6800  
[www.ci.bellevue.wa.us/development\\_services\\_center\\_intro.htm](http://www.ci.bellevue.wa.us/development_services_center_intro.htm)

### City of Renton, Development Services

Renton City Hall  
1055 S. Grady Way  
Renton, WA 98057  
(425) 430-7200  
[www.rentonwa.gov/government/default.aspx?id=1112](http://www.rentonwa.gov/government/default.aspx?id=1112)

### City of Kirkland, Planning Department

123 5th Ave  
Kirkland, WA 98033  
(425) 587-2225  
[www.ci.kirkland.wa.us/depart/Planning.htm](http://www.ci.kirkland.wa.us/depart/Planning.htm)

### City of Redmond, Department of Planning and Community Development

PO Box 97010  
Redmond, WA 98073  
(425) 556-2473  
[www.ci.redmond.wa.us/insidecityhall/planning/planning.asp](http://www.ci.redmond.wa.us/insidecityhall/planning/planning.asp)

### City of Sammamish, Community Development Department

801 228th Ave SE  
Sammamish, WA 98075  
(425) 295-0500  
[www.ci.sammamish.wa.us/CommunityDevelopment.aspx](http://www.ci.sammamish.wa.us/CommunityDevelopment.aspx)

### City of Lake Forest Park, Planning and Building Department

17425 Ballinger Way NE  
Lake Forest Park, WA 98155  
(206) 368-5440  
<http://www.cityoflfp.com/city/planning.html>

### City of Kenmore, Community Development

6700 NE 181st Street  
P.O. Box 82607  
Kenmore, WA 98028  
(425) 398-8900  
<http://www.cityofkenmore.com/dept/cd/cdindex.html>

### King County, Department of Development and Environmental Services

Black River Corporate Park  
900 Oakesdale Avenue SW  
Renton, WA 98057  
(206) 296-6600  
[www.kingcounty.gov/permits](http://www.kingcounty.gov/permits)

## Glossary

**Armoring:** Any hard engineering approach to shoreline protection. This includes structures made of concrete, riprap, and sheetpile. While needed on some properties, armoring is often unnecessary, and causes negative impacts on fish habitat, water quality, and access to the water.

**Beach nourishment:** Adding appropriate gravel to the shoreline in order to offset gradual erosion. Typically needed every five to ten years for beaches on Lake Washington.

**Emergent plants:** Plants that thrive while partially submerged. In addition to having striking visual qualities, emergent plantings are an effective way to enhance near-shore habitat and provide reinforcement against erosion. Often difficult to establish in Lake Washington, given the lake's unusual hydrology (see "Plant List").

**JARPA:** Joint Aquatic Resources Permit Application, a form developed by multiple regulatory agencies to streamline the environmental permitting process (see "Getting Permits").

**Nearshore habitat:** Shallow areas waterward of the shoreline, which make up the most biologically active part of the lake. Aquatic plants, juvenile salmon, shore birds, and numerous other organisms depend on this habitat. Nearshore slope can be a key factor in determining which kinds of restoration work on a given site (see "Selecting the Right Approach").

**Ordinary high water line:** The elevation where high water meets the shore. Water level in Lake Washington, which peaks in the summer at 21.85 feet above sea level, is regulated at the Ballard Locks. In most cases, local, state, and federal permitting processes are triggered when development occurs at or below the ordinary high water line.

**Riprap:** Stone commonly used for bulkheads or other bank stabilization efforts; ranging from about 4" to 2' in diameter. Also known as rip-rap, rubble, revetment, or rock armoring.

**SEPA:** State Environmental Policy Act, a state process that requires state and local agencies to consider the environmental consequences of a proposal before approving or denying the proposal.

**Sheetpile:** A type of wall used as a bulkhead on sites with shallow setbacks. Typically made of steel, vinyl, fiberglass, or treated wood, sheetpile walls have all the negative effects of concrete and typically cost more.

**Shoreline exemption:** A determination that a proposed project does not require a shoreline substantial development permit. Shoreline substantial development permits are required by state law for many development activities in shoreline areas, but most single-family residential projects are exempt (see "Getting Permits").

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our sound, our community, our chance