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Lake Washington Shoreline Permitting Process Study



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Executive Summary: Lake Washington Shoreline Permitting Process Study

A summary of key findings and recommendations for improving Lake Washington shoreline permitting processes

Who is the Lake Washington Shoreline Team?

We are an interdisciplinary group of graduate students enrolled in the University of Washington’s Environmental Management Certificate Program and represent four different graduate schools at the university. During the 2007-2008 academic year we performed a study of the Lake Washington Shoreline Permitting Process.

Study Rationale

The physical and ecological function of Lake Washington has been drastically altered by humans over the last century. The Cedar River was redirected to flow into Lake Washington. With this alteration, migrating Puget Sound Chinook Salmon (a threatened species under ESA protection) now utilize Lake Washington as juvenile rearing grounds. Optimal rearing grounds for juvenile salmon, characterized by a low gradient of sand or gravel, overhanging vegetation along the water’s edge, nearshore logs and woody debris, nearby wetlands, and the absence of large objects over the water that create dark shaded areas are sparsely present on Lake Washington’s shorelines. Over 70% of Lake Washington’s shoreline is retained by bulkheads and riprap owned primarily by single-family residential landowners.

The Permitting Process as a Barrier and Incentive

In 2006-2007 a University of Washington Environmental Management Certificate Group called the ‘Fish Friendly’ group surveyed Lake Washington private landowners to identify barriers to and incentives for the implementation of eco-friendly shoreline designs. Survey participants identified the permitting process as the top barrier to implementing eco-friendly shorelines. Approximately 75% of shoreline landowners identified streamlining the permitting process as a potential incentive for implementing eco-friendly shorelines.

The Project Goal and Objectives

Goal: encourage Lake Washington landowners to implement eco-friendly shorelines

Project Objectives:

- Perform a policy analysis of the permitting process for Lake Washington residential shoreline projects
- Create end products that can be used to promote eco-friendly shorelines on Lake Washington



Study Methods

Twenty-seven in-person interviews were conducted with permit issuers (local, state, and federal agencies) and permit applicants (private landowners, contractors, and consultants). A content analysis of the interview data allowed us to identify common themes, and to compare responses between stakeholder groups. The interview findings were used to inform a policy analysis of the permitting process to provide a framework for permit issuers to consider alternative approaches to the permitting process.

Key Interview Findings

The permitting process is confusing and complicated, leading private landowners to rely on their contractors and consultants to aid them through the permitting process. Because individual permit issuing agency staff are responsible for administering a variety of permits, they are often unfamiliar with how their shoreline related permits fit into the permitting process at large.

Lack of adequate resources and information about eco-friendly shorelines was identified by all interviewees.

Communication/coordination problems exist among permit issuers about the sequence of permit applications and the requirements for shoreline designs.

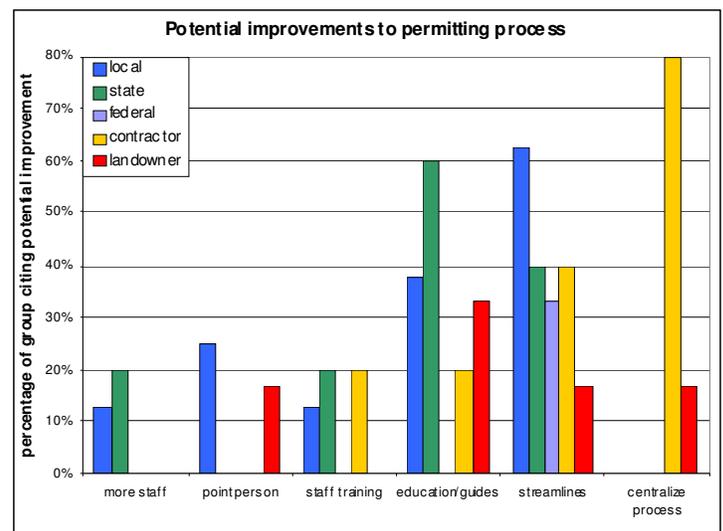
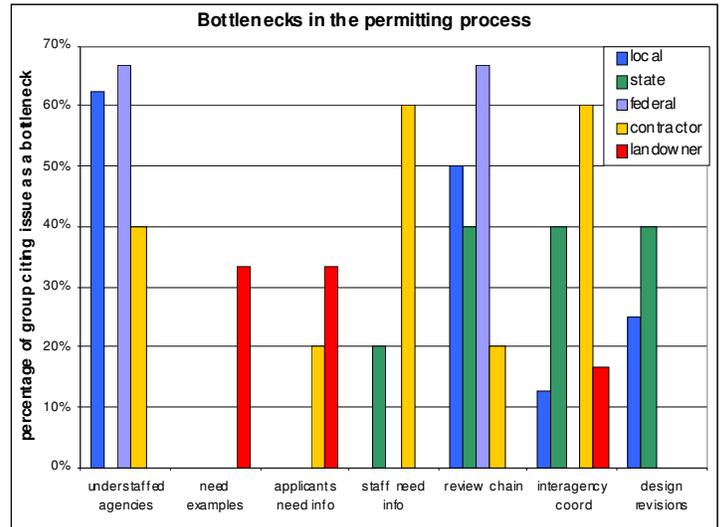
Non-permitted (illegal) shoreline work is common and widely recognized by private landowners, posing both environmental and public safety risks.

Few incentives for eco-friendly shoreline designs exist even with the new federal Lake Washington Shoreline Protection Alternatives Programmatic.

Policy Analysis

Policy Objective: To increase suitable nearshore habitat for juvenile salmon in Lake Washington by encouraging shoreline landowners to implement eco-friendly shorelines

		POLICY CRITERIA			
		Environmental Effectiveness	Program Costs	Viability	Environmental Review
POLICY OPTIONS	Status Quo	Low	None	Easy	Stringent
	Education & Outreach	Medium	Moderate	Easy	Balanced
	Financial Incentives	High	Expensive	Difficult	Stringent
	Permit Streamline and Code Changes	Medium	Moderate	Moderate	Balanced



Policy Options: 1) Maintain the status quo, 2) Education/outreach and coordination both among and between stakeholder groups, 3) Provide financial incentives, 4) Make changes in code for permit streamlining

Policy Criteria: 1) Environmental effectiveness, 2) Program implementation costs, 3) Political viability and equitability, 4) Adequate environmental review

Key Policy Analysis Findings

The status quo is not working well; the current permitting process is hindering the policy objectives.

Tax incentives are not feasible as they are politically charged and may not represent the general interest of the public.

Increased enforcement is not viable; this is option is costly and hinders positive relationships between permit issuers and applicants.

Education for all stakeholders and interagency coordination are viable and cost effective.

Recommendations

- Streamline the permit process for eco-friendly shoreline designs at the state and/or local level.
- Increase outreach and education efforts to Lake Washington property owners and shoreline contractors.
- Promote collaboration and coordination between the local, state and federal permit issuing agencies that regulate shoreline construction on Lake Washington.

Project Deliverables

Report. Written to document the Lake Washington Shoreline Permitting Process Study in full for the benefit of permit issuing agencies and our community partners, it contains more detailed information about our key findings and recommendations.

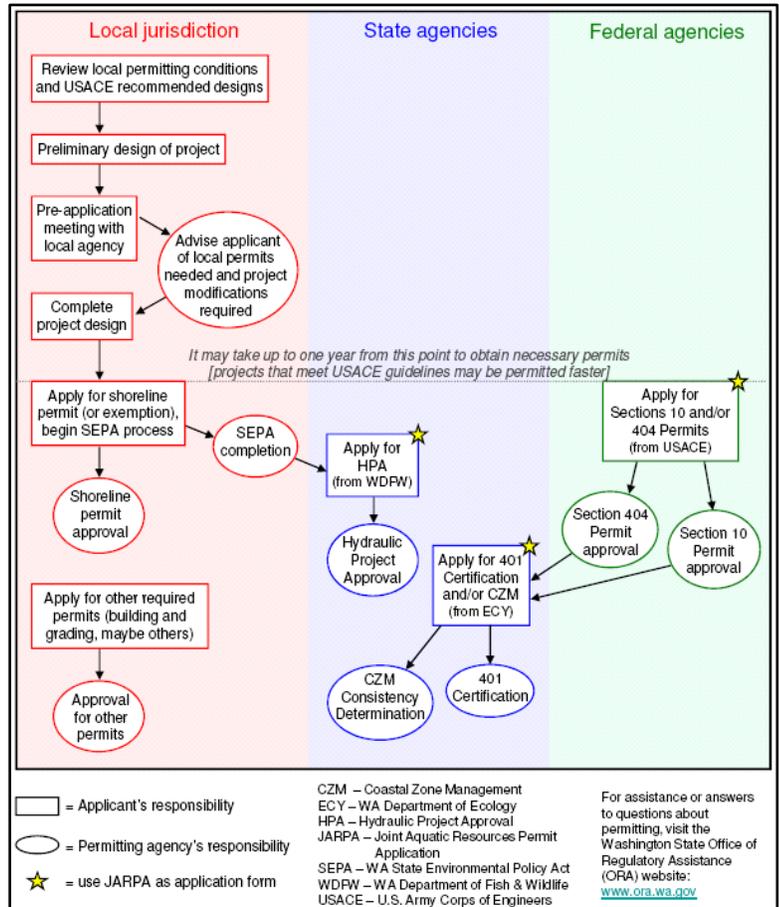
Permitting Process Schematic for landowners/applicants. A schematic of the entire permitting process for Lake Washington shoreline projects did not previously exist. This schematic provides a general overview of the permitting process including, and the general ordering of permit applications and review, the permits and permit applications involved, and the permit issuers involved in each step.

Information and Resources

For more information and electronic access to our full report and other Lake Washington Shoreline Team documents and presentations please visit our website: http://courses.washington.edu/emksp07/NOAA_AltTradShorelines

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Lake Washington Shoreline Permitting Process Schematic for landowners and applicants

Introduction

Background

Lake Washington provides important habitat for numerous species including the threatened Puget Sound Chinook salmon. Lake Washington's shoreline has been and continues to be drastically altered for human use. Historically the lake's edge was a mixture of conifer forests, willow thickets, and wetlands that filtered stormwater runoff and provided nutrient inputs. Today a majority of the lake's shoreline is comprised of bulkheads, riprap, and non-native vegetation that do not provide the ecological functions necessary to support a healthy lake and threatened species.

Conventional shorelines (bulkheads and riprap) threaten the health of the lake, yet they make up more than 70% of Lake Washington's shoreline¹. The majority of the shoreline is owned by residents empowered to choose the type of shoreline design they want on their property. Eco-friendly shorelines that promote lake health are possible, but landowners on Lake Washington perceive the process of converting to an eco-friendly shoreline as expensive and as a permitting nightmare. Residents also worry that eco-friendly shorelines will be ineffective at controlling erosion and protecting the land from wave and wake energy. These issues ranked as the most common concerns of private landowners in a survey conducted by the Fish Friendly Shorelines group.

Fish Friendly Shoreline Project

The Fish Friendly Shorelines group was a team of 2006-2007 Environmental Management students who performed a survey of private landowners around Lake Washington to collect information about shoreline resident's use of their shoreline and their opinions about what best promotes healthy shorelines². The Fish Friendly survey identified the permitting process, along with cost and ineffectiveness to erosion control, as one of the top barriers to shoreline property owners implementing eco-friendly shorelines. The study also identified streamlined permitting, along with tax incentives and matching funds, as one of the top three incentives for residents to use eco-friendly design on their shoreline. The findings from the Fish Friendly study encouraged our team to investigate why the permitting process was perceived as a top barrier to implementing more eco-friendly shorelines.

Although resident's responses may have been influenced by personal experience, it is also possible that their views were informed by biased information given to them from other landowners or contractors. Further investigation was needed to assess whether these barriers were real or simply perceived. An opportunity existed for our team to assess the permitting process to identify its areas of weakness, find a way to circumvent any possible mazes, and determine whether lack of knowledge of the permit process by landowners is a problem source point. The team's community partners indicated that many

¹ Toft, J.D. 2001. *Shoreline and Dock Modifications in Lake Washington*. Technical Report. SAF-UW-0106, School of Aquatic and Fishery Sciences, University of Washington, Seattle, Washington.

² Howell, R., Casad, G., Fries, D., Roberts, K., Russo, B., Wallis, A. 2007. *Wildlife-Friendly Shoreline Modifications on Lake Washington: Summary of Shoreline Property Owner Survey and Regulatory Interviews*. Environmental Management Keystone Project Final Report, Program on the Environment, University of Washington, Seattle, Washington.

of the agencies involved in the permitting process want to work more collaboratively to make permitting a smoother process, but they often do not know how to do this.

Eco-Friendly Shorelines

A shoreline is eco-friendly if it promotes beneficial ecosystem functions to wildlife while still preventing erosion and maintaining human enjoyment of the lake. Eco-friendly shorelines do not all look alike, but they may include such features as beach coves or full beaches, overhanging vegetation or planting buffers, bulkheads that are set back an appreciable distance behind the ordinary high water mark (OHWM), appropriately placed logs or large woody debris, and biotechnical slope stabilization. For more information, see the City of Seattle's *Living Shorelines* guidebook due out in summer 2008.

Goal and Objectives

Our overall project goal is to *improve ecosystem functions of Lake Washington by encouraging shoreline landowners to implement eco-friendly shoreline designs*. This can be accomplished through a measurable reduction in hardened shoreline around Lake Washington. We aimed to do this by investigating the permitting process to identify what role it plays in the implementation of eco-friendly shorelines, and by assisting our community partners in educating all stakeholders involved on the costs and benefits of eco-friendly versus traditional hardened shorelines. Our specific project objectives included:

- Performing a policy analysis of the shoreline construction permitting process that Lake Washington landowners are required to navigate
- Use this information to create end products that we or our community partners will use to promote eco-friendly shorelines on Lake Washington
- Provide educational resources for private landowner regarding their shoreline design options

Project Rationale

The physical and ecological function of Lake Washington has been drastically altered by humans over the last century. Historically, the lake was drained by the Black River, which fed into the Duwamish River flowing into Elliot Bay. The Duwamish Estuary at the mouth of the Duwamish River was the primary rearing area for juvenile Chinook salmon. The Cedar River also fed into the Black River downstream from Lake Washington. In 1916, the Lake Washington Ship Canal and Chittenden Locks were completed, connecting the lake to Shilshole Bay. The Cedar River was redirected to flow into Lake Washington. These actions resulted in lowering the water level of the lake roughly ten feet, exposing 5.4 km² of previously shallow water habitat, and eliminating many of the lake's wetlands³. Furthermore, residential development on the lake resulted in the construction of bank reinforcements in the form of bulkheads and riprap at the lake's edge, changing nearshore conditions from a low gradient with small gravel and sand substrates to a steep gradient more vulnerable to erosion from wave energy. The

³ Kerwin, J. 2001. *Salmon and Steelhead Habitat Limiting Factors Report for the Cedar-Sammamish Basin*. Washington Conservation Commission.

engineered changes in the rivers and lake also forced migrating salmon and other fish to change their migratory routes and rearing grounds. Juvenile Chinook salmon now rear primarily in nearshore areas of Lake Washington.

This area is critical for the survival of the native fish so highly valued as a member of the ecosystem and as food, especially by Native American tribes. Fish must now travel different migratory corridors and rearing areas than they historically used. Optimal rearing areas for juvenile salmon are characterized by shallow water, a low shoreline gradient, overhanging vegetation along the water's edge, nearshore logs and woody debris, nearby wetlands, and the absence of large objects over the water such as docks that create dark shaded areas. A steep gradient with a hard retaining wall at the water's edge creates deep nearshore areas in which juvenile salmon are less able to find food and are vulnerable to predation. In 1999, Puget Sound Chinook salmon and bull trout were listed as "threatened" species under the Endangered Species Act (ESA). Under the ESA, federal agencies must ensure that actions they authorize are not likely to jeopardize the continued existence or result in adverse modification of designated critical habitat of listed species⁴.

Since the nearshore of Lake Washington is already significantly altered in ways that seriously compromise the critical habitat of Chinook salmon, efforts to comply with the ESA and to more generally enhance the health of the lake ecosystem have focused on "restoration" of the shoreline. Of course, the lake's shoreline cannot be restored to its natural conditions because the water is almost ten feet lower than its natural level and homes and other structures have been built on the land that was historically under water. Furthermore, since most of the lakefront property is owned by private individuals and currently retained by bulkheads and riprap, it would be very difficult, if not politically impossible, for regulatory agencies to mandate that critical areas of the shoreline be restored to conditions that mimic the natural shoreline. Thus, the U.S. Army Corps of Engineers (USACE) in consultation with the National Oceanic and Atmospheric Administration (NOAA) is working to fulfill its obligations under the ESA by cooperating with local and state agencies to require shoreline design that enhances habitat for Puget Sound Chinook salmon as part of any proposed significant work on Lake Washington shorelines.

The Washington Shoreline Management Act (SMA) requires that shoreline natural resources be protected against adverse effects to water and wildlife, and that adverse environmental impacts be mitigated to the maximum extent feasible⁵. Local jurisdictions have Shoreline Master Programs/Plans (SMPs) which are based on the requirements set forth by the SMA. Most local agencies have codes that now prohibit the replacement of hardened shoreline retaining structures unless it is shown that they are needed to maintain protection of buildings from wave action or it is otherwise infeasible to restore the shoreline to more natural conditions.

Despite increasing efforts on the part of the agencies at local, state, and federal levels of government, very little of the privately owned shoreline of Lake Washington has been restored to more natural conditions. Our community partners, NOAA, Water Resource Inventory Area 8 (WRIA 8), Seattle Public Utilities (SPU), and the City of Seattle asked our team to develop and implement a project that would address this issue. They also expressed that a study of the permitting process would be very helpful to them in their continued efforts to increase the quantity and quality of eco-friendly projects on Lake Washington shoreline residential property. The local jurisdictions are currently undergoing the process of updating their SMPs, so an analysis of the permitting process is timely in that it could be of use to

⁴ Endangered Species Act. 1973. (7 U.S.C. § 136, 16 U.S.C. § 1531 et seq.).

⁵ Shoreline Management Act. 1971. Chapter 90.58 RCW.

agencies as they revise the codes that regulate local permitting of shoreline construction and restoration.

Given the responses to the survey, additional efforts geared toward better understanding and communicating the issues related to the cost of eco-friendly shorelines and the perception of such shorelines as being ineffective at controlling erosion are recommended. This could be the focus of a future related project.

Interviews

During the early stages of our project, we referred to eco-friendly shorelines as “alternative shorelines”. However, over time we came to the conclusion that the term “alternative” is ambiguous. Although many people do not know what an eco-friendly shoreline is, “eco-friendly” at least gives them an idea of the shoreline’s function, even if they cannot picture the specific aspects of such a design. However, we decided not to reword our interview questions after the fact. Hence, in the interview questions and the discussion of the responses, we sometimes refer to “alternative shorelines.” Similarly, there are other terms that refer to the same thing, such as green, living, or soft shorelines. A consensus should be reached on the terminology to avoid confusion and facilitate recognition of the chosen term.

Methods

To gain an understanding of the nuts and bolts of the shoreline permitting process and the diversity of perspectives on permitting, we conducted a series of interviews with people from the entire spectrum of participants in the permitting process. The people we interviewed include permit issuers from local, state, and federal government agencies, as well as permit applicants including Lake Washington homeowners and shoreline contractors and consultants. We created a list of questions to ask every interviewee, with a few additional questions asked only of permit applicants. See Appendix A for the complete list of interview questions. This list of questions was approved by the University of Washington Human Subjects Division, which required us to keep the identities of the interviewees anonymous. The interview questions are mostly open-ended; rather than giving interviewees options to choose from, we simply asked the questions and allowed the interviewee to interpret and answer as he/she saw fit. We asked for clarification when needed. Almost every interview involved one interviewee and two interviewers from our team; one team member was the primary question asker, while the other was the primary note taker. Interviews lasted between 30 minutes and 1 hour, depending on the time available and the amount of detail offered by the interviewee. After the interview was completed, the primary note taker typed the answers to the questions into a document, using a template for consistency. The primary question asker, who also took notes during the interview, then reviewed the typed notes and added points missed by the primary note taker and noted any points of disagreement (which were rare) with the original notes.

Once the interviews were completed, the team performed a content analysis to identify trends and patterns from the interview notes. The analysis consisted of compiling all the narrative responses to each question into a single document, then reading through the entire collection of responses and compiling a list of unique responses. The responses were subsequently read through again, this time matching the response from each interview into the appropriate category or categories of responses from our list and recording it in a comprehensive spreadsheet. Since this determination is somewhat subjective, it was done in teams of two to achieve some consistency and guard against mistakes. Some determinations were very easy and straightforward, such as ones in which many interviewees used common terminology to answer a question (i.e. “agencies are understaffed” or “pre-application

meeting”), while others required interpretation to decide whether differently worded answers were communicating the same idea and should be lumped together in one category. We did our best to categorize the responses by what each interviewee intended to communicate in the narrative offered to answer our questions.

Once the spreadsheet was completed, we calculated the percentages of each category of response provided by each group of interviewees. Interviewees fell into the broad groups of permit issuers and permit applicants. Within in the group of permit issuers, the interviewees were in subgroups of local agencies, state agencies, and federal agencies. Within the group of permit applicants, the subgroups were private landowners and contractors/consultants.

Results and Recommendations

A total of 27 interviews were conducted during the winter of 2008 and the qualitative data obtained from the interviews was analyzed as described in the Methods section of this report. Of the 27 interviews, 15 were with permit issuers and 11 were with permit applicants. Of the interviews with agency personnel, eight represented a local agency, five represented a state agency, and three represented a federal agency. We also conducted five interviews with contractors and consultants, six with and shoreline residents on Lake Washington. Figure 1 shows the graphical distribution of the various stakeholders that were interviewed. The interviewees’ familiarity with the permitting of specifically eco-friendly shorelines varied, but all had some experience with the shoreline permitting process on Lake Washington.

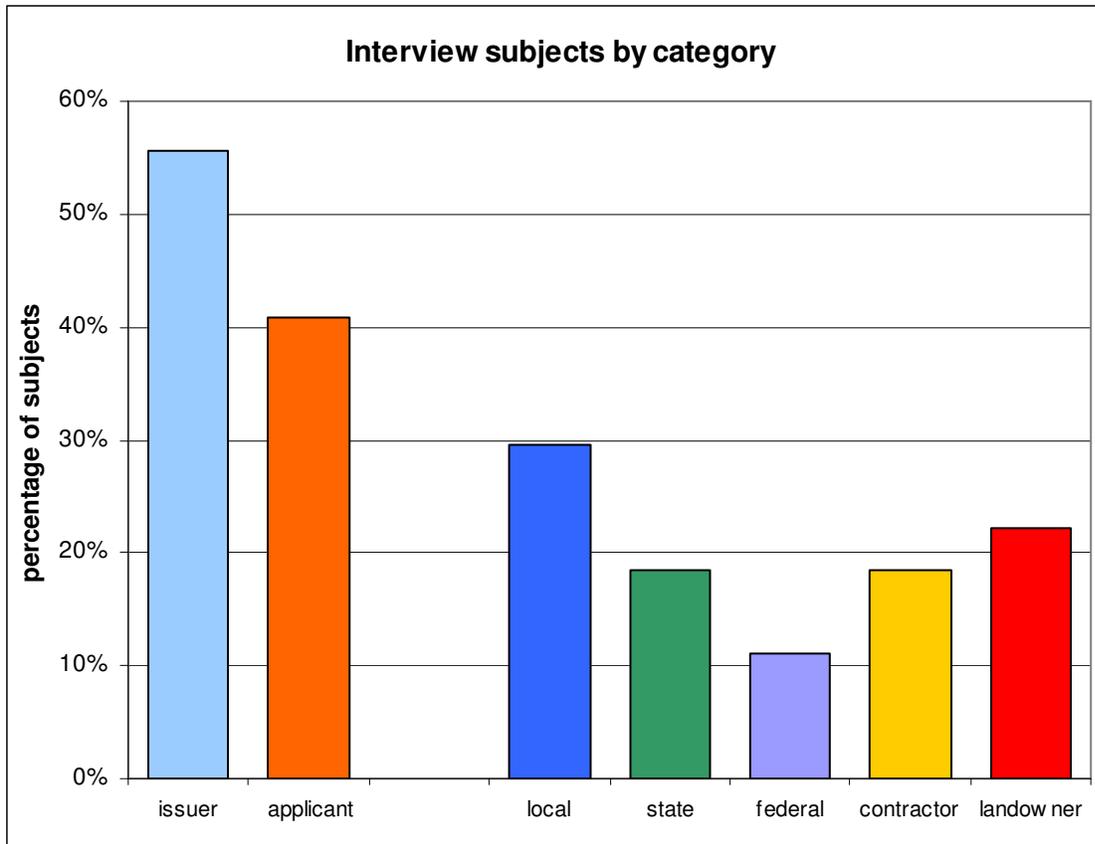


Figure 1: Interview subject by category.

The results of the content analysis are provided here. It is important to note that the results are not statistically significant and should not be interpreted as such. The interviewees were selected based on contacts the team had through our community partners, information gathered from the internet, and from information volunteered by other interviewees. Since the interviewees were not selected at random and the number of interviewees in each group is small, the results should not be interpreted as representative of the group as a whole. We have tallied the results and report them graphically and numerically to give general information regarding the diversity of perspectives and knowledge of the Lake Washington shoreline permitting process among the various stakeholders. While the results should not be thought of as representative of the whole groups of stakeholders, nor should the numbers be construed as statistically significant, the results do identify important trends that can inform continued efforts to increase eco-friendly shoreline projects on Lake Washington and improve ecosystem function.

While every effort was made to interview each person individually, time and scheduling concerns were balanced with the desire to obtain the largest possible breadth and depth of information in the time we had, resulting in two interviews in which two people from the same agency or company being interviewed together. In both of these interviews, the two interviewees were in agreement with each other on the answers to the questions. In the results, those interviews are counted the same as any other interview; no extra weight was given to them due to the participation of two people in the interview.

All of the graphs in this section of the report follow the same format. Some divide interviewees into the large groups of issuers (15) and applicants (11), while most divide interviewees into the subgroups of local agency (eight), state agency (five), federal agency (three), contractor/consultant (five), and private landowner (six). There was one interviewee representing a government agency that is a stakeholder in the permitting process, but is neither an issuer nor an applicant. The responses from that interview are included in the appropriate subgroup, but they are not factored in to either of the large groups. The distribution of interviewees in the large groups and subgroups are shown in Figure 1.

In this section, we provide a content analysis based on the following questions:

- *Are there any perceived or actual bottlenecks in the permitting process? If so, where do they exist?*
- *How can permit applicants avoid bottlenecks?*
- *What are the most common mistakes made by permit applicants?*
- *Is there a discussion between the permit applicant and the permit issuer about the applicant's shoreline design? Are alternative shorelines promoted by the permit issuer?*
- *Are there any shortcuts or streamlines in the permitting process for landowners interested in implementing alternative shoreline designs (as compared to installing or replacing a bulkhead or riprap)?*
- *Is any alternative shoreline design information available for permit applicants?*
- *How do people know they need a permit?*
- *What assistance and resources are available for permit applicants?*
- *[To landowners:] Does your property have an alternative shoreline design? [To contractors and consultants/designers:] Have you designed and/or constructed any alternative shoreline designs? Why or why not?*
- *What are the benefits of alternative shoreline designs?*
- *How do the following factors affect the choice between traditional and alternative shoreline designs?*

The remainder of this section of the report presents the findings from the interviews. For each of the questions that yielded responses that can be compared in a meaningful way and provide some insight into the permitting process, we present the results using the following format. First, the question asked of the interviewees is given. Then the qualitative data based on the verbal responses is described in text and graphically. Finally, we suggest recommendations for addressing the issue.

Are there any perceived or actual bottlenecks in the permitting process? If so, where do they exist?

A wide variety of responses were given to this open-ended question, but there was general consensus among interviewees from all of the groups that there are bottlenecks in the permitting process. The responses generally fit under the themes of lack of resources (time/staffing, education, information) and issues within the process itself. Over 40% of each of the agency groups stated that the review chain is a bottleneck, meaning that the current process is slowed by the requirements for some permits and reviews to be completed by one agency before another agency can review or often even accept an application. Over 60% of local and federal agency interviewees, along with 40% of contractors and consultants, stated that lack of adequate staffing at some of the agencies slowed the permitting process. Some interviewees indicated that the staffing issues were improving. 25% of the local agency

interviewees and 40% of the state agency interviewees said that revision of designs slows the process because of the back-and-forth negotiation of the design between permitting agencies and applicants and the need to resubmit applications to other agencies if the design is revised at the request of one agency.

About a third of landowners stated that they need more information and examples of shoreline designs that are acceptable to the agencies. 20% of contractors and consultants agreed that applicants need more information, and 60% also think that agency staff need more information and education, as they perceived that some permit reviewers were not as familiar with the specific permitting process associated with shorelines (as opposed to other land use permits) as necessary for timely review, and even less familiar with alternative shoreline designs. As Figure 2 shows, at least one interviewee from each subgroup except the federal agencies cited inadequate interagency coordination as a bottleneck. Contractors and consultants, who submit applications for shoreline projects on behalf of the landowners much more often than the landowners themselves, were most vocal about the lack of interagency coordination and its effect on the permitting process.

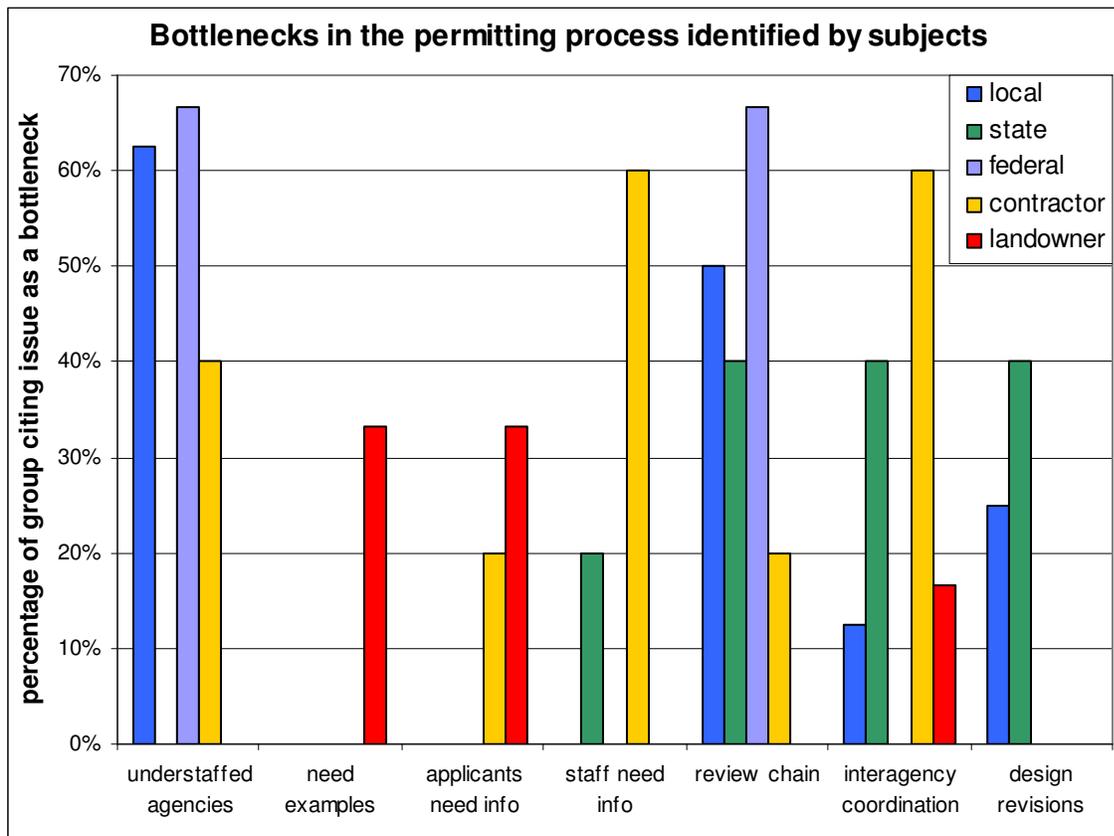


Figure 2: Bottlenecks in the permitting process, all stakeholders.

When the results are sorted by permit issuers and applicants, as shown in Figure 3, it is clear that there is a difference of opinion between the interviewees belonging to these two groups. Over 45% of permit issuers cited the review chain as a bottleneck, while only a small fraction of the applicants cited that issue. Even more striking is that more than 25% of the permit issuers brought up design revisions as a bottleneck, but no applicants cited it (Figure 3).

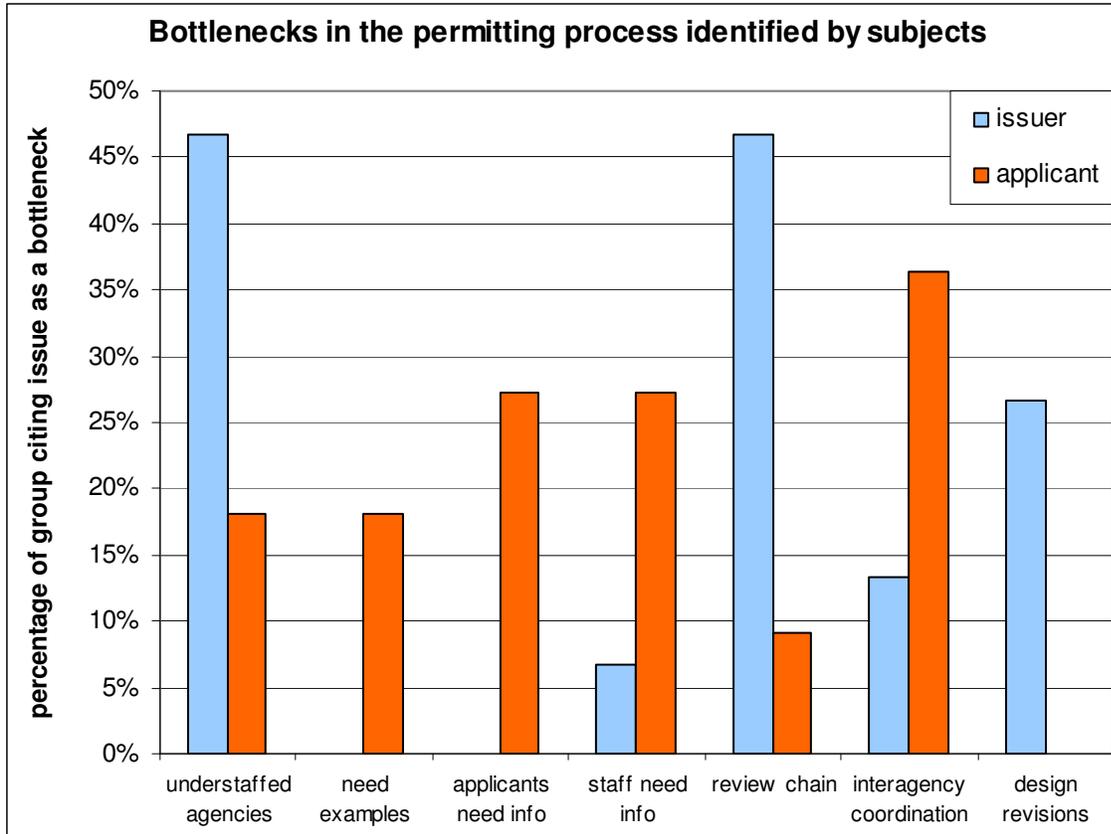


Figure 3: Bottlenecks in the permitting process, separated by issuer and applicant.

Recommendations

Streamlining the permitting process would eliminate or minimize delays due to the review chain. Providing information to landowners, contractors, and consultants about the agencies' requirements for shoreline projects, including a variety of examples, would allow applicants to start the process with a design that will require few or no revisions. Interagency coordination will be necessary in developing appropriate guidelines and examples for applicants. Some agencies deal with shoreline permitting frequently, while some of the local jurisdictions do not. Educational material shared between the agencies at all levels would be helpful in interagency coordination as well as providing the land use departments of all of the local jurisdictions around Lake Washington with the resources they need in order to permit shoreline projects that are in line with the state and federal requirements.

How can permit applicants avoid bottlenecks?

Again, interviewees volunteered their own answers to this question, and several of the answers were repeated by many of the interviewees. Some of the interviewees did not have any suggestions of ways applicants can avoid bottlenecks. Interestingly, the only ways identified by landowners were applying early and hiring a professional. As shown in Figure 4, a majority of the permitting agencies stated that the best way applicants can avoid bottlenecks is by following the guidelines of the permitting agencies (stated several ways, such as comply with the code, follow the guidelines, and come in with an eco-friendly shoreline design). Having a productive pre-application meeting in which the shoreline design is

discussed was identified by some of the local and state agency interviewees and some of the contractors and contractors as another means to avoid bottlenecks. In addition, Figure 5 shows that permit applicants were much more likely to say that hiring a professional is a way to avoid bottlenecks.

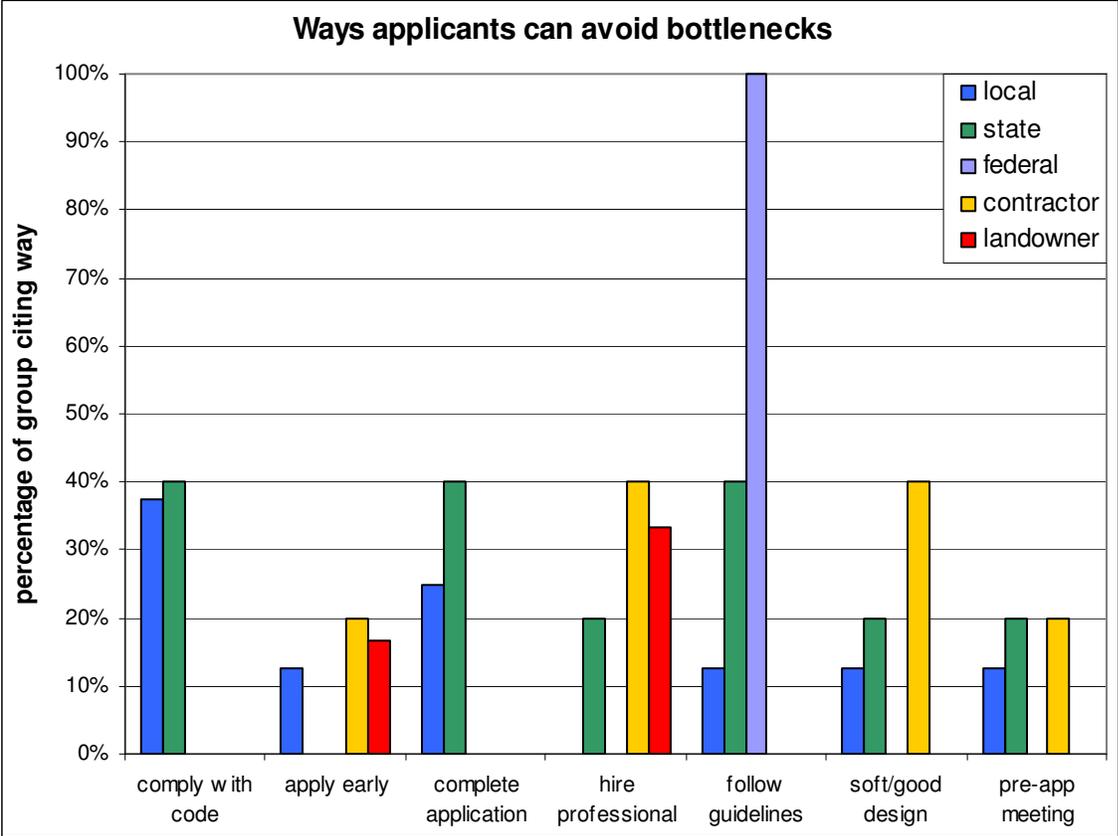


Figure 4: How applicants can avoid bottlenecks in permitting process, sorted by subgroups

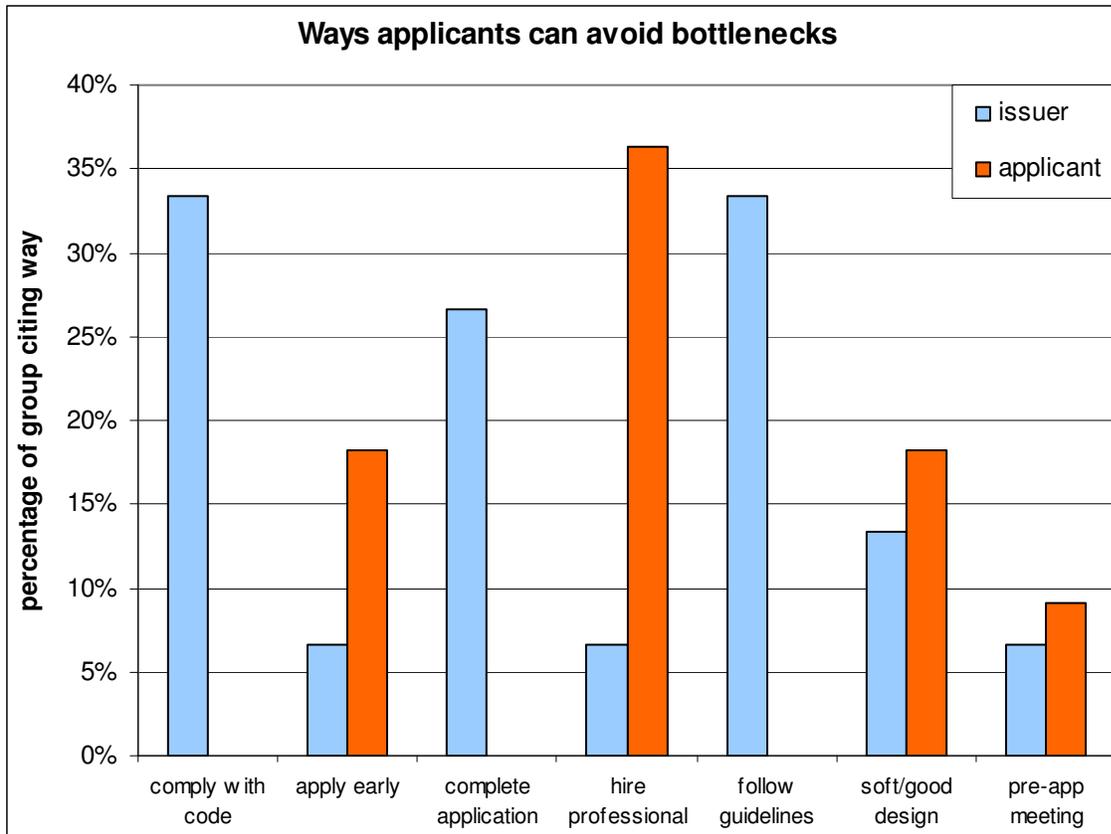


Figure 5: How applicants can avoid bottlenecks in permitting process, sorted by groups.

Recommendations

As with the responses to the previous question, this data indicates that education and information for applicants about the requirements for shoreline projects would help to minimize time and frustration for everyone involved. Also, since most local jurisdictions require a pre-application meeting with the applicant, this is an opportunity for the local agencies to educate applicants about what the agencies (at all levels) are looking for in a shoreline project design and the potential for eco-friendly designs to improve the health of the lake and ensure a smoother, faster permitting process for the applicant.

What are the most common mistakes made by permit applicants?

The most prevalent answers provided by the interviewees were ignorance of the permitting process, offered by two-thirds of the applicant group and one third of the permit issuer group, which is especially striking considering that the response doesn't identify a mistake so much as a deficiency that is likely to lead to mistakes. Providing incomplete information on applications was a common response among all groups except landowners (Figure 6). Having "too hard" of a shoreline design and not complying with the code were fairly common responses among agencies and a small percentage of contractors and contractors.

Perhaps most interesting is the indication by 20-33% of every agency group that a common mistake by landowners is having a blind trust in their contractors or consultants to take care of the shoreline design

and permitting. Some interviewees at each level of agency believe that some contractors and consultants do not inform their clients of alternatives to replacing a bulkhead because they do not know how to design or implement an eco-friendly shoreline. Some of the contractors and contractors we interviewed stated that alternative shorelines are not desired by homeowners and that soft shorelines are not effective at controlling erosion and do not work on most sites. Some of the permit agency interviewees also said that many (but not all) contractors and consultants charge their clients by the hour, thus giving them an incentive to submit shoreline designs that will be difficult to approve and draw out the permitting process by refusing to make the agencies' recommended design changes without keeping their clients in the loop. There did seem to be a general consensus among all of the groups of interviewees that many landowners have little to no communication with the permitting agencies, even regarding revisions to the designs, leaving contractors and consultants as the go-between. This situation could potentially lead to the conflict of interest described by some of the permit issuers.

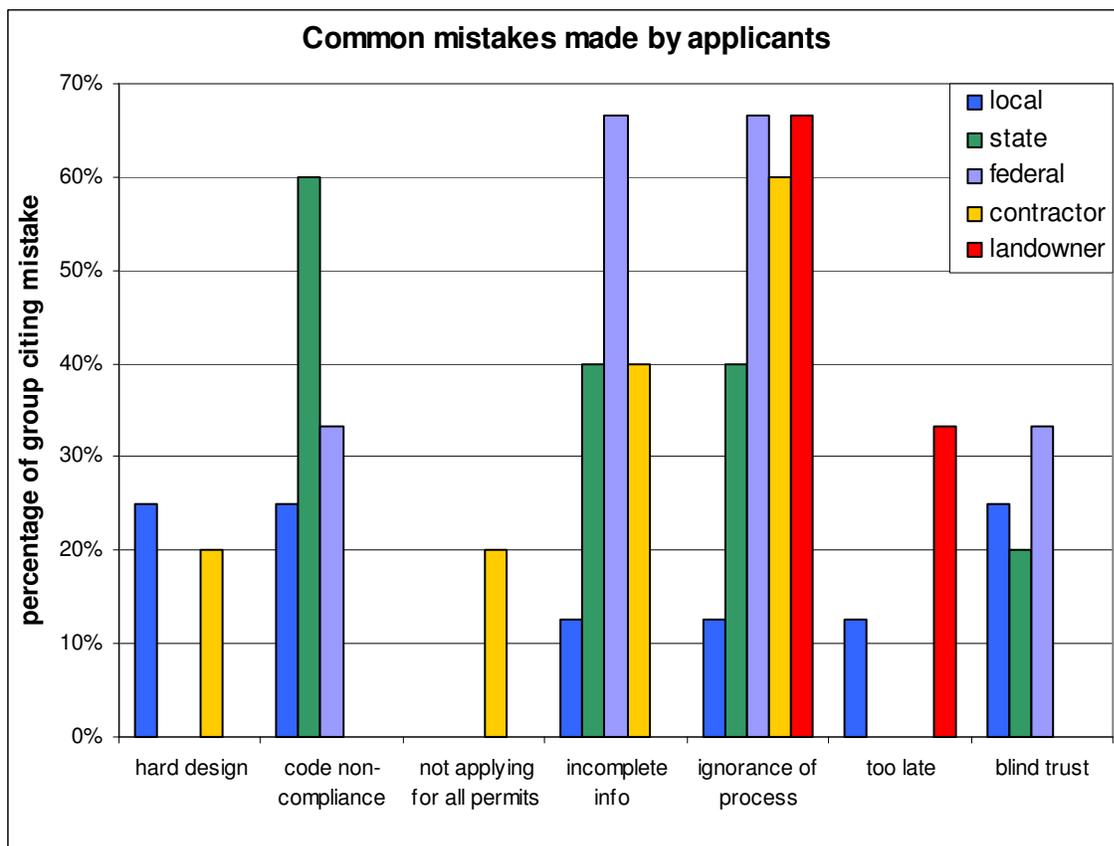


Figure 6: Common mistakes made by permit applicants.

Recommendations

Once again, applicants need better information and guidance to help them understand what shoreline designs will be approved by the agencies. In addition, there is a possibility that in some cases, the information that is provided by agencies regarding suggested design revisions is not passed on the landowners from their agents (contractors or consultants). We have no evidence that this is a widespread problem, but since we do know that most landowners hire contractors and/or consultants to navigate the permitting process for them, this could be an issue. Landowners are ultimately responsible for their own property and the decisions concerning it, so they should be informed of the shoreline

requirements and the reasoning behind the code in order to make their own decisions, rather than allowing hired professionals to make decisions for them.

Is there a discussion between the permit applicant and the permit issuer about the applicant’s shoreline design? Are alternative shorelines promoted by the permit issuer?

The answers to these questions were essentially yes or no. Figure 7 gives the percentages of each group answering yes to the question. Interestingly, more than half of the permit issuers and the contractors and contractors said that there is a discussion between the permit issuer and applicant about the shoreline design and that alternative shoreline designs are promoted by the permit issuer, but only one third of the landowners interviewed agreed. This may reflect the fact that landowners often allow hired professionals to act as their agents in the permitting process. But it may also indicate that beyond not being directly involved in the process, the landowners do not know what is going on in the process. It is also interesting that not all of the permit issuers agreed that there is a discussion between the issuer and applicant, let alone that alternative shorelines are promoted. This is especially interesting given that every level of government has regulations related to shoreline development and the protection of the environment.

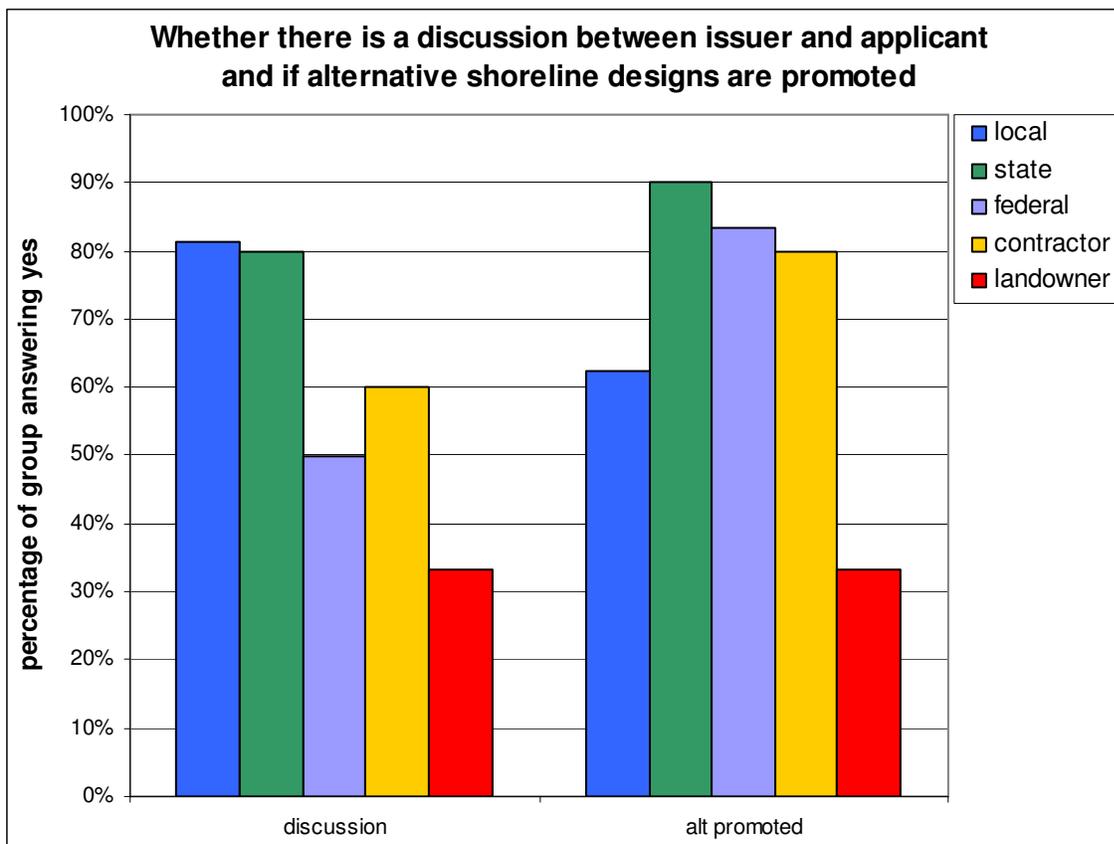


Figure 7: Discussion and/or promotion of eco-friendly shorelines.

Recommendations

To increase restoration activities on Lake Washington residential shorelines, it is critical that the agencies achieve a greater cohesion, both horizontally and vertically, in terms of how shoreline projects will be permitted and the information that will be given to applicants and potential applicants. The information communicated to the public and to applicants should be consistent and clear.

Are there any shortcuts or streamlines in the permitting process for landowners interested in implementing alternative shoreline designs (as compared to installing or replacing a bulkhead or riprap)?

Interviewee responses were highly variable among the interview subject categories. As shown in Figure 8, all federal agency subject responses, 50% of contractor subject responses, 17% of landowner subject responses, 13% of local permitter subject responses, and 10% of state agency subject responses identified that yes, there are shortcuts or streamlines in the permitting process for shoreline residents interested in implementing alternative shoreline designs. The variability among the different subject group responses suggests that there is a lack of consensus on whether or not shortcuts or streamlines exist in the permitting process as well as a lack of communication between stakeholder groups about the shortcuts or streamlines that do exist. It is important to note that response variability occurs on multiple levels, within a subgroup (for example, among permitter jurisdictions) as well as between subgroups (for example, between permitters and applicants).

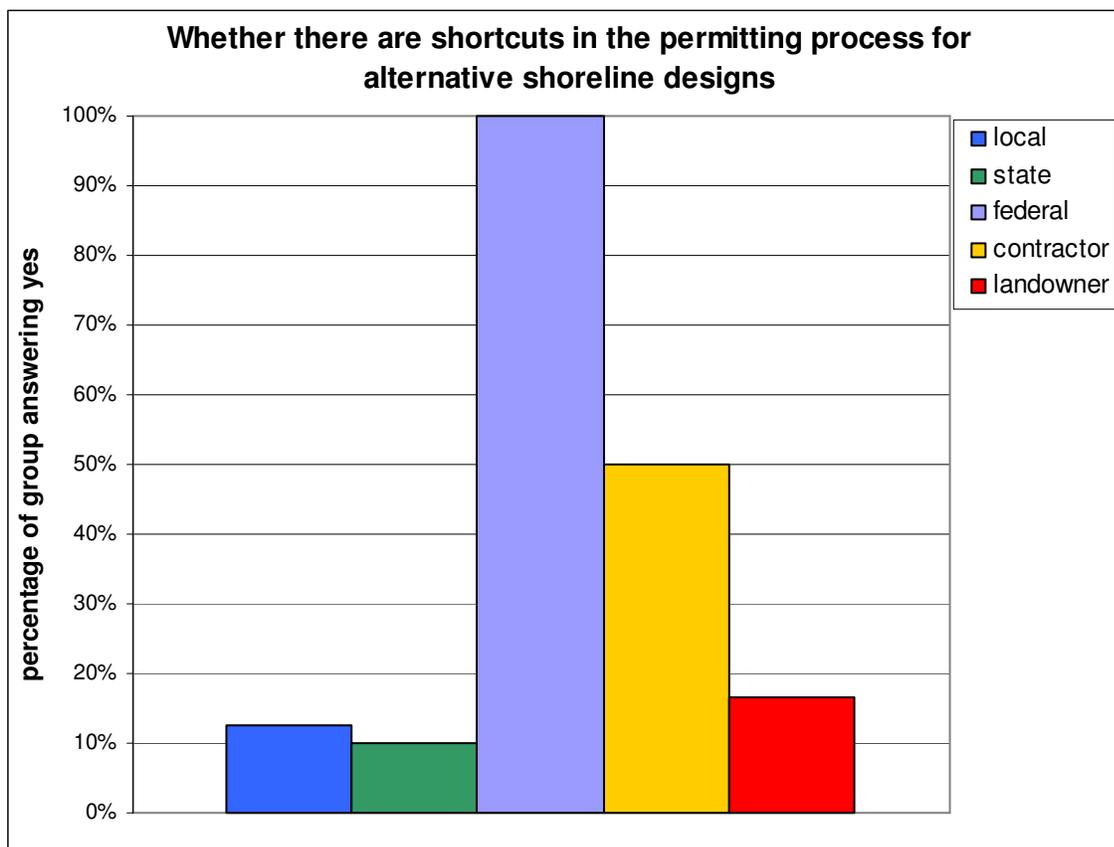


Figure 8: Shortcuts in the permitting process.

Recommendation

Streamlines and shortcuts in the permitting process were identified as top potential incentives for private landowners to implement eco-friendly shoreline designs.⁶ Increased interagency communication is recommended to increase consensus among permit issuers regarding existing streamlines and shortcuts in the permitting process. More communication between permit issuers and permit applicants regarding existing streamlines and shortcuts in the permitting process to permit applicants is recommended. In addition, permit issuers at all levels should strive to gain a better understanding of all aspects and stages of the permit process.

Is any alternative shoreline design information available for permit applicants?

The interviewed subjects independently communicated the following categorized responses as to their knowledge on whether there is any alternative shoreline design information available for permit applicants: none exists, Lake Washington Shoreline Protection Alternative Programmatic (SPAP), websites, the City of Seattle's *Living Shorelines* guidebook, professionals, and more information is needed. As shown in Figure 9, all permit applicants and all permit issuers, except federal permit issuers, communicated that no alternative shoreline design information is available for permit applicants. Permit issuers across all levels of government identified the SPAP as a source of alternative shoreline design information for permit applicants; however, no landowners identified the SPAP as a source of alternative shorelines information. Local and federal permit issuers as well the majority of contractors interviewed commented that websites contained information about alternative shorelines for permit applicants, however; no landowners identified websites as a source of alternative shoreline design information. The only subject subcategory to identify the City of Seattle's *Living Shorelines* guidebook as alternative shorelines information for applicants was local permit issuers. Local and state permit issuers as well as shoreline residents identified professionals as a source of alternative shoreline information; no federal permit issuers or contractors identified professionals as sources of alternative shoreline information. When asked if shoreline design information is available for permit applicants, state and federal permit issuers as well as contractors took the question one step further to suggest that more information is needed. Half of all landowners reported that there was no publicly available information on alternative shorelines, and instead relied on contractors and/or consultants for information.

⁶ Howell, R., Casad, G., Fries, D., Roberts, K., Russo, B., Wallis, A. 2007. *Wildlife-Friendly Shoreline Modifications on Lake Washington: Summary of Shoreline Property Owner Survey and Regulatory Interviews*. Environmental Management Keystone Project Final Report, Program on the Environment, University of Washington, Seattle, Washington.

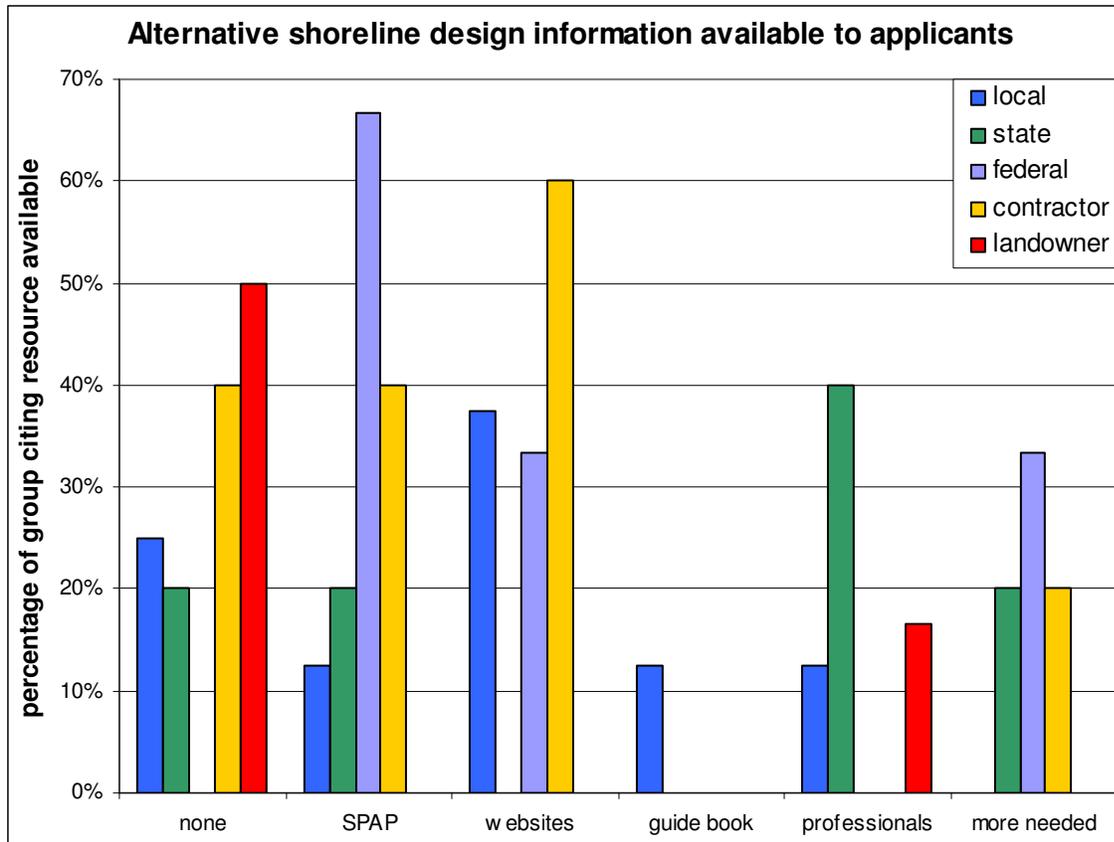


Figure 9: Availability of design information

Recommendations

From the responses received on permit process stakeholders' knowledge of existing and available alternative shoreline design information three major themes arose: (1) almost all stakeholders in the permitting process agree that there is a deficit in alternative shoreline design information for permit applicants; (2) the information that does exist is not recognized across all stakeholder subcategories; and (3) while the majority of landowners communicated that there is no alternative shoreline design information available for permit applicants, when an information source was identified 'professionals' was the only source communicated in responses. In order to encourage alternative shoreline designs on private property, alternative shoreline design information should be available to permit applicants. Also, greater promotion, education and outreach of alternative shoreline design information are needed for both existing and future information resources. Because shoreline residents identified 'professionals' as their primary source of alternative shoreline design information, it is recommended that greater education and encouragement of alternative shoreline design information is needed from contractors, consultants, and agency personnel in direct communication with landowners if greater consideration of alternative shoreline designs is desired. Agencies and municipalities interested in promoting alternative shoreline designs should consider holding training sessions on the best management practices regarding alternative shoreline design.

Are there any improvements that could be made in the permitting process?

Interview subjects independently identified and communicated six potential approaches for improving the existing permitting process. The six potential improvement approaches include: increasing permit handling staff; designating a point person to communicate information about and handle permit applications; increase permitting process training for permitting staff; increase permitting process education and guidance for permit applicants; streamline the permitting process; and create a centralized permitting process by allowing permit applicants to apply for all the required permits through one agency. As shown in Figure 10, all permitting process stakeholder groups suggested streamlining the permitting process as a potential approach to improving the permitting process. All stakeholder groups, excluding the federal agencies, communicated that greater education and guidance for permit applicants may improve the permitting process. State and local permit issuers expressed a need for increasing permit issuer staffing as a method for improving the permitting process. Among all stakeholders local permit issuers and landowners both communicated that designating a point person to communicate information about and handle permit applications have the potential to improve the permitting process. Creating a centralized process was a suggested approach to improving the permitting process by all permit applicants (a high percentage of contractors and some landowners); however, no permit issuers suggested this improvement approach.

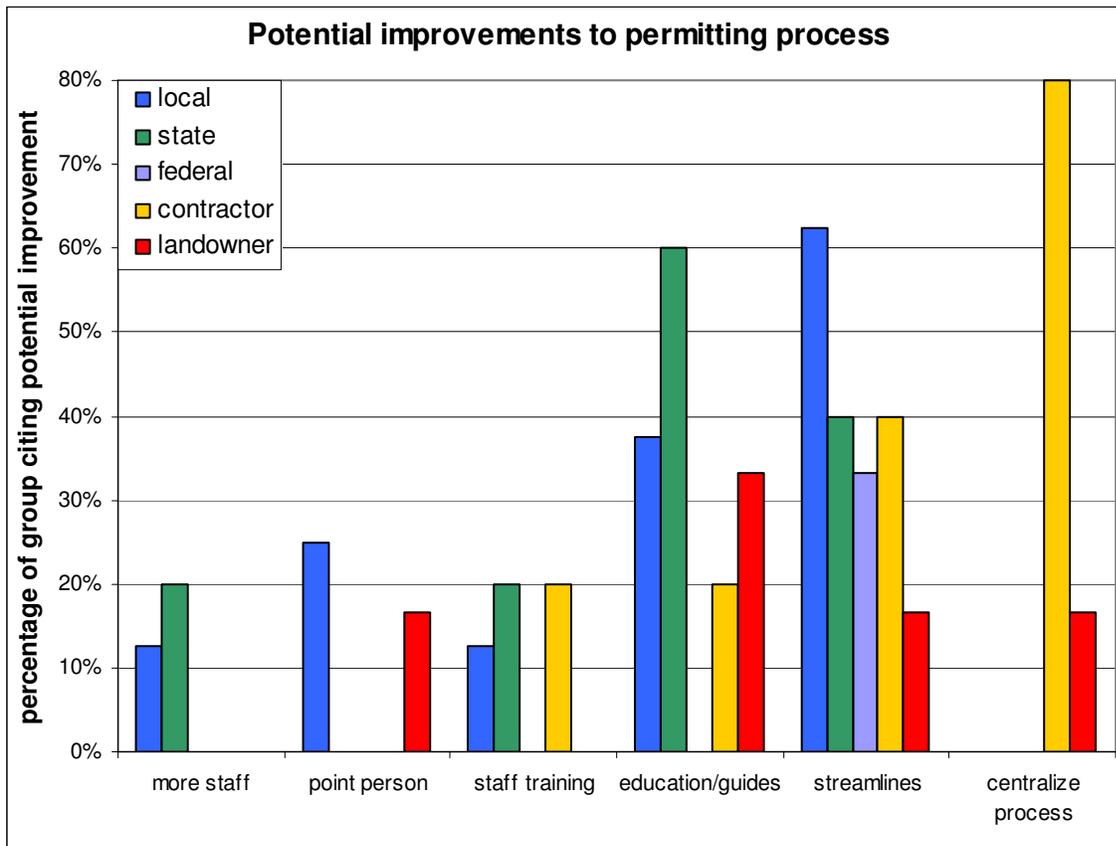


Figure 10: Potential improvements to the permitting process

Recommendations

Because streamlining the permitting process was identified by all stakeholders in the permitting process, it is recommended that permit issuing agencies collaborate to develop and communicate a streamlined permitting process for applicants. In streamlining the permitting process permit issuers should consider opportunities for permit applicants to obtain all necessary permit information and application materials from one permit issuing agency. Establishing a single permitting office (for example, a local planning and permitting office) adequately staffed and educated on the complete private property step-by-step shoreline permitting process and capable of communicating this process to applicants would potentially streamline the permitting process, as well as incorporate the most commonly communicated improvement suggestions from all interviewed stakeholder groups without initiating a complete re-organization of the current multi-jurisdictional permitting process to create a centralized agency.

How do people know they need a permit?

Nine categorized responses were independently derived and communicated by permit process stakeholders regarding how people knew they needed a permit to perform work on their shoreline. The nine categorized responses were: interviewed subjects were unclear and not sure; needing a permit is thought of as common knowledge; through public notice postings; people do not know they need a permit; people have been caught without a permit and then found out they needed one; through contractors; through agencies; through newsletters; and through neighbors reporting one another when permits are not obtained. The findings from this question are summarized in Figure 11. All stakeholder groups interviewed indicated that contractors inform people they need a permit. Over 80% of landowner responses suggested that needing a permit is common knowledge; however, only 40% of state permit agency responses, no federal or state permit issuers, nor contractors communicated that people know they need a permit through common knowledge. While all permit issuers and contractors indicated that people know they need a permit as a result of neighbors reporting one another for not obtaining permits, of the landowners surveyed, none of their responses indicated this as a reason why people know they need a permit. Permit issuer responses credited agencies as a source of informing people they need a permit; no permit applicant responses indicated that agencies were a way people knew they needed a permit. While all permit issuer responses to some degree indicated that people were informed they needed a permit through public notices, no permit applicant responses indicated this as a source. The majority of contractor responses identified contractors (themselves) as the major source of how people know they need a permit. Contractor responses also strongly indicated that people generally do not know they need a permit.

While all responses were highly variable among stakeholder groups, of all permit issuers, the state agencies were the only subgroup to align with all landowner response as to how people know they need a permit. The federal agencies were the only permit issuer subgroup to fully align with all contractor responses as to how people knew they needed permits. Local permit issuer agencies had varied responses from all permit applicant and contractor responses, except for their consensus on contractors as informers, as to how people know they need a permit.

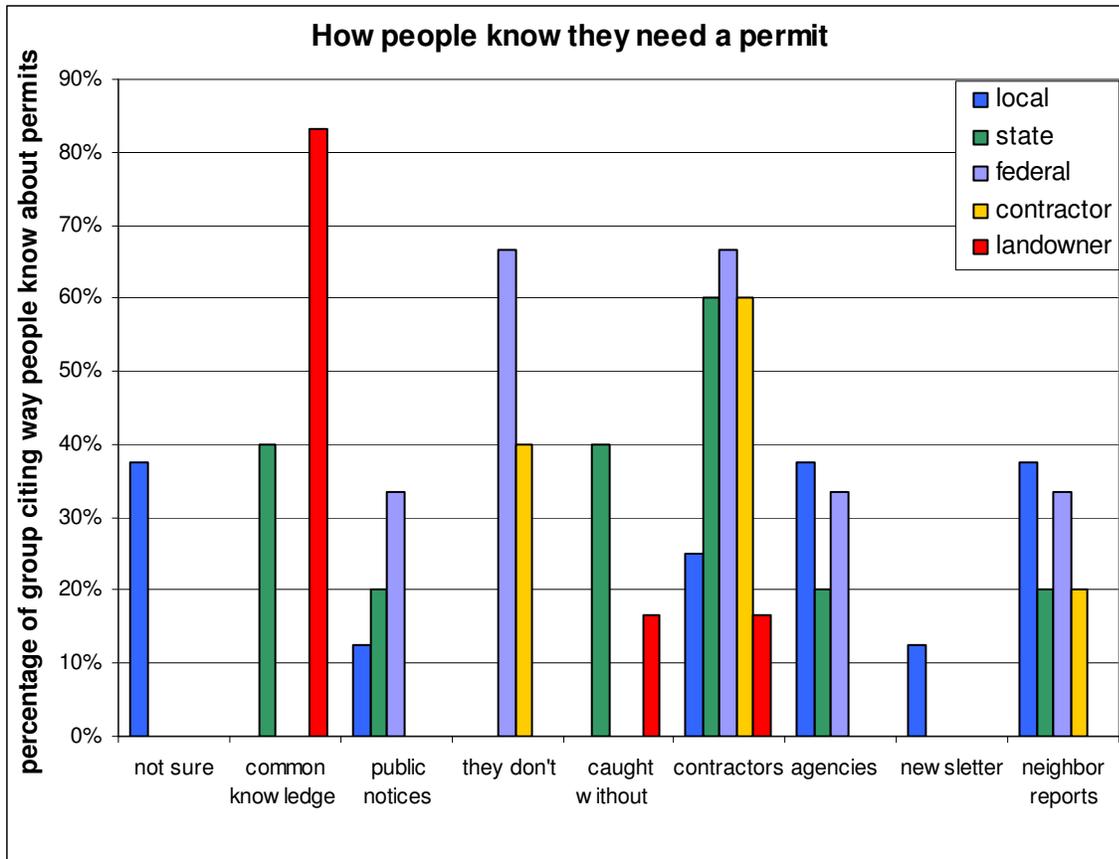


Figure 11: How people know they need a permit

Recommendations

There was high variability between how permit issuers and permit applicants think people know they need a permit to do work on private shorelines. While a strong majority of the shoreline resident responses indicated that needing a permit is common knowledge, very few permit issuers and no contractors agreed. Local permitting agencies responses to how people knew they needed people and responses of permit applicants were highly varied. Among permit issuers, state agencies' responses were most closely aligned with private landowner responses; among permit issuers, federal agencies' and contractor responses were most closely aligned. The only point of consensus among all stakeholder groups as to how people knew they needed a permit was that contractors are informers. If contractors are the only consensus point between all stakeholder groups as to how people know they need permits, it is recommended that agencies pursue communication with contractors when new opportunities or changes occur in the permitting process. Permit issuers may also consider pursuing opportunities to have a more comprehensive understanding of how permit processes are understood and communicated to permit applicants for improved communication and the most effective permit process education outreach programs.

What assistance and resources are available for permit applicants?

Four key resources were identified by the interviewees – agency websites, newsletter, telephone the agency, and the Office of Regulatory Assistance (ORA). The results show a clear perceived lack of

resources from the applicant's viewpoint, as shown in Figure 12. Only 17% of landowners interviewed identified any assistance at all (ORA and agency websites). Contractors fared slightly better, with just fewer than half (40%) also identifying ORA and agency websites as resources. Clearly, no applicants believe that agencies provide proper assistance by phone. The permit issuers had a different viewpoint, generally identifying resources more often than applicants. A full 80% of state agency interviewees identified ORA as a resource. As ORA is a state entity, this is not surprising. That the local agencies did not identify ORA is also not surprising, as ORA mainly focuses on providing assistance with permits that are applicable statewide. However, it should be noted that ORA does give some information on standard local permitting processes.

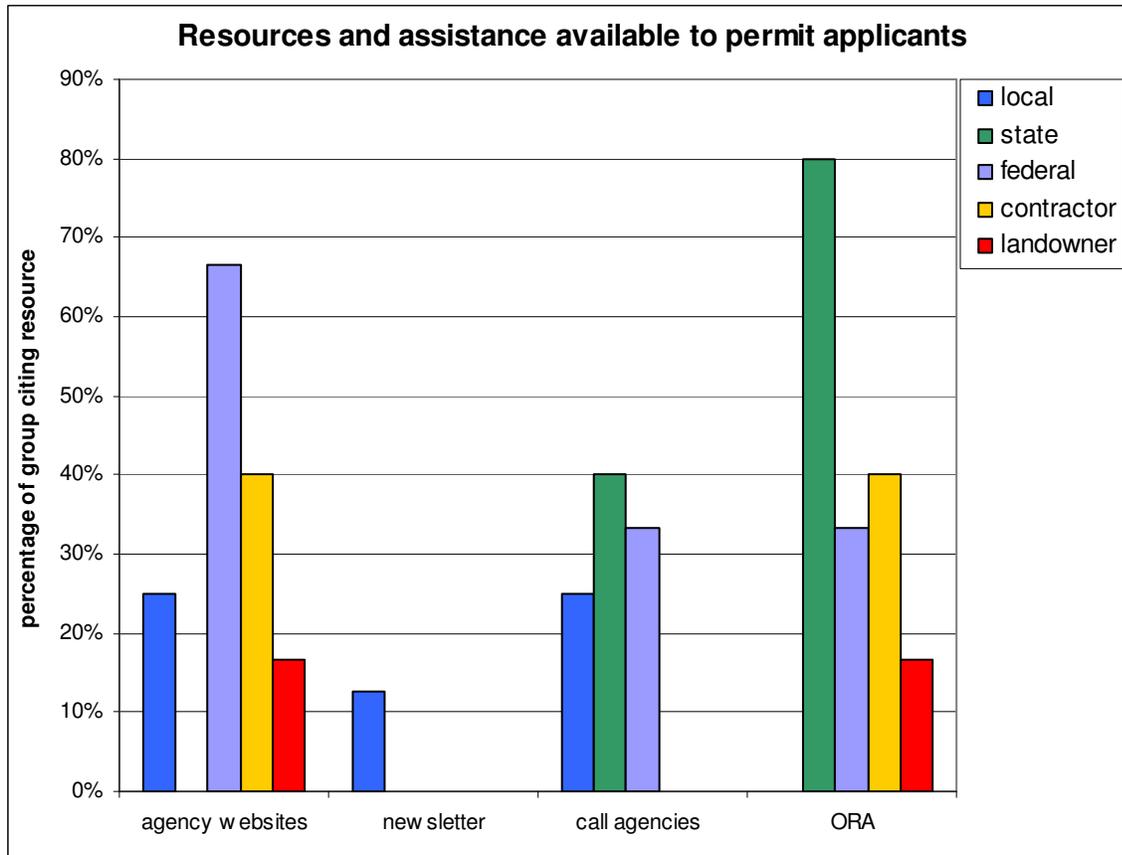


Figure 12: Resources and assistance for permit applicants.

Recommendations

Education and outreach is needed to inform landowners, contractors, and consultants about the existing resources available to them. Additionally, many interviewees, while identifying websites and phone services as resources, also conveyed a lack of organization and access from these sources. Agencies should strive to clarify the information on their websites and make navigation simple for the public citizen. Access to permit issuers via telephone should be expanded to provide much needed communication between applicant and issuer. This was identified as a source of frustration among applicants. Of course, the above recommendations are in essence staffing issues, which may be constrained by budgets. Many agencies are overworked and backlogged due to lack of staff; this was identified as a major bottleneck in the process in Figures 2 and 3.

[To landowners:] Does your property have an alternative shoreline design? [To contractors and consultants/designers:] Have you designed and/or constructed any alternative shoreline designs? Why or why not?

In Figure 13, the set of bars on the far left indicates the percentage of contractors and consultants who have designed alternative shorelines and the percentage of landowners that have an alternative shoreline. Given those answers, the remaining bars indicate reasons why contractors and consultants *have* designed alternative shorelines and reasons why landowners *have not* installed alternative shorelines. Since we sought out companies most of whom we knew were involved in alternative shoreline design and construction, 100% of them had experience with such designs. However, it is difficult to determine the reasons why they chose do so. That only 20% of contractors identified agency influence as a driving force implies that there is a communication problem between contractors and permit issuers. This may be changing as our interviews indicated a strong trend among agencies towards requiring alternative shoreline design. Among landowners, the main reasons why they did not install an alternative shoreline on their property were loss of property and cost (50% each). Erosion proved to not be much of a factor, with only 17% identifying it as a barrier (Figure 13). Indeed, if alternative shorelines are designed properly on a site without extreme exposure, erosion is not an issue.

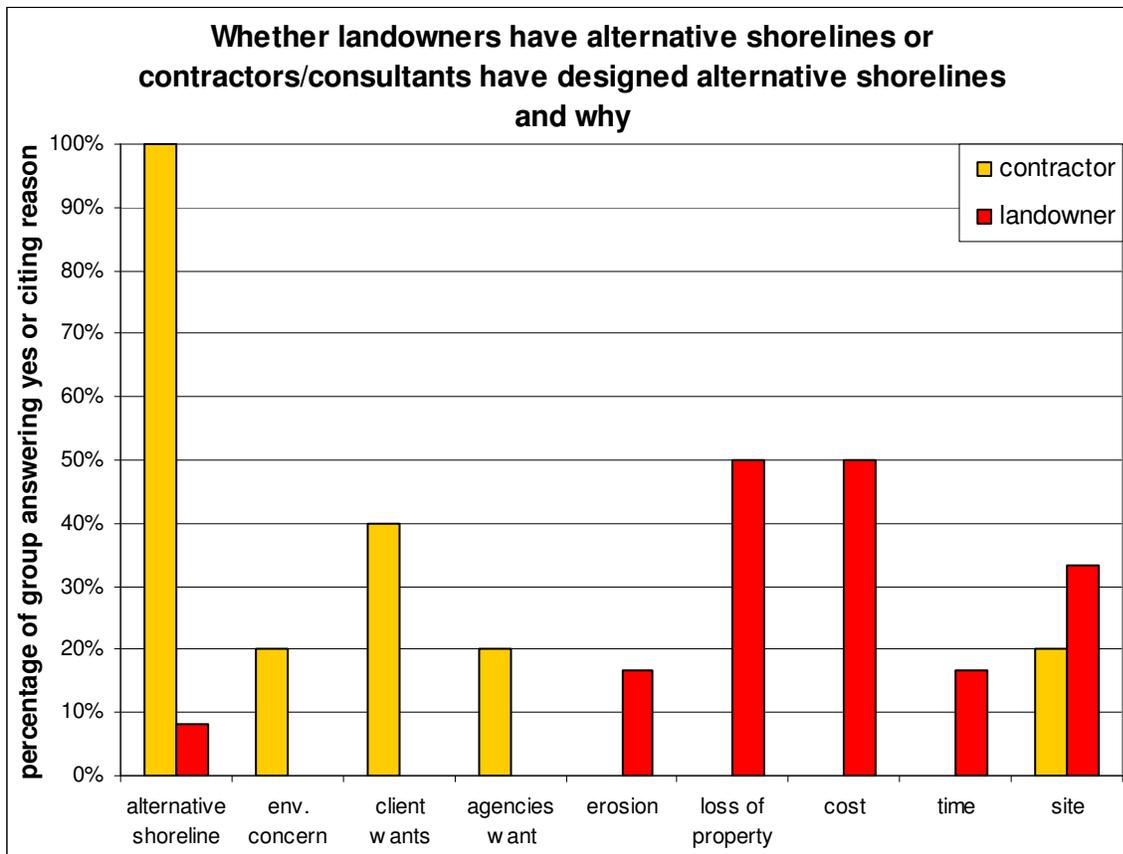


Figure 13: Participation in eco-friendly shoreline design.

Recommendations

Perhaps the biggest impediment to increasing the amount of soft shoreline on Lake Washington is the loss of property entailed in replacing a bulkhead with a beach. This is a contentious issue. In some cases, landowners are very wealthy and have 100 feet of land between their house and the water's edge, and could easily convert some property from lawn to beach. In other cases, the landowner's house and property is their major asset, and if the house is close to the water's edge, they may lose up to half of their lawn, with potential for decreased property value and loss of some functions the lawn provides. Needless to say, the property owners will do anything they have to protect their investment if they perceive its value as threatened. One option to alleviate this problem is to allow a certain amount of fill in the lake in order to minimize the loss of lawn on properties that are close to the water's edge. Currently, fill in the lake is regulated by the USACE. A change in USACE policy could stipulate a certain amount of fill for landowners installing an alternative shoreline. Some potential barriers to this are: determining exact site requirements and fill specifications that apply to all projects, as every site is unique; how to handle a situation where the landowner installing a beach is bordered by a neighbor with a bulkhead – there may not be a way to stabilize the fill to prevent erosion where the two properties abut. However, it would be advantageous to tackle these issues in order to remove one of the most significant bottlenecks to promoting soft shorelines.

What are the benefits of alternative shoreline designs?

Contractors unanimously noted the environmental and aquatic concerns as the benefits of alternative shorelines, but only 33% of landowners noted this (Figure 14). Additionally, 33% of landowners said there were no benefits of alternative shorelines at all. 60% of contractors and consultants found alternative shorelines to have aesthetic benefits. These results suggest a familiarity with alternative shorelines among contractor and consultants, understanding how they can benefit the ecological functions of the lake as well as additional benefits. The results also suggest a lack of familiarity with alternative shorelines among landowners, and a possible belief that alternative shorelines are a poor choice.

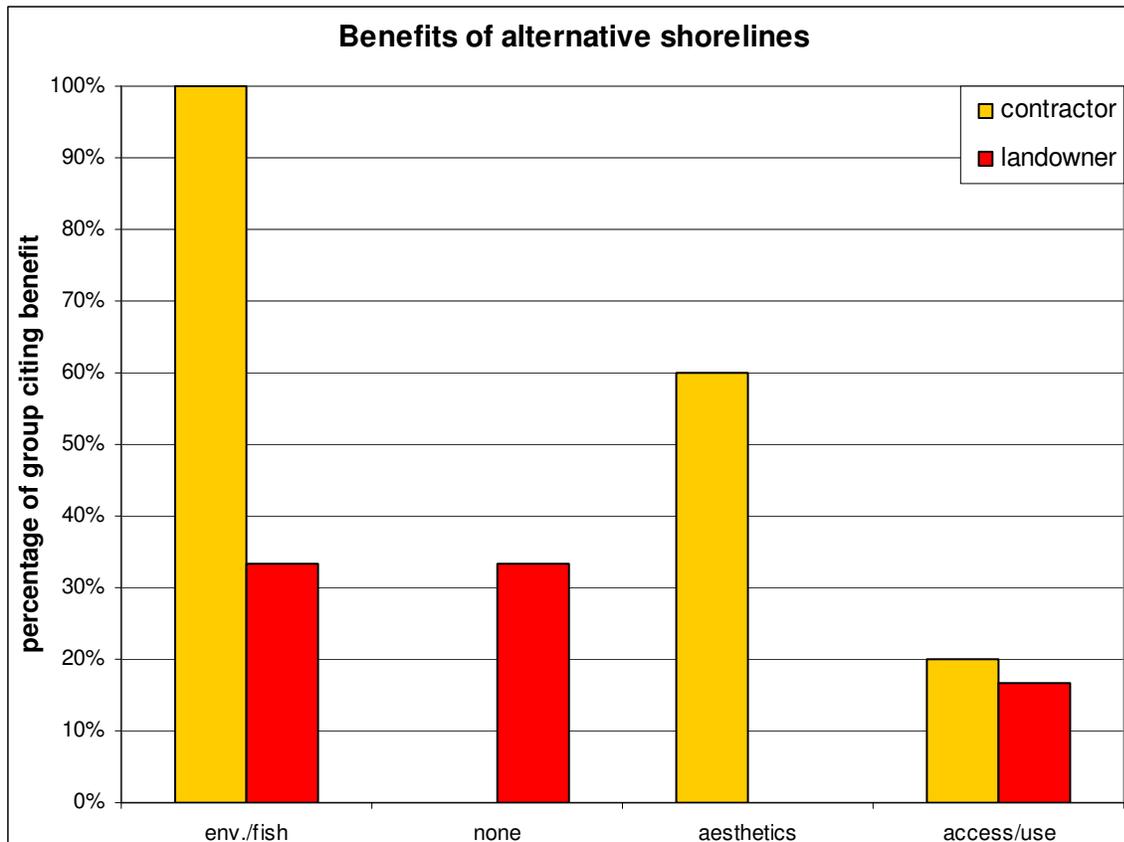


Figure 14: Benefits of eco-friendly shorelines.

Recommendations

Shoreline landowners need to be informed about alternative shorelines and their environmental benefits and given examples that show them how aesthetically pleasing they can be. The City of Seattle's Living Shorelines guidebook will provide this to landowners provided it is widely accessible. The guidebook is not overly technical or dry and provides educational information as well as design ideas and examples. Other jurisdictions around the lake should inquire about its adaptation for their use.

How do the following factors affect the choice between traditional and alternative shoreline designs?

- **Effectiveness of shoreline design at controlling erosion**
- **Maintenance**
- **Cost**
- **Permitting**
- **Aesthetics**
- **Lake accessibility and use**

Figure 15 shows the various reasons why contractors and landowners thought alternative shorelines were a better design options. Surprisingly, even though no landowners identified aesthetics as a benefit

in Figure 14 above, when asked specifically about aesthetics as a possible benefit of alternative designs, 75% of landowners thought they were better than the traditional designs. A majority of landowners thought alternative designs provide better access to the lake, but the majority of contractors thought otherwise. There does appear to be a belief among landowners (83%) that alternative shorelines are worse than bulkheads at preventing erosion. There are also a significant percentage of all applicants who believe alternative shorelines are more costly and are harder to permit.

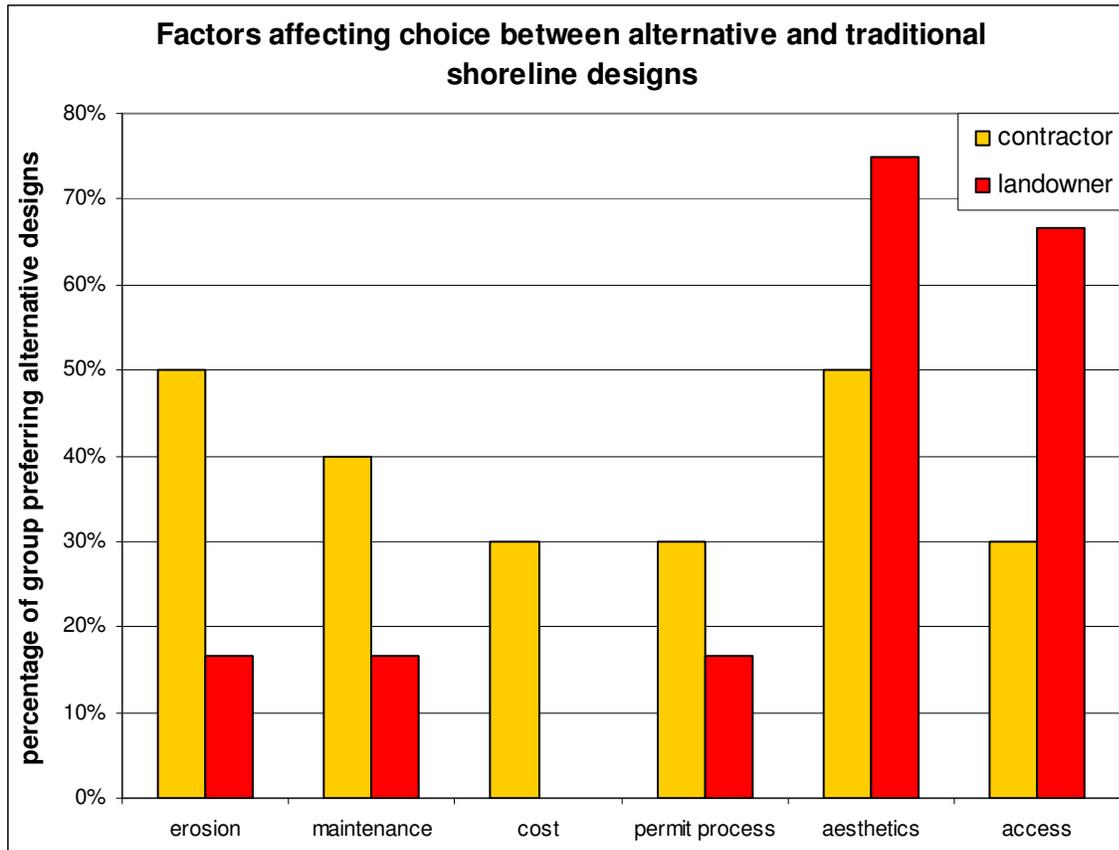


Figure 15: Factors affecting the choice between alternative and traditional shoreline designs.

Recommendations

Once again, landowners need to be educated and informed about alternative shoreline design – when designed correctly, it should provide adequate protection against erosion. With the introduction of the USACE programmatic (SPAP), permitting will be streamlined for most alternative designs, but since every site is unique and may not be able to fully meet the requirements for the programmatic, we would also like to see preferential treatment under Individual Permits given to those cases where an alternative design is implemented yet is unable to fall under the programmatic’s umbrella. An even better way to streamline the permitting of alternative designs would be for permitting agencies at the federal, state, and local levels to coordinate so as to have one set of guidelines for alternative designs so that if one agency approves the design, it will be automatically approved at the other levels. This will take time and effort to accomplish as each agency is bound by different laws and regulations, but is certainly feasible and would result in a significant reduction in time and hassle to the applicant, making alternative designs preferable to traditional designs.

Deliverables

To accomplish the goals and objective of our project we developed several deliverables. In addition to the policy analysis included in this report, we created educational resources for permit applicants and issuers, and we also presented our findings at the WRIA 8 Shoreline Issue Meeting, Spring Shoreline Planners Meeting in April 2008 and at the University of Washington Environmental Management Symposium in May 2008.

Educational Resources

One of the key findings from our analysis is that educational resources are needed for all stakeholders in the permitting process, including permit issuers and applicants. In response, our team developed a schematic of the step-by-step permitting process for private landowners interested in implementing an eco-friendly shoreline designs. The schematic is also a helpful tool for permit issuers to gain a better understanding about how their particular agency fits into the entire permitting process. As a separate deliverable, our team compiled and will deliver informational packets to permit issuers involved in the shoreline permitting process for Lake Washington. The packets were intended to provide educational resources to enhance permit issuers' understanding of the step-by-step permitting process navigated by applicants, as well as to inform them of the most important findings and recommendations from our interviews and policy analysis.

The Schematic

The Governor's Office of Regulatory Assistance (ORA) provides schematics on individual permits, but a schematic of the entire process for shoreline permits did not previously exist. We produced a schematic that provides a broad overview of the shoreline permitting process for construction and restoration work along Lake Washington residential shorelines (Figure 16). The schematic underwent many iterations of review by the ORA, permit issuers at all levels, contractors, and consultants to ensure the process is accurately represented. Agencies have expressed great interest in this product as a printed and online resource they can provide to the public. For these purposes, a one-page guide was written to explain how to use the schematic (see text box). The schematic and its accompanying text are also included in the City of Seattle's *Living Shorelines* guidebook and in the informational packets for permit issuers.

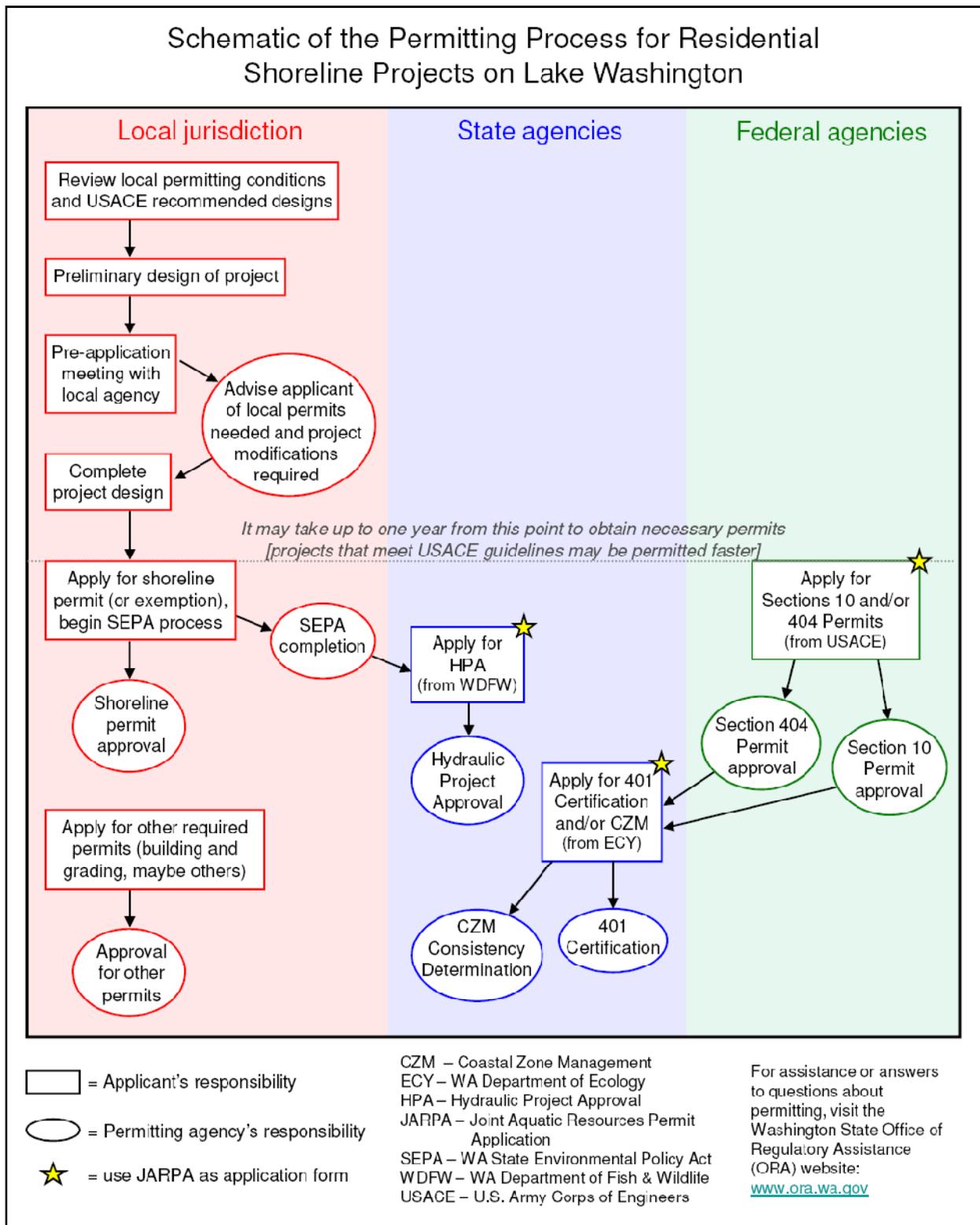


Figure 16: Schematic of the permitting process for Lake Washington residential shoreline projects

Lake Washington Shoreline Permitting Process Schematic

Schematic Design: This schematic provides a broad overview of the shoreline permitting process for construction and restoration work along the Lake Washington shoreline of private residences. The permitting process for shoreline work is not straightforward, and it can be difficult to determine what information and permits are required. This often leads homeowners to hire consultants or contractors to take care of the permitting for them. The involvement of professionals is helpful, especially in providing the required plans and evaluations required. However, it is still important for homeowners to understand the overall process and be involved in the design and permitting of their shoreline project. Homeowner communication with the permitting agencies often facilitates a faster, smoother permitting process, which saves time and money.

Permitting Process: The shoreline permitting process involves federal, state, and local agencies. Since there are many local jurisdictions around Lake Washington, the local permitting process varies depending on the location of the residence. Some of the state and federal permits require prior approval of other permits or certifications. In addition, the projects proposed by residents and/or their contractors or consultants will vary. For these reasons, there is no single step-by-step process of obtaining the required permits for a shoreline project. While the schematic does not walk applicants through every permutation of the permitting process, it provides a general overview of the major permits needed, the agencies issuing the permits, and the time required. Homeowners can use the schematic as a guide because it directs them to the appropriate agencies and informs them what the agencies expect and require. This schematic is a general overview of the permitting process required for shoreline construction and restoration projects, but it does not include every single form, evaluation, and permit that is required for a specific project. It provides enough guidance to ensure that the appropriate agencies will be contacted. Discussions between the applicant and the agencies should fill in the details.

The project design phase, which should include a pre-application meeting with the local jurisdiction planning office, provides the best opportunity for applicants to increase the speed and ease of the overall permitting process. Agencies at all levels of government are required to issue permits based on existing laws. For instance, the U.S. Army Corps of Engineers (USACE) must consider how a proposed project will affect habitat for juvenile Chinook salmon in Lake Washington because they are protected under the Endangered Species Act. Local jurisdictions look to their Shoreline Master Plans, which establish regulations to protect the health and usability of water bodies. Since each agency is responsible to carry out related but different regulations, it is important for applicants to work with agencies to develop a shoreline project design that meets the needs of the residents and can be permitted by the agencies. Agencies are generally able to approve more eco-friendly shoreline projects faster and with fewer revisions than more traditional projects. Nevertheless, the process can be slow; to avoid hassle and expense, the applicant should start the permitting process early to help ensure that the necessary permits and approvals are obtained in time for work to occur within the approved work window. Shoreline work is allowed during work windows that are set to minimize disturbance to wildlife. Generally work is done during the summer, but the dates of work windows can vary by the type of work being done. The USACE permits often take the longest amount of time to be approved (up to one year), but this time can be significantly shortened by proposing a shoreline design that fits USACE guidelines. Discussions with the local permitting agency can help applicants understand the shoreline design principles that are encouraged by all of the agencies.

Directions for Using the Schematic: To use the schematic as a guide to the permitting process, first review it as a whole, using the key to understand the significance of the symbols and acronyms. Rectangles show tasks for which applicants are responsible, while ovals show what the agencies will do. Arrows point from an activity that must be completed before another activity can begin; note that some of these chains involve information passing back and forth between applicants and agencies. Along the way, agencies will inform the applicant of additional information needed and which permits are required for the specific project proposed. Keeping the lines of communication open between the applicant and the agencies will help speed things along.

Informational Packets for Permit Issuers

Because our study produced key findings and recommendations relevant to permit issuers, we will deliver informational packets to Lake Washington shoreline project permit issuers. These packets will contain a cover letter, an executive summary of our study including key findings and recommendations, and a copy of our schematic. We hope that the delivery of these informational packets will encourage permit agencies to consider our recommendations as well as come up with their own ideas on how to improve the permitting process. In addition, the packets will guide agency personnel to our website, where they can download our full report, obtain an electronic copy of the schematic so they can print it and provide it to permit applicants, and find links to other relevant resources.

Policy Analysis

Problem Statement

Over 70% of Lake Washington's shoreline is armored by bulkheads and riprap, resulting in a lack of adequate nearshore habitat for rearing juvenile Puget Sound Chinook salmon, which are listed as threatened under the U.S. Endangered Species Act.

Policy Objectives

The purpose of this analysis is to evaluate which policy options are most effective at reaching the following objective: To increase suitable nearshore habitat for juvenile salmon in Lake Washington by replacing private residential hardened shorelines with bio-engineered eco-friendly shorelines.

Policy Options

Through reviews of the existing statutory and regulatory requirements and numerous structured stakeholder interviews, we have identified nine specific policy options that could be implemented to increase eco-friendly shoreline projects on Lake Washington. The policy options can be placed into the following four categories:

1. Status Quo/Increased Enforcement: No significant changes are made, or there are additional efforts to monitor and enforce the existing code.
2. Education, Outreach, and Collaboration: Efforts are directed to educate shoreline homeowners or shoreline permit reviewers on the technology, design and permitting process for eco-friendly shoreline projects.
3. Financial Incentives: Shoreline landowners can participate in a cost-share program or fee waiver program to help recover costs from eco-friendly shoreline projects.
4. Changes in code/Streamline of Environmental Review: Various policy options that would make it easier to complete the shoreline permit process, such as streamlining, building code tradeoffs, and code consistency.

Policy Criteria

Each policy options is evaluated on criteria that addresses how cost-effective and politically viable each policy option is. The following criteria are used to evaluate the policy options that we propose:

- Increase eco-friendly shorelines: Will the policy result in an increase in eco-friendly shoreline renovations on Lake Washington?
- Program implementation costs: Will the policy require additional funding for staffing, outreach, etc.? Compared to the environmental effectiveness of the policy option, is it cost-effective?
- Adequate environmental review: Does the policy promote adequate environmental review? Could there be unforeseen loopholes? Is the environmental review so thorough, stringent and costly that homeowners are dissuaded from shoreline renovation or complete the project without a permit? This is measured in minimal, stringent, and balanced. A balanced environmental review is the most desirable.
- Political viability and equitability: Will the policy require additional legislation at the state or municipal level? Is this likely to pass given budgetary and political considerations? Is this policy fair to both shoreline residents and the tax paying public?

Policy Analysis

In the following section we evaluate the benefits and drawbacks of the policy options based on the criteria we have established. This analysis is based on our current understanding of the statutes and regulations governing shorelines on Lake Washington, as well as from the 27 structured interviews we conducted with various stakeholders (see Methods and Interview Results sections). The analysis is by no means definitive, and is not intended to be overly specific, but it gives a sense of which policy options are likely to be most feasible and effective at achieving our policy objective. The bureaucratic, political, and ecological conditions vary across Lake Washington, so some generalizations had to be made. Table 1 offers more specific assessments of each policy option weighted by each of the policy criteria.

Status quo

- The regulatory system in place with the new programmatic guidelines issued by USACE and NOAA.
 - *Benefits:* The status quo policy is politically feasible, and is relatively effective at ensuring that new hardened shorelines are not installed.
 - *Drawbacks:* Shoreline landowners may be dissuaded from pursuing renovation of shoreline structures because the permitting process is too stringent and takes too long. Landowners may perceive that eco-friendly shoreline costs are imperative. Monitoring and enforcement are currently inadequate, as our interviews with landowners, contractors, and consultants indicated that illegal (non-permitted) work is common. A permitting process that is too complicated and prescriptive can have inadvertent consequences of contributing to the resistance of landowners and contractors to even participating in the permitting process.
- Increase enforcement of existing code: Local jurisdictions increase patrol of shorelines and penalties are more substantial.
 - *Benefits:* An unknown number of unpermitted lakeshore renovations would be discovered and mitigated for. This policy option would catch projects that would never be allowed under code, and are probably the most damaging to the environment.
 - *Drawbacks:* This policy would not address the problem of why the permitting process is costly and timely, and may require additional staff and resources that may not be available to agencies. It could also contribute to an adversarial relationship between regulatory agencies and many landowners, contractors, and consultants. Resistance to compliance, anger, and mistrust could be unintended consequences of this policy option.

Education, Outreach and Collaboration

- Homeowner/contractor education: Local, state, and federal agencies would provide more technical and non-technical information on the benefits and costs of eco-friendly shorelines, examples of eco-friendly shoreline projects, and sample eco-friendly shoreline designs to homeowners and contractors.
 - *Benefits:* This policy would address one of the major problems leading to reduced effectiveness of the current regulatory system. It would improve the understanding of the benefits of eco-friendly shoreline designs and may encourage landowners to choose to implement eco-friendly shorelines, thus increasing juvenile salmon habitat. In addition, this outreach would show landowners that eco-friendly shorelines provide additional benefits, such as improved safety and access, increased wildlife habitat, and more aesthetic appeal. By educating contractors on the technical requirements needed

for eco-friendly shorelines, the permitting process may be improved without forgoing adequate environmental review.

- *Drawbacks:* Environmental review may still be perceived as too stringent and costly by homeowners. Educating all lakeshore homeowners across all Lake Washington jurisdictions would require a coordinated social marketing effort, which would require funding and interagency coordination.
- **Agency Education and Collaboration:** Planners and permit reviewers at the local, state, and federal level would be educated on eco-friendly shoreline designs and the overall permitting process from the local to the state and federal level. Permit issuing agencies at all levels would also communicate with other on a regular, ongoing basis to share ideas and facilitate greater cohesion among the permitting agencies.
 - *Benefits:* This policy would promote consistency among permit reviewers and ensure that agencies understand the requirements of all of the agencies involved and what the entire permitting process entails, allowing them to better advise permit applicants about shoreline designs and facilitate a smoother permitting process. This policy would be politically viable and would not be too expensive to implement. This process would maintain a high level environmental review.
 - *Drawbacks:* This would require cross agency collaboration between the local, state, and federal levels, which can be difficult to orchestrate. Environmental review may still be perceived as too stringent and costly.

Financial Incentives

- **Public Subsidy:** Tax incentives or grants for homeowners choosing to implement eco-friendly shorelines. Current programs such as the Public Benefit Rating System could be enhanced to incorporate shoreline restoration.
 - *Benefits:* Landowners would be more willing to implement eco-friendly designs if a tax break or grant covered some portion of the financial cost of incurred. Environmental review would be very substantial since public funding would be used.
 - *Drawbacks:* This may be politically infeasible as it is seen as unfair to give tax breaks or financial subsidies to wealthy shoreline landowners. Also, in order to make a difference in the number of eco-friendly shorelines implemented, the amount of the tax break or grant would have to be significant enough to be an incentive for people who would otherwise not choose eco-friendly shoreline design options.
- **Fee Waiver or Reduction:** Applicants who implement eco-friendly shoreline designs would not have to pay permit application fees at the local, state or federal levels. A related financial incentive would be creating a wider variety of conditions under which shoreline project applications would be eligible for Biological Evaluation exemption under the USACE/NOAA Lake Washington Shoreline Protection Alternatives Programmatic (SPAP).
 - *Benefits:* A waiver or reduction in fees for application review may provide a small incentive for applicants to implement eco-friendly shoreline designs. This policy would not be politically contentious, and should not greatly impact the revenue stream for local municipalities. Applicants may be more willing to ask for consultation from local planners if the review fee is not cost-prohibitive. Biological Evaluations are very expensive (on the order of \$10,000), so waiving the requirement for them could be a significant financial incentive for landowners to choose eco-friendly shoreline designs. Currently, the SPAP allows the Biological Evaluation to be waived for only a few specific project designs.

- *Drawbacks:* Few interviewees identified this as an important issue, and those that did focused on the large municipalities such as Seattle and Bellevue. The overall impact of this policy would have a very marginal impact on the ease of the permitting process unless it was combined with another policy. Landowners would have to be aware of the financial incentives available in order for them to be an effective encouragement for eco-friendly shoreline implementation.

Streamline/Changes in Code

- **Additional Permit Exemptions for eco-friendly shoreline designs:** In consultation with state and federal agencies, local agencies would create programmatic similar to the SPAP issued by USACE in December 2007. If certain eco-friendly shoreline criteria were met in the initial designs, then the review of the project application would be streamlined.
 - *Benefits:* This policy may greatly reduce permitting time and provide common eco-friendly shoreline templates that would be consistent throughout Lake Washington. Programmatic could be included in the Shoreline Master Plan updates that are currently taking place.
 - *Drawbacks:* Local jurisdictions and state agencies may have different priorities. If a programmatic is too prescriptive, contractors may decide to apply for an individual permit, regardless of the time and costs it takes for approval. On the other hand, if a programmatic is too general, it may create loopholes for shoreline projects that are not truly eco-friendly.
- **Local Code Consistency:** Require that shoreline codes for Lake Washington municipalities are consistent with each other and with state and federal standards in eco-friendly shoreline design requirements and permit application processes. This policy would also require that all municipalities would accept a standardized permit application such as the JARPA or a modified JARPA.
 - *Benefits:* Consistent use of the JARPA would mean that each agency receives the same information at the same time, facilitating better coordination among the involved agencies and the creating the opportunity for a more streamlined permit process. Additionally, requiring that there is consistency among all Lake Washington municipalities regarding what construction is permitted may allow for long-term monitoring of the environmental effectiveness of eco-friendly shorelines.
 - *Drawbacks:* Each municipality has a Shoreline Master Plan and other building codes that are consistent with political and ecological conditions unique to each geographic region. Different municipalities may want to require more thorough permit review process because they have the staffing, technical resources, and mandates to do so. Requiring a one-size-fits-all approach may not be the most appropriate.
- **Tradeoffs or Flexibility in Design:** If landowners implement eco-friendly shorelines plans, certain other code requirements such as building setback would be less stringent.
 - *Benefits:* Landowners or contractors may be given an incentive to implement an eco-friendly shoreline project on construction or renovation sites in which they had not originally planned to do so.
 - *Drawbacks:* Allowing flexibility in other building codes may compromise environmental or safety standards that may not be completely mitigated by installing an eco-friendly shoreline.
- **Change Fill Restrictions:** Allow eco-friendly shoreline projects to place more shoreline fill than is currently allowed.

- *Benefits:* This would allow eco-friendly shoreline restoration projects on sites that have a very steep gradient and would require more fill than is currently allowed. Allowing more fill may eliminate the need to refill the site as regularly.
- *Drawbacks:* Fill standards were developed for a reason, and may cause unforeseen environmental impacts.

Table 1: Policy analysis matrix.

			POLICY CRITERIA			
			Environmental Effectiveness	Program Cost	Viability	Environmental Review
POLICY OPTIONS	Status Quo	Status Quo	Low	Inexpensive to implement new RGP guidelines.	Easy: Decisions by NOAA and ACE already approved.	Stringent: Extensive Review on all levels.
		Enforcement	Low/Medium	Moderately expensive: More Staff Time at Local Level Required	Somewhat difficult politically. May be seen as unfair to lakeshore landowners	Stringent
	Education/ Outreach	Landowner/ Contractor education	Medium/High	Moderate	Easy: Need program funding.	Would improve permit application process while maintaining adequate review.
		Agency Education	Medium	Moderate	Moderate: Need program funding and agency collaboration.	Would improve permit application process while maintaining adequate review.
	Financial Incentives	Cost Share Program/ Matching Fund	High	Very expensive	Very difficult politically. Seen as unfair to offer tax cuts to very wealthy	Stringent: Projects would be thoroughly reviewed to get public funding.
		Fee Waiver/Fee Reduction	Low	Moderately Expensive: Reduced revenue	Easy: Local jurisdictions drop fee based on basic criteria.	Stringent: Project would be thoroughly reviewed to get fee waived.
	Code Changes/Streamline Permitting Process	Additional Streamline	Medium: Depends on whether designs fit within the designated exemptions, or will be used as loopholes.	Inexpensive	Difficult: Agencies want to maintain oversight.	Minimal: Streamlining would reduce review but may allow unforeseen loopholes.
		Building Code Tradeoffs	Medium	Inexpensive	Moderate: Depends on local jurisdiction.	Balanced/Stringent: Planners may be more critical to allow tradeoffs.
		Change Fill Restrictions	Medium	Inexpensive	Difficult: WDFW and ACE may not approve of changes.	N/A
		Local Code Consistency	Medium	Inexpensive	Difficult: Agencies want to maintain oversight.	Balanced: Similar protocols would allow better understanding at all levels.

Recommendations

Based on the relative benefits and drawbacks of the previously explained policies, we believe three policy options are best suited to meet the outlined policy objectives:

- Promote collaboration and coordination between the local, state and federal government agencies that regulate shoreline construction on Lake Washington.
- Streamline the permit process for eco-friendly shoreline designs at the state and/or local level.
- Increase education and outreach efforts to Lake Washington property owners and shoreline contractors.

We feel these three specific policy options will work synergistically to help alleviate the current permitting lag in the regulatory system, and will help make landowners more aware of the multiple benefits of eco-friendly shorelines. The recommended policy options work in concert with each other, and are not meant to stand-alone. In the following section we explain how our content analysis' key findings give rationale for the recommended policy option, provide hypothetical processes for implementing the policies, as well as outline the various inputs, outputs and possible outcomes that could be measured.

Interagency Collaboration and Coordination

Rationale

In our interviews, a common theme among all respondent was the lack of overall coordination among agencies that have regulatory oversight over Lake Washington shorelines. Many agencies had knowledge about their own particular mandates, but had little understanding of the process and mandates of the other agencies involved in the permitting process. As our findings show, there is tremendous inconsistency among permit issuers regarding their understanding of the effectiveness of eco-friendly shorelines, whether or not they streamline the permitting process, and what resources are available for landowners who are interested in eco-friendly shorelines. Perhaps the most obvious need is a working definition of what an eco-friendly shoreline is.

Sixty percent of permit applicants thought that permit reviewers were not as familiar with the specific permitting process associated with shorelines (as opposed to other land use permits) as necessary for timely review, and even less familiar with eco-friendly shoreline designs. At least one interviewee from each subgroup except the federal agencies cited inadequate interagency coordination as a bottleneck.

This policy recommendation would encourage local jurisdictions to be more consistent with one another, and would prepare permit applicants for subsequent review at the State and Federal level.

Process

In order to promote collaboration and coordination among permit agencies, ECY could require that local jurisdictions include a section that defines eco-friendly shorelines and associated best management practices in their SMP updates. The SMP update meetings are an ideal environment in which to generate discussion between agencies. In addition, WRIA 8 could continue to coordinate workshops and training sessions regarding best management practices. However, WRIA 8 would need additional

resources to support a more robust agency education and coordination program, especially in the early stages of implementation.

Inputs, Outputs and Outcomes

The inputs for this policy would be additional staff hours allocated to this program, and/or associated program implementation costs. Outputs would be measured by the number of workshops or training sessions held, as well as the number of local jurisdictions with consistent eco-friendly shoreline provisions in their SMP updates and local code. As with all policy options, the outcomes would be increased nearshore habitat for juvenile salmon.

Permit Streamline

Rationale

The stakeholder interviews revealed that permit applicants commonly complain that the permitting process is confusing and requires unnecessarily large amounts of time and money due to redundant environmental reviews. The majority of permit issuers reported that the review chain is a bottleneck in the permitting process, characterized by permit applications not receiving review until the applicant has received a permit or certification from another agency (referred to earlier as the review chain). A related issue, insufficient interagency coordination, was indicated as a bottleneck in the permitting process by some members of every stakeholder group except federal permit issuers. Design revisions were reported as a bottleneck in the process by some local and state permit issuers as well. While all federal permit issuers interviewed reported that there is a shortcut in the permitting process for eco-friendly shorelines (referring to the Lake Washington Shoreline Protection Alternatives Programmatic (SPAP) in place starting December 2007), few of the local and state permit issuers interviewed agreed. Half of the contractors and consultants group said there were shortcuts, and few of the private landowners agreed. More than half of the permit issuers interviewed suggested streamlining the permitting process when asked what improvements they would like to see in the permitting process. All of the contractors and consultants suggested either streamlining the process or centralizing it so that one agency would issue all necessary project permits. While the latter suggestion is not feasible, streamlining the permitting process is a popular idea among all stakeholder groups. It should be noted that the interviewees independently suggested streamlining.

Streamlining the permitting process could save time and money for permit applicants and issuers. Applicants may be exempt from certain environmental evaluations for which they are currently responsible, often costing more than \$10,000 in consultation fees. This would leave landowners with greater financial resources to dedicate to shoreline restoration projects. The time savings to applicants would increase their satisfaction with the permitting process. Meanwhile, environmental review would not be diminished and may actually improve due to an increase in the consistency of eco-friendly project criteria between federal, state, and local jurisdictions around Lake Washington.

It is important to carefully consider the standards for projects eligible for a streamlined permitting process. They should ensure that the legal responsibilities of the agencies involved are fulfilled. They should not be so general that loopholes are created, but not so prescriptive as to be impossible to implement for a large fraction of shoreline properties. The goal is to increase eco-friendly shorelines around Lake Washington, and this will only happen if private landowners and their hired professionals are able to design eco-friendly shoreline projects that are satisfactory (affordable and pleasing) to the

landowners and will be permitted by all of the agencies involved. An agreement between the permit issuing agencies at all levels would go a long way to ensuring that the permitting process itself does not constitute a barrier to private landowners implementing eco-friendly shorelines.

Process

Local agencies would work with state (WDFW and ECY) and federal (USACE and NOAA) agencies to create a programmatic similar to the SPAP. A set of guidelines for eco-friendly shoreline designs would be provided, and project applications to the local agency adhering to these guidelines would be granted shortcuts in the permitting process at the state and federal levels. One way this might be implemented is for the local permit agencies to submit their guidelines as an application to the state and federal agencies for review. If the guidelines meet the requirements for shoreline projects at the state and federal level, the state and federal agencies could pre-approve or provide shortcuts to all projects that fall under the local guidelines. The shortcuts would have to be agreed upon by the agencies, but could include waivers for some environmental reviews and expedited permit application reviews. The state and federal agencies could review the programmatic on a regular basis, and work with the local agencies to recommend changes in the programmatic as necessary.

Inputs, Outputs and Outcomes

Streamlining the permitting process for eco-friendly shoreline projects on Lake Washington would require a serious commitment from USACE, NOAA, WDFD, ECY, and the local permit issuers. It is possible for some local permit agencies to participate while others choose not to, but the state and federal agencies would have to be on board to make the efforts worthwhile. The resources required from the agencies involved would primarily be work hours; the time commitment would depend on how easily the group can come to an agreement on guidelines for eco-friendly shoreline designs and determine exactly how the streamlined permitting process would work. The outputs of this policy would include agreements between local, state, and federal permitting agencies, guidelines for eco-friendly shoreline designs, and plans for how to process the applications that fit under the guidelines. It is a daunting task to develop a new programmatic, but as we found in this study; the status quo is not producing many eco-friendly shoreline projects. A streamlined permitting process, combined with education and outreach aimed at Lake Washington landowners, is more likely to produce the environmental outcome of increased nearshore habitat for juvenile salmon.

Outreach and Education to Landowners/Applicants

Rationale

A lack of knowledge among landowners about eco-friendly shorelines and shoreline permitting processes was identified in our study. In addition, a lack of resources on eco-friendly shoreline designs and shoreline permitting was identified.

Eco-friendly shorelines are not being implemented as frequently as traditional shorelines simply because landowners are not demanding them. Contributing rationale for this occurrence may include a lack of knowledge and/or misconception on:

- what eco-friendly shorelines are
- why eco-friendly shorelines are necessary for supporting lake ecological processes
- eco-friendly shorelines and their ability to protect the shoreline from erosion, and the desire to stick with what has traditionally “worked” on their shoreline.

This inertia is difficult to reverse; it requires a change in landowners' attitudes about their shorelines.

The complex nature of the permitting process has led landowners to rely on their contractors and consultants to aid them through the process. This has resulted in contractors and consultants playing a heavy hand in what kind of shoreline designs are implemented. While some contractors and consultants have encouraged eco-friendly design, not all have yet embraced it. Landowners cannot be expected to handle the technical details of their shoreline design, a basic knowledge of eco-friendly shorelines and their benefits would empower them to request these designs from their contractors.

While permit issuers should heavily discourage traditional (hardened design), this approach promotes negative interactions with permit issuers, having long-term negative effects, and may reduce the intended environmental outcome. It is anticipated that the greatest change in the types of shoreline designs being implemented will come when landowners are informed about what is best for ecological function, health, and personal enjoyment of the lake. Under these conditions it is expected that landowners would demand eco-friendly designs. For this reason it is important to objectively communicate the benefits of eco-friendly shorelines in a manner that resonates with landowner values in a manner that benefits the intended environmental outcomes.

Process

We recommend that agencies take on the responsibility for outreach in order to educate landowners about eco-friendly shorelines and their benefits. An excellent example of this recommendation is the City of Seattle's forthcoming *Living Shorelines* guidebook. Due out this summer, it will be a vital resource for any shoreline landowner planning to perform maintenance on, redesign, or "green" their shoreline as other jurisdictions may not have the means to produce their own guidebooks. The city should take measures to ensure it is readily available to all landowners around the lake. This resource is too important to restrict its access to Seattle shoreline residents.

While the detailed information in the *Living Shorelines* guidebook is indispensable, it is reasonable to assume that landowners will only seek its guidance when they are about to start or have already started their shoreline project. We recommend permitting agencies educate landowners early, before they are attached to a traditional design. Eco-friendly shoreline designs need to be a realistic and apparent option for landowners when they first start to think about their shoreline project.

The early promotion of eco-friendly shoreline designs by local permit agencies may be accomplished through providing educational resources to private landowners. For example, pamphlets, newsletters, or similarly concise materials could be used to communicate a thorough description of eco-friendly shorelines and their benefits to both aquatic life and landowners. A single-page fact sheet developed from the *Living Shorelines* guidebook may provide an efficient starting place. We recommend that the City of Seattle take on this task.

Because there are multitudes of ways to educate private landowners about eco-friendly shoreline designs, we recommend that local permit agencies should collaborate amongst themselves to find the best outreach strategies. We also recommend the agencies evaluate the best media for the disseminating and receiving information whether it is print or internet based. Making information easily accessible will allow it to reach a wider audience.

Inputs, Outputs and Outcomes

The inputs for these and other educational and informative tools are primarily work hours. Although many permitting agencies are understaffed and overworked, this work is vital to improving the ecosystem functions of the Lake Washington shoreline. Once the initial development of tools is complete, issuers need only be aware that the resource tools exist and direct the landowners to them.

The outputs produced from this recommendation include documents and other educational resource tools. The effectiveness of these outputs could be evaluated by surveying permit applicants to learn whether they received the resource tools and if they influenced their decision in choosing a shoreline design.

The outcome of this recommendation would be increased numbers of eco-friendly shorelines. If all landowners are properly informed about eco-friendly designs we are hopeful that more landowners would want eco-friendly shorelines on their property and eco-friendly shorelines will become the norm. When this happens, less landowner outreach will be needed; landowners will seek this information on their own.

Appendix A: Interview Questions

During the early stages of our project, we referred to eco-friendly shorelines as “alternative shorelines”. However, over time we came to the conclusion that the term “alternative” is ambiguous. Although many people do not know what an eco-friendly shoreline is, “eco-friendly” at least gives them an idea of the shoreline’s function, even if they cannot picture the specific aspects of such a design. However, we decided not to reword our interview questions after the fact. Hence, in the interview questions and the discussion of the responses, we sometimes refer to “alternative shorelines.” Similarly, there are other terms that refer to the same thing, such as green, living, or soft shorelines. A consensus should be reached on the terminology to avoid confusion and facilitate recognition of the chosen term.

The interviews we conducted with permit applicants and issuers were structured by a set of questions that were intended to cover a wide variety of information regarding the permitting process. Our research was conducted as part of a University of Washington program, so we submitted our interview questions to the University’s human subjects review process for approval. We broke up our interviewees into two groups: permit applicants (landowners, contractors, and consultants applying for the permits) and permit issuers (employees from local, state, and federal agencies issuing permits). The first eleven questions were asked of both applicants and issuers, and an additional three questions were asked of applicants only.

Questions for Permit Applicants and Issuers

1. What is the step-by-step permitting process for private landowners interested in implementing an alternative shoreline design?
 - a. What permits are required?
 - b. Do differences in the permitting process exist between traditional and alternative designs?
2. Which group most frequently applies for permits: contractors, consultants, landowners?
 - a. Is the permitting process generally faster or smoother for one group compared to another? Why?
3. Are there any perceived or actual bottlenecks in the permitting process?
 - a. If so, where do they exist?
 - b. How can permit applicants avoid bottlenecks?
 - c. How can permit issuing agencies help applicants avoid bottlenecks?
4. What are the most common mistakes made by permit applicants?
 - a. What is the cost (time and/or financial) of these mistakes to the permit applicant?
 - b. [To permit issuers only:] What is the cost (time and/or financial) of these mistakes to the permit issuing agency?

5. Is there a discussion between the permit applicant and the permit issuer about the applicant's shoreline design?
 - a. Are alternative shorelines promoted by the permit issuer?
6. Are there any shortcuts or streamlines in the permitting process for landowners interested in implementing alternative shoreline designs (as compared to installing or replacing a bulkhead or riprap)?
7. Is any alternative shoreline design information available for permit applicants?
8. Are there any improvements that could be made in the permitting process?
9. Are there any incentives within the permitting process for applicants interested in implementing alternative shoreline designs?
 - a. Are there any potential incentives within the permitting process that would encourage applicants to consider alternative shoreline designs?
 - b. Are there any potential policy mechanisms that would encourage applicants to consider alternative shoreline designs?
10. How do people know they need a permit?
11. What assistance and resources are available for permit applicants?

Additional Questions for Permit Applicants

12. [To landowners:] Does your property have alternative shoreline design?
[To contractors and consultants/designers:] Have you designed and/or constructed any alternative shoreline designs?
 - a. Why or why not?
 - b. What are the benefits of alternative shoreline designs?
 - c. What are the problems and costs of alternative shoreline designs?
13. How do the following factors affect the choice between traditional and alternative shoreline designs?
 - a. Effectiveness of shoreline design at controlling erosion
 - b. Maintenance
 - c. Cost
 - d. Permitting
 - e. Aesthetics
 - f. Lake accessibility and use
14. What information is your answer to the previous question based on?

Appendix B: Definitions

Alternative Shorelines: see **Eco-friendly Shorelines**

Bulkhead: a retaining wall to contain beach erosion and protect property from storm damage, often made of concrete, wood, or large boulders

Clean Water Act (CWA): the primary United States federal law governing water pollution

Ecosystem Functions: interactions between organisms and the physical environment

Eco-Friendly Shoreline: a shoreline that promotes beneficial ecosystem functions to wildlife while still preventing erosion and maintaining human enjoyment of the lake. Eco-friendly shorelines do not all look alike, but they may include such features as beach coves or full beaches, overhanging vegetation or planting buffers, bulkheads that are set back an appreciable distance behind the OHWM, appropriately placed logs or large woody debris, and biotechnical slope stabilization.

Endangered Species Act (ESA): a United States federal law designed to protect critically imperiled species from extinction as a consequence of economic growth and development untended by adequate concern and conservation

Hardened Shorelines: a shoreline armored with bulkhead or riprap

Lake Washington Shoreline Protection Alternatives Programmatic (SPAP): a programmatic under which the federal permitting process, including consultation with NMFS, is streamlined if a project meets the specific set of design requirements set forth in the SPAP guidelines, ensuring an environmentally friendly shoreline design

Nearshore: The region of land extending between the backshore, or shoreline, and the beginning of the offshore zone. Water depth in this area is usually less than 10 m (33 ft).

NMFS (National Marine Fisheries Service): a division of the National Oceanic and Atmospheric Administration (NOAA), NMFS is responsible for the stewardship and management of the nation's living marine resources and their habitat

NOAA (National Oceanic and Atmospheric Administration): a scientific agency within the United States Department of Commerce focused on the conditions of the oceans and the atmosphere. NOAA is one of the community partners associated with this project.

Office of Regulatory Assistance (ORA): an entity created by the governor of Washington State to help citizens and businesses navigate through applicable state and federal regulatory systems

Ordinary High Water Mark (OHWM): refers to the highest level reached by a body of water that has been maintained for a sufficient period of time to leave evidence on the landscape

Programmatic Biological Evaluation for Shoreline Protection Alternatives in Lake Washington: see **Shoreline Protection Alternatives Programmatic**

Regional General Permit (RGP): a Department of the Army authorization that is issued on a regional (limited geographic scope) basis for a category of activities when those activities are substantially similar in nature and cause only minimal individual and cumulative impacts on the aquatic environment. If your project meets the requirements, you may apply for an RGP from the Corps instead of the lengthier Individual Permit.

Riprap: loose rock used to create shoreline armoring similar to a bulkhead, though often placed at an angle to the water as opposed to a wall perpendicular to the water

Rivers and Harbors Act (RHA): this refers specifically to the Rivers and Harbors Act of 1899, the oldest environmental law in the United States. Its primary function was to make the discharge of matter into navigable waters a misdemeanor. To understand its applicability to this study, see **Section 10**.

Seattle Department of Planning and Development (SDPD): a department within the City of Seattle that manages growth and development within the city in a way that enhances quality of life. They promote a safe and sustainable environment through comprehensive planning, good design, and compliance with development regulations and community standards. SDPD is one of the community partners associated with this project.

Seattle Public Utilities (SPU): SPU provides water, sewer, drainage, and solid waste services to the residents of Seattle. SPU is one of the community partners associated with this project.

Section 7: a section of the Endangered Species Act that directs all federal agencies to use their existing authorities to conserve threatened and endangered species and, in consultation with the U.S. Fish and Wildlife Service, to ensure that their actions do not jeopardize listed species or destroy or adversely modify critical habitat

Section 10: a section of the Rivers and Harbors Act that regulates the building of a structure (bulkheads, docks, piers) or the placing of fill in navigable waters of the U.S.

Section 404: a section of the Clean Water Act that regulates the discharge of dredged and fill material into waters of the U.S.

Shoreline Management Act (SMA): a Washington State law adopted to prevent the inherent harm in an uncoordinated and piecemeal development of the state's shorelines. The SMA has broad policies to promote "preferred" shoreline use, protect shoreline natural resources (the land and its vegetation and wildlife), and to promote public access to the state's shorelines.

Shoreline Master Program (SMP): Under the SMA each city and county with "shorelines of the state" must adopt a SMP that is based on state laws and rules but tailored to the specific geographic, economic and environmental needs of the community. The SMP is essentially a shoreline comprehensive plan and zoning ordinance with a distinct environmental orientation applicable to shoreline areas and customized to local circumstances. The SMPs in jurisdictions around Lake Washington are currently being updated.

Substrate: the material on the lake floor. Close to the shoreline, a certain size of gravel (1/8 inch to 2 inches in diameter) contributes to the ideal habitat for juvenile salmon.

Traditional Shorelines: see **Hardened Shorelines**

U.S. Army Corps of Engineers (USACE): a federal agency that provides engineering services to the nation. The Corps has jurisdiction over navigable waters and issues the federal permits needed for shoreline work waterward of the OHWM along Lake Washington.

Washington Department of Ecology (ECY): an agency whose role is to protect, preserve, and enhance Washington's environment, and promote the wise management of our air, land, and water

Washington Department of Fish and Wildlife (WDFW): an agency whose mission is to provide sound stewardship of Washington State's fish and wildlife

Water Resource Inventory Area 8 (WRIA 8): Washington State is divided into 62 WRIs for water and aquatic-resource management issues. WRIA 8 includes Lake Washington as well as the Cedar River watershed. One of the main functions of WRIA 8 is to conserve and restore salmon habitat. WRIA 8 is one of the community partners associated with this project.

Work Window: construction timing rules prohibiting work at certain times of the year due to detrimental ecological effects to fish or other wildlife listed under the ESA. Different work windows apply to different areas of the lake.