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MEMORANDUM

To: Houghton Community Council

From: Stacy Clauson, Contract Planner
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Date: February 13, 2009

Subject: Kirkland's Shoreline Master Program Update (SMP)
File No. ZON06-00017

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I. RECOMMENDATION

- Review and provide direction on proposed **shoreline stabilization standards**.
- Review and provide direction on **preliminary approaches for addressing pier standards**.

II. INTRODUCTION

On November 24, 2008 the Houghton Community Council began its review of the initial draft of the regulations associated with the Shoreline Master Program. The Houghton Community Council has previously reviewed the draft shoreline goals and policies that will be added as a new chapter in the Comprehensive Plan.

On February 23, 2009 the Houghton Community Council will begin review of background materials and draft regulations for **shoreline stabilization** including: 1) new bulkheads, 2) replacement of existing bulkheads, and 3) repair of existing bulkheads. Shoreline stabilization

has been one of the key topics of concern as voiced by members of the public throughout the SMP update process. In addition, we will also address issues relating to **piers**, including 1) new piers, 2) pier replacements, 3) pier additions, and 4) repair to existing piers.

The Planning Commission began their review of these regulations in December and January. They are scheduled to meet again on March 12th.

III. SHORELINE STABILIZATION.

A. **Introduction.** As noted in the Final Shoreline Analysis, much of Kirkland's shoreline presently has low performance for a number of different shoreline functions. Shoreline modifications and near shore structures have, together with other changes, altered Lake Washington's aquatic ecosystem. **Degraded shoreline conditions** resulted originally from lowering the lake water surface levels when the Locks were constructed. Further adverse impacts are a result of urbanization and the majority of the Kirkland's shoreline (approximately 67 percent) is now used for urban commercial and residential uses. As reported in the Chinook Salmon Conservation Plan, "Landscaped yards and bank armoring (bulkheads and riprap) have reduced the amount of riparian vegetation and woody debris contributed to the lake. Armoring has also modified substrates in shallow areas due to prevention of bank erosion and altering sediment dynamics at the water-land interface." These changes have, in turn, **impacted the habitat for salmon**. Lake Washington is used as a migratory and rearing area and shoreline habitat conditions are important for juvenile Chinook using Lake Washington.

At the same time, property owners along the shoreline desire to **protect their property from wind and wave action and erosion** and to be able to use their property and have access to the lake.

Staff has prepared draft standards for the Houghton Community Council to review (see Attachment 1). The challenge will be **balancing protecting property while improving ecological function**. During the Planning Commission initial review of these draft provisions, there was concern expressed by shoreline property owners that the draft standards did not appropriately address this balance. Staff has revised the standards to address public comments where possible, but it is also acknowledged that there will likely still be concerns over new provisions which focus on new and creative shoreline designs that make use of gravels, cobbles, boulders, logs, and vegetation to stabilize shorelines in lieu of traditional hard materials such as vertical concrete walls or riprap bulkheads.

B. **Purpose**. With the updated regulations we need to address several different objectives, including the following:

- Ensuring **protection of property from erosion**.
- Improving **shoreline ecological functions**.
- **Enhancing habitat** for migrating juvenile Chinook salmon.
- Responding to new **State requirements.**

- Providing **consistency with state and federal permitting**, particularly streamlined permitting for fish friendly designs.
- **Responding to WRIA 8 recommended actions** (see Section F below).

The presence of bulkheads along the shoreline has become an increasing area of concern for a number of reasons:

1. To respond to the **Endangered Species Act listing of Chinook salmon** and the subsequent scientific understanding of bulkhead affects on Chinook habitat,
2. To respond to increased understanding of how bulkheads and other shoreline stabilization interfere with **ecological functions and alter ecosystem-wide processes** (see WAC 173-26-231(2) and (3a), pages 71-74 of http://www.ecy.wa.gov/programs/sea/sma/laws_rules/173-26/SMP_Guidelines_Final.pdf for outline of general shoreline stabilization impacts) (included as Attachment 2),
3. To comply with specific State requirements that establish provisions for new, enlarged, and replacement bulkheads which need to be included in the updated SMP (see WAC 173-26-231(3)(a)(iii), pages 74-77 of http://www.ecy.wa.gov/programs/sea/sma/laws_rules/173-26/SMP_Guidelines_Final.pdf (for outline of general shoreline stabilization impacts and Ecology requirements) (included as Attachment 2).

C. Existing Conditions. The Final Shoreline Analysis report completed in 2006 provided a characterization of the amount of existing shoreline stabilization in the City (see Table 7 on page 15 of the Final Kirkland Shoreline Analysis Report), which shows:

- 88% hardened shoreline in Residential – L
- 89% hardened shoreline in Residential – M/H
- 80% hardened shoreline in Urban Mixed
- 60% hardened shoreline in Urban Conservancy
- 0% hardened in Natural

D. **Overview of Potential Impacts and Opportunities.** The following provides an overview of the potential negative impact shoreline stabilization can have on the lake's ecological function, and a list of actions that can minimize or mitigate for these impacts. The impacts noted are summarized in more detail in the Final Kirkland Shoreline Analysis Report, sections of which have been included in Attachment 3. References to scientific studies are found in this Analysis Report and noted below in Section VI.B below.

Impacts	Opportunities
• Loss of complex habitat features (i.e., woody debris, overhanging vegetation, emergent vegetation). • Steepen the nearshore, providing less	• Enhance shoreline vegetation. • Reduce shoreline armoring by removing bulkheads, or pulling them back from ordinary high water.

opportunity for gradual nearshore slopes to attenuate wave energy and provide refuge habitat for small fish from larger fish predators. • Creates a deeper, turbulent nearshore that is inhospitable to small fish and amphibians, as well as to emergent vegetation. • Reduces upwelling/downwelling areas, which are optimal for sockeye salmon spawning. • Limits natural recruitment of lakebed materials.	• Place fill material for purposes of habitat enhancement (creation of nearshore shallow-water habitat) waterward of the ordinary high water mark.

The City of Seattle has produced a guidebook for property owners that illustrates the alternatives to conventional shoreline armoring, consistent with the opportunities noted in the table above. A hard copy has been provided in your packet and is posted on the City's website.

E. **Overview of Federal and State Permitting**. The permitting for shoreline stabilization structures can be a complicated process, with review required at the local, state, and federal levels. At the January 22, 2009 Planning Commission meeting, the City received a **presentation from Dave Douglas** of Waterfront Construction about the permitting processes for shoreline stabilization structures and piers at the local, state and federal permitting agencies. An audio recording of the presentation can be reached at the following link: http://www.ci.kirkland.wa.us/depart/Planning/Planning_Commission/Planning_Commission_Meetings_Online.htm . A copy of the slide presentation is included as Attachment 4. As a part of this presentation, Mr. Douglas related his experiences and suggestions as a permit coordinator with past experience in both Kirkland and other communities in assisting property owners through the permitting process. Mr. Douglas stressed the need to incorporate flexibility into local regulations that would allow for property owners to explore different designs that may exceed certain dimensional standards used in federal permitting in exchange for other improvements.

   See Attachment 5 for more information on permitting requirements.

F. WRIA 8 Recommendations. Staff is evaluating the WRIA 8 Conservation Strategy as one of the resources providing both scientific and policy guidance for the development of the SMP revisions. The Chinook Salmon Conservation Strategy document identified a number of recommended actions that are applicable to Kirkland, including:

- In the WRIA 8 Chinook Salmon Conservation plan, Kirkland's shoreline is identified as a **Tier 1 migratory corridor for Chinook Salmon**. The plan contains the following technical priorities addressing shoreline stabilization:

  - Reduce predation to outmigrating juvenile Chinook by: reducing bank hardening, restoring overhanging riparian vegetation, replacing bulkheads and rip-rap with sandy beaches with gentle slopes, and use of mesh dock surfaces and/or community docks.

- Use WRIA 8 Conservation Strategy as one of the "best available science" resources during current critical areas ordinance (CAO) revisions and Shoreline Master Program (SMP) revisions. Recognize that softening or removal of bulkheads is the most important action to improve shoreline habitat. In addition, riparian/shoreline buffers should be increased to the extent practicable.

- Discourage construction of new bulkheads. Develop guidelines to better assess need for bulkheads and restrict height to that necessary to protect the structure; height increases would be allowable only after appropriate analysis based on fetch, waves, wind velocity and direction, etc. Guidelines should take into account tradeoffs with other environmental impacts (e.g., presence of contaminated soils) and public safety hazards.

- Support development of federal/state/local specifications and streamlined permitting for salmon friendly bulkheads. (Note: These standards have now been developed as part of the Programmatic Biological Evaluation for Shoreline Protection Alternatives in Lake Washington, which outlines several alternatives shoreline designs that, if used, can receive expedited federal review. See Attachment 6 for more information).

G. **Overview of State Requirements**. The following is an overview of the **State requirements addressing shoreline stabilization** (see Attachment 2 for specific guideline language), together with information describing how the proposed regulations included in Attachment 1 respond to these State Requirements. In addition, Attachment 7 provides a response that the Department of Ecology has provided which addresses issues related to both piers and shoreline stabilization and is intended to provide clarification to some of the public comments that have been received.

1. **New and Enlarged Bulkheads**. Given the degree of existing shoreline armoring along the single family, multifamily, and commercial areas along Kirkland's shoreline, the incidence of new bulkheads is anticipated to be rare.

   i. **State Requirements/Guidance**. With respect to new bulkheads, the State Guidelines focus on:

   - Avoiding the need for structural stabilization measures by appropriately locating new development,
   - Demonstrating that there is a need for the bulkhead, by submittal of a geotechnical report (WAC 173-26-231(3)(a)(iii)(B) and WAC 173-26-231(3)(a)(iii)(D)),
   - Demonstrating that nonstructural measures are not feasible (WAC 173-26-231(3)(a)(iii)(B)),
   - Incorporating impact minimization measures to lessen the impacts of the new bulkhead (WAC 173-26-231(3)(a)(iii)(E) and WAC 173-26-201(2)(e)), and

- Completing mitigation to offset impacts that could not be avoided or minimized (WAC 173-26-201(2)(e)).

ii. **<u>Proposed Standards (see Attachment 1)</u>**. A summary of the key provisions is included below. Please see Attachment 1 and review specific draft regulation language.

a. *Submittal Information.* Section 83.300.4.a and b – Requires geotechnical report for new or enlarged structural shoreline stabilization measures, except when primary structure is located within 10 feet of ordinary high water mark.

b. *Impact Minimization Measures*. Section 83.300.5 – Requires:

- Limiting the size of the stabilization measure to the minimum necessary.
- Use soft shoreline stabilization measures to maximum extent.
- Limit size of hard structural shoreline stabilization measures to minimum necessary and shift or slope bulkhead landward.
- Construction timing restrictions to respond to endangered species habitat requirements, use of BMPs to prevent water quality impacts, etc.

c. *Mitigation*. Section 83.300.5.d – Requires placement of gravel beach fill waterward of OHWM and installation of native riparian vegetation.

<u>Houghton Community Council</u>: Does the HCC have any questions on the draft standards for new or enlarged shoreline stabilization structures contained in Attachment 1 or comments to transmit to the Planning Commission?

2. **Replacement of Existing Bulkheads**. In reviewing the City's past permitting for new bulkheads and bulkhead replacements, we have not had a large number of requests for new bulkhead construction or bulkhead replacement. (Note: Since 1990, City records show no requests for new bulkheads, 1 replacement and 6 repairs.) There may be some projects that are not accounted for in this summary. For instance, bulkheads may have been repaired or added as part of pier work; this work may not have been independently tracked as a bulkhead repair or addition. In addition in some cases repair work may have been done without permits.

After contacting a shoreline contracting firm with extensive experience working on bulkheads in Lake Washington and along Kirkland's shoreline, it is projected that there **will be additional requests for bulkhead repairs** in the future, particularly because the City has not received many requests over the last 15 years. This is because over time, wave, wake and storm activity cause bottom scouring and washout to occur. The natural effect is for bulkhead rock to move or pull out, causing a sloughing over time that can lead to failure of the bulkhead.

Staff has made inquiries with this contracting firm to try to determine under what circumstances full replacement is generally needed if part of a bulkhead is starting to

fail. Staff learned that, generally, **most non-rock bulkheads will need total replacement** because of how they are built and tied together and the consistency in material deterioration. This includes concrete, timber, soldier piles, sheet pile, etc. **Rip rap bulkheads, on the other hand, are more likely to include repairs or maintenance activities** such as toe protection (fill), new top course rocks, holes plugged, backfill added behind, etc. Most major structural problems with rock bulkheads arise from destabilization of the lake bottom and the result is requiring a total replacement because the base layers must be reconstructed and the bulkhead must be built higher to compensate for the loss of lake bottom.

The contractor stressed the **need to conduct maintenance inspections regularly** in order to detect scouring at the toe of a bulkhead before damage occurs. Scouring could be addressed in earlier stages by installing suitable fill, thereby minimizing the need for bulkhead replacement. It should be noted that the City is proposing to **allow placement of fill material for purposes of habitat enhancement waterward of the ordinary high water mark**. As noted, maintenance issues can also be addressed through this activity.

i. **State Requirements/Guidance**. With respect to replacement bulkheads, the State Guidelines (see Attachment 2 for specific guideline language) focus on:

- Demonstrating that there is a need for the bulkhead (WAC 173-26-231(3)(a)(iii)(E)),
- Demonstrating that nonstructural measures are not feasible (WAC 173-26-231(3)(a)(iii)(B)),
- Incorporating impact minimization measures to lessen the impacts of the new bulkhead (WAC 173-26-231(3)(a)(iii)(E) and WAC 173-26-201(2)(e)), and
- Completing mitigation to offset impacts that could not be avoided or minimized (WAC 173-26-201(2)(e)).

ii. Proposed Standards (see Attachment 1). A summary of the key provisions is included below. Please see Attachment 1 and review specific draft regulation language**.**

a. *Submittal Information*. Proposed Regulation:

1) Section 83.300.4.c – Requires submittal of written narrative justification outlining need to protect principal uses, except when soft shoreline stabilization measures are to be used or if residence is located within 10 feet of ordinary high water mark (note: no geotechnical report is proposed to be required).

2) Section 83.300.4.e requires City consultant review of justification.

b. *Impact Minimization Measures*. Section 83.300.5 – Requires:

1) Limiting the size of the stabilization measure to the minimum necessary.

2) Use soft shoreline stabilization measures to maximum extent.

3) Limit size of hard structural shoreline stabilization measures to minimum necessary and shift or slope bulkhead landward.

4) Construction timing restrictions to respond to endangered species habitat requirements, use of BMPs to prevent water quality impacts, etc.

c. *Mitigation*. Proposed Regulations: Section 83.300.5.b addresses mitigating for short-term construction impacts. Note: Other state and federal permitting agencies require mitigation for replacement structures.

Houghton Community Council: Does the HCC have any questions on the draft standards for replacement shoreline stabilization structures contained in Attachment 1 or comments to transmit to the Planning Commission?

3. **Repair of Existing Bulkheads.** Repair activities, like replacement, are also anticipated to be **more common in the future**.

i. **State Requirements/Guidance.** Under the provisions of WAC 173-27-040(2)(b), normal maintenance or repair of existing structures or developments (including damage by accident, fire or elements) can be exempt from the requirements of an SDP application. "Normal repair" means to restore a development to a state comparable to its original condition, including, but not limited to, its size, shape, configuration, location and external appearance, within a reasonable period after decay or partial destruction, except where repair causes substantial adverse effects to shoreline resources or environment. Replacement of a shoreline stabilization structure can be authorized under this provision as repair where such replacement is the common method of repair for the type of structure. Further, the replacement structure would need to be comparable to the original structure including, but not limited to, its size, shape, configuration, location and external appearance. Finally, the replacement could not cause substantial adverse effects to shoreline resources or environment. As noted, replacement can, in certain circumstances, be authorized as a type of repair. Since the State has established requirements for replacement shoreline stabilization structures, one of the key issues that needs to be determined is how much repair can occur until the activity functions as replacement.

ii. **Proposed Standards (see Attachment 1). A summary of the key provisions is included below. Please see Attachment 1 and review specific draft regulation language.** The draft regulations use the following thresholds to determine major repair activities:

- If a section of an existing bulkhead to be repaired/replaced is greater than 15 feet in continuous linear length, then that portion of the bulkhead (not the full bulkhead length) should be considered replacement and be considered for impact minimization measures (e.g. creation of a coved area, sloped bulkhead, fill to create shallow water, if feasible).
- If more than 75% of the linear length of the existing bulkhead is repaired, the bulkhead shall be considered a replacement bulkhead.

Houghton Community Council: Does the HCC have any questions on the draft standards for major repair of shoreline stabilization structures contained in Attachment 1 or comments to transmit to the Planning Commission?

H. **Planning Commission Direction**. The Planning Commission has heard from a large number of property owners about the need for shoreline stabilization along Kirkland's shoreline, concerns with use of softer approaches not being sufficient to address Kirkland's shoreline characteristics, and potential costs and additional requirements that new standards might impose. The Planning Commission has expressed interest in avoiding duplication of requirements and therefore limiting the extent of new regulations where possible, if other state and federal agencies sufficiently address impacts. The extent to which this can be accomplished will be limited to a large degree by the requirements established in the State

Guidelines. The Planning Commission has requested additional study of how soft approaches could be accommodated on some of the narrow lot configurations that are present in the low-density residential areas along the shoreline, such as along 5th Ave W.

The Planning Commission has made a number of initial recommendations that have been incorporated into the proposed regulations, as follows:

- Establish an SDP permit review for new bulkheads in the Residential L and M/H and Urban Mixed shoreline environments.
- Provide a performance approach that allows applicants to select among a menu of mitigation approaches to mitigate for impacts associated with new shoreline stabilization measures.
- Create criteria to waive geotechnical reports for certain types of projects where the need for the structural shoreline measure can be determined up-front and incorporated into the regulations.
- The Planning Commission has also reviewed and provided initial comments on draft regulations that respond to new State Guideline requirements for shoreline stabilization. It is important to note that these regulations are likely to achieve a gradual improvement in shoreline conditions over time, as bulkheads are either replaced with softer measures, pulled back from the shoreline, or gravel substrate is added for habitat enhancement, all depending on the outcome of site-specific analysis which is aimed at gauging the degree to which shoreline stabilization is required or can be accomplished with softer measures.

I. **Public Comments and Proposed Regulations.** There has been **significant public comment** received addressing shoreline stabilization regulations and staff would encourage you to review comments attached to this packet as well as your November 24th packet. Attachment 8 provides a **summary of some of the key themes** from the public comments relating to shoreline stabilization, together with a brief response from staff on the status of the regulations with respect to the issue noted:

IV. PIERS

A. Introduction. As noted above in Section III.A, much of Kirkland's shoreline presently has low performance for a number of different shoreline functions. Shoreline modifications and near shore structures have, together with other changes, altered Lake Washington's aquatic ecosystem. **Degraded shoreline conditions** resulted originally from lowering the lake water surface levels when the Locks were constructed. Further adverse impacts are a result of urbanization and the majority of the Kirkland's shoreline (approximately 67 percent) is now used for urban commercial and residential uses. As reported in the Chinook Salmon Conservation Plan, "Overwater structures have **increased shading and segmented the lake shoreline and nearshore areas**, affecting aquatic organisms such as benthic invertebrates, a prey item of juvenile Chinook (Warner and Fresh 1998; Kahler et al. 2000; Koehler 2002). Docks and piers also **affect the migration movements of juvenile Chinook**. These alterations have **reduced the amount and quality of shallow water**

habitat, an important habitat for rearing juveniles (Tabor and Piaskowsi 2002; Tabor et al. 2003)."

At the same time, piers are an **important aspect of lakeside living** and provide recreational amenities and, in certain cases, public access to the shoreline. As with shoreline stabilization, the challenge in establishing updated provisions will be achieving the right **balance** between property rights and improvement of the shoreline conditions.

B. **Purpose**. With the updated regulations we need to address several different objectives, including the following:

- Providing for **water-dependent use** along the shoreline.
- Achieving new State requirements for **no net loss**.
- **Improving shoreline ecological functions.**
- Enhancing **habitat for migrating juvenile Chinook salmon**.
- Providing consistency with state and federal permitting, particularly streamlined permitting for fish friendly designs.
- **Responding to WRIA 8 recommended actions** (see Section D below).

As with shoreline stabilization, the presence of overwater and in-water structures along the shoreline has become an increasing area of concern for a number of reasons:

1. Enhanced review that is taking place at the state and federal agencies to respond to the **Endangered Species Act listing of Chinook salmon** and the subsequent scientific understanding of **piers affects on salmon habitat.** In the Lake Washington/Sammamish SMP Guidance issued by ECOLOGY in Fall 2008, ECOLOGY specifically states: "By way of example, recent studies focusing on the affects of shoreline alterations to salmon migration in the littoral environment of lakes have raised concern pertaining to both the physical barrier of a dock/pier as well as affects to aquatic habitat for both migrating and rearing salmon species."[1]
2. Compliance with **specific State requirements that establish provisions for piers** which need to be included in the updated SMP (see WAC 173-26-231(3)(b), pages 77-78 of http://www.ecy.wa.gov/programs/sea/sma/laws_rules/173-26/SMP_Guidelines_Final.pdf (included as Attachment 9).

C. State Requirements. The following summarizes some of the key requirements that the new standards for piers must address.

1. WAC Requirements for **Piers** (General) (*supplementary to No Net Loss*) – **WAC 173-26-231(3)(b)** establishes the following standards for piers and docks:

   (A) **Allowed** only for:

[1] (1 Tabor, R.A., and R.M Piaskowski, 2002. Nearshore habitat use by juvenile Chinook salmon to lentic systems of the Lake Washington Basin. Annual Report, 2001. U.S. Fish and Wildlife Service, Lacey, WA. And 2 Kahler, T.,M. Grassley and David Beauchamp. 2000. A summary of the effects of bulkheads, pier and other artificial structures and Shorezone development on ESA-listed salmonids in lakes. City of Bellevue)

1. **Water dependent use (including single-family docks)**
2. **Public access**

(B) Permitted only when the applicant has demonstrated that a specific **need** exists to support the intended water-dependent use (except single-family)

(C) **Minimum size** necessary to meet the needs of the proposed water-dependent use

(D) New residential development of two or more dwellings to provide **joint use** or community dock facilities, when feasible, rather than allow individual docks for each residence

(E) Piers and docks shall be designed and constructed to **avoid or, if that is not possible, to minimize and mitigate the impacts to ecological functions.**

(F) Master programs should require that structures be made of **materials** that have been approved by applicable state agencies.

2. WAC Requirements for **Navigability and Migration**. WAC 173-26-211(5)(c)(ii)(D) also states: "All developments and uses on navigable waters or their beds should be located and designed to minimize interference with surface navigation … and to allow for the safe, unobstructed passage of fish and wildlife, particularly those species dependent on migration."

3. WAC Requirements for **Single-Family Piers** (*supplementary to General Requirements Noted above*) – WAC 173-26-231(3)(b) contains the following provisions specifically addressing piers associated with single-family residences:

   (A) A dock associated with a single family residence is a water dependent use provided that it is designed and intended as a facility for access to watercraft

   (B) Master programs should contain provisions to require new residential development of two or more dwellings to provide joint use or community dock facilities, when feasible, rather than allow individual docks for each residence

4. WAC Requirements for **No Net Loss - Cumulative Impacts** - WAC 173-26-186. Evaluation of cumulative impacts should consider:

   (A) Current circumstances affecting the shorelines and relevant natural processes;

   (B) Reasonably foreseeable future development and use of the shoreline; and

   (C) Beneficial effects of any established regulatory programs under other local, state, and federal laws.

5. WAC Requirements for **Protection of Resources with Limited Information** - WAC 173-26-201(3)(g) states that as a general rule, the less known about existing resources, the more protective SMP provisions should be to avoid unanticipated impacts to shoreline resources.

6. WAC Requirements for **Environmental Impact Mitigation** - WAC 173-26-201(2)(e) states that to assure no net loss of shoreline ecological functions, master

programs shall include provisions that require proposed individual uses and developments to analyze environmental impacts of the proposal and include measures to mitigate environmental impacts not otherwise avoided or mitigated by compliance with the master program and other applicable regulations… Master programs shall indicate that, where required, mitigation measures shall be applied in the following sequence of steps listed in order of priority, with (a) of this subsection being top priority.

(A) **Avoiding** the impact altogether by not taking a certain action or parts of an action;
(B) **Minimizing** impacts by limiting the degree or magnitude of the action and its implementation by using appropriate technology or by taking affirmative steps to avoid or reduce impacts;
(C) **Rectifying** the impact by repairing, rehabilitating, or restoring the affected environment;
(D) **Reducing or eliminating** the impact over time by preservation and maintenance operations;
(E) **Compensating** for the impact by replacing, enhancing, or providing substitute resources or environments; and
(F) **Monitoring** the impact and the compensation projects and taking appropriate corrective measures.

D. WRIA 8 Recommendations. Staff is evaluating the WRIA 8 Conservation Strategy as one of the resources providing both scientific and policy guidance for the development of the SMP revisions. The Chinook Salmon Conservation Strategy document identified a number of recommended actions that are applicable to Kirkland, including:

- One of the WRIA 8 action items for northern Lake Washington, including Kirkland, is to "**support joint effort by NOAA Fisheries, WDFW, USACOE, USFWS to develop specifications for new piers**…" RGP 3 is the result of this collaboration.

- "**Minimize … overwater structures** that would either disrupt normal migration rates and patterns or limit access to shallow feeding and refuge areas."

- "Encourage **salmon friendly shoreline design** during new construction or redevelopment by offering incentives and regulatory flexibility to improve … dock design and revegetate shorelines. Increase enforcement and address nonconforming structures over long run by requiring that major redevelopment projects meet current standards."

- "**Promote value of light-permeable docks, smaller piling sizes, and community docks** to both salmon and landowners through direct mailings to lakeshore landowners or registered boat owners sent with property tax notice or boat registration tab renewal. Offer financial incentives for community docks in terms of reduced permit fees, loan fees/percentage rates, taxes, and permitting time, in addition to construction cost savings."

- "The outmigration of juvenile Chinook would benefit from improved shoreline connectivity. The **use of mesh dock surfaces and/or community docks** would reduce the severity of predation on juvenile Chinook.

- In the WRIA 8 Chinook Salmon Conservation plan, Kirkland's shoreline is identified as a **Tier 1 migratory corridor for Chinook Salmon**. The plan contains the following technical priorities addressing piers:

  - Reduce predation to outmigrating juvenile Chinook by: reducing bank hardening, restoring overhanging riparian vegetation, replacing bulkheads and rip-rap with sandy beaches with gentle slopes, and **use of mesh dock surfaces and/or community docks.**

E. **Existing Conditions**. The Final Shoreline Analysis report completed in 2006 provided a characterization of the amount of existing overwater coverage in the City (see Table 8 on page 15 of the Final Kirkland Shoreline Analysis Report). In addition, staff reviewed permitted history for new, enlarged, or replacement piers that have taken place since the RGP-3 was implemented and summarized these projects in Attachment 10 for review. Based on a review of aerial photographs, it appears that the breakdown of lots with existing piers and those without piers would be as follows:

Shoreline Environment	**# of Lots with Pier(s)**	**# of Lots without Pier(s)**
Residential – L	90 (with approximately 2 existing joint piers)	9 (including three waterfront street ends)
Residential – M/H	45 (with approximately 3 existing joint piers)	11 (including one waterfront street end)
Urban Mixed	10 (includes public piers)	3
Urban Conservancy	5 (by park, rather than lot and includes public piers)	2 (including community owned property near Juanita Beach)

F. **Overview of Potential Impacts and Opportunities.** The following provides an overview of the potential negative impact piers can have on the lake's ecological function, and a list of actions that can minimize or mitigate for these impacts. The impacts noted are summarized in more detail in the Final Kirkland Shoreline Analysis Report, sections of which have been included in Attachment 11. References to scientific studies are found in this Analysis Report and noted below in Section VI.B below. Note: The **nearshore area** of the lake is of particular importance because aquatic life is richest and most abundant in these shallow water areas. Aquatic plants provide a food source and substrate for algae and invertebrates, as well as habitat for fish and other organisms. In particular, this shallow-water habitat is very important to juvenile salmon migrating along the lake shoreline, as a refuge area from predators and for its shallow-water habitat characteristics.

Pier Elements	**Impacts**	**Opportunities**

Pier Elements	Impacts	Opportunities
Overwater cover (new and existing)	Overwater structures can shade waters beneath, interfering with aquatic vegetation growth, benthic invertebrates, and salmon migration. May increase attraction of salmon predators, and may introduce contaminants into the water column.	For new piers, pier replacements, and pier additions or other modifications: • Elevate pier decks to increase light penetration • Install grating on new piers, or replace decking with grating on replacement piers • Minimize width of pier structures, particularly in the nearshore • Remove unnecessary overwater structure in the nearshore 30 feet • Encourage use of joint-use piers • New decking and replacement decking should be untreated or use only approved aquatic treatments • Design or shift overwater cover (including boats) to the terminal end of the pier.
Piles and other in-water structures (new and existing)	Piles and other simple in-water structures (e.g., free-standing boatlift supports) can provide nesting habitat for juvenile salmon predators at their base, ambush (foraging) habitat for predators, interfere with natural movement and accumulations of lakebed substrate, and introduce harmful contaminants into the water column or the food chain	For new piers, pier replacements, and pier additions or other modifications: • Reduce the number of piles by increasing pile spacing requirements • Reduce the diameter of piles • Remove any piles unnecessary to support a pier or safely moor a boat • New piles and replacement piles should be untreated or use only approved aquatic treatments
Skirting	Skirting blocks ambient light from penetrating underneath the pier, and can physically block salmon migration and the movement of lakebed substrates	• Prohibit installation of new skirting • Require removal of existing skirting for all other pier projects
Construction	Short-term in-water construction activities (primarily pile-driving) can directly kill a listed species, can interrupt fish migration, and can cause acute water quality impacts	• Require compliance with state and federal timing restrictions to protect fish and other aquatic life • Require use of BMPs such as sediment curtains, special equipment or techniques to minimize vibration, etc

G. **<u>Conceptual Policy Approach for Piers</u>**. As explained in Section C above, several elements of the WAC Guidelines direct our development of pier regulations. The requirement for "no **net loss** of ecological functions" is just one of them. Additional WAC requirements address the required **use of mitigation sequencing** for all projects (new uses and developments, as well as replacements, enlargements, and repair/maintenance) and direction to **construct piers**

to the minimum size necessary to accommodate the water-dependent use (boat moorage). As explained by Ecology in a guidance memo issued in Fall 2008 (see Attachment 7), "Achieving no net loss of ecological function relies on consistent application of mitigation sequencing. Mitigation sequencing sets a priority to first avoid, then minimize, rectify, reduce or compensate for impacts." Finally, regulations for all uses and modifications, including piers, should be developed based "on an analysis incorporating the most current, accurate, and complete scientific or technical information available."

H. Planning Commission Direction. As with shoreline stabilization measures, the Planning Commission has expressed interest in avoiding duplication of requirements and therefore limiting the extent of new regulations where possible, if other state and federal agencies sufficiently address impacts. However, it is important to note that Ecology has advised the City about the need to incorporate certain dimensional standards so that it can effectively evaluate NNL through the Cumulative Impacts Analysis. The Planning Commission has reviewed several different approaches to addressing standards for new piers, replacement piers, additions to existing piers, and maintenance of existing piers. Based on that review, the Planning Commission has made a number of initial recommendations, as follows:

- Require use of RGP-3 standards for **new pier construction**. The **RGP 3** provisions noted herein refer to a Regional General Permit issued that applies to Construction of New or Modification of Existing Residential Overwater Structures and Installation of Moorage Pilings (A link to the RGP 3 document can be reached via the following: http://www.nws.usace.army.mil/publicmenu/DOCUMENTS/REG/RGP%203%20Final%20Text%20_6-13-05_.pdf and the key requirements are summarized in Attachment 12). A **regional general permit** (RGP) is a Department of the Army authorization that is issued on a regional 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.

  Each RGP has a number of terms and conditions that must be met in order for an applicant to use an RGP. The conditions related to piers are summarized in Attachment 12. In most instances, anyone complying with the terms and conditions of an RGP may receive project specific authorization. For those not able to comply with the terms and conditions, authorization may be received via another type of Department of the Army permit.

  Along Kirkland's shoreline, it is estimated that there is potential for construction of approximately 25 new piers. For those not able to comply with the standards outlined in Section H, they would need to seek a Shoreline Variance, which would require Department of Ecology approval.

  This approach was selected by the Planning Commission because it provides the most consistency with the City's WRIA 8 commitment to support state and federal pier regulations in the interest of streamlining. RGP 3 represents the latest scientific understanding. This option is also consistent with the WAC requirements that piers be the "minimum size necessary to meet the needs of the proposed water-dependent use," which is boat moorage and that projects utilize mitigation sequencing in their design.

Houghton Community Council: Does the HCC have any questions on the conceptual approach for standards for new pier construction or comments to transmit to the Planning Commission?

- For **replacement piers**, require use of RGP-3 standards or, alternatively, allow for administrative approval of an alternative pier design that received Corps and WDFW permits. This approach was chosen by the Planning Commission because it provides flexibility for property owners to pursue an alternative design than specified in the RGP-3 standards, and avoids the need for an expensive and time-consuming Shoreline Variance process if the RGP-3 standards were not met. In this way, property owners are provided with additional flexibility which will facilitate earlier replacement of existing structures in order to maximize opportunities for piers to be rebuilt with fewer impacts than the current structures.

  To enable the cumulative impacts analysis, the draft regulations for the alternative pier design must include some dimensional limitations.

Houghton Community Council: Does the HCC have any questions on the conceptual approach for replacement piers or comments to transmit to the Planning Commission?

- Allow **pier enlargements** under certain defined circumstances, such as need to reach 10 feet of water depth, or to increase safety of moorage by adding a finger or ell to form enclosed boatslip or change orientation of boat moorage with respect to wind and waves. Additions must meet RGP 3 dimensional and material standards and the area of enlargement/addition must be compensated for with conversion of equivalent area of nearshore solid decking with grating.

  This option was chosen by the Planning Commission because it would compensate for the addition of more overwater coverage at the important nearshore area.

Houghton Community Council: Does the HCC have any questions on the conceptual approach for pier enlargements or comments to transmit to the Planning Commission?

- Allow **pier maintenance and repair**, but fully implement feasible impact avoidance and minimization techniques consistent with the type of repair proposed. E.g., use grating for all decking replacement, including when decking is temporarily removed to implement substructure or pile replacements, use steel small-diameter pile for replacement of first pile set. Decking replacements could locate the grating in the nearshore if approved by all other agencies. This approach maximizes implementation of all WAC requirements, and is also consistent with other agency requirements.

Houghton Community Council: Does the HCC have any questions on the conceptual approach for pier maintenance and repair or comments to transmit to the Planning Commission?

I. **Other Issues Related to Piers.** There are a number of other key issues relating to piers, as follows:

1. Setbacks from property line. The current SMP establishes a **10-foot** setback for pier, measured from the property line (see Attachment 13). This standard was likely established to try and ensure that boats that are moored at the site are not located in front of adjoining property, potentially impacting views. **Greater setbacks are required for piers that would provide moorage for more than two boats**, if the adjoining property is developed with a single-family residence. Based on current information, it is recommended that this standard continue under the proposed regulations.

2. Setbacks from adjoining moorage structures. The current SMP requires a **25-foot separation between piers** (see Attachment 13). This standard was likely established to provide separation between piers for navigability. **Greater distances are required for piers that would provide moorage for more than two boats**.

   Planning Commission Direction: Continue to use existing standard.

3. Setbacks from public parks. The current SMP establishes the following setback standards for piers from public parks: If the moorage is not for more than two boats, then it must be separated from a public park by twenty-five (25) feet. Otherwise, if the moorage facility serves more than two boats, the following would apply:

   a. No moorage structure on private property may be within one hundred feet of a public park.

   b. No moorage structure on private property may be closer to a public park than a line that starts where the high waterline of the park intersects with the side property line of the park closest to the moorage structure and runs waterward toward the moorage structure at a forty-five-degree angle from that side property line. This setback applies whether or not the subject property abuts the park, but does not extend beyond any intervening over-water structures.

   This standard was likely established to ensure the safety of swimmers and others enjoying the public park from encroachment by boat traffic at a private pier. This standard has potentially limited some properties from pursuing a pier and several existing structures may be nonconforming to these requirements.

   Planning Commission Direction: Evaluate whether the setbacks from public parks can be reduced while still allowing for adequate protection of recreational uses. Staff is consulting with the Parks Department to determine what standards are recommended to provide protection for swimmers and others enjoying public parks and plan to revisit these regulations based on input from the Parks Department.

4. Setbacks from stream mouths. There is presently no standard for this presently; however, piers are typically separated from natural areas as a result of the setback from public parks noted in Section c. Staff is inquiring about whether any **additional standards**

should be put in place to **separate piers from stream outlets** or other natural areas that may not be designated as a public park. This standard could be beneficial in order to limit structures in areas near streams, which juvenile salmon have been noted to prefer. (According to Tabor et al. 2006, juvenile Chinook congregate around stream inflows (Feb-June). He also noted that the abundance increases with high flow events and the juveniles do appear to prefer stream mouths close to their natal streams).

Planning Commission Direction: The Planning Commission has recommended that staff include a setback from stream mouths.

Houghton Community Council: Does the HCC have any questions on the setback provisions for piers or comments to transmit to the Planning Commission?

5. Joint-use. The current SMP encourages property owners in the Suburban shoreline environment to develop joint or shared moorage facilities. If this occurs, the joint or shared moorage facility may contain up to two moorages for each waterfront lot participating in the joint or shared moorage facility. Staff is recommending that this provision be retained, together with additional provisions **demonstrating why joint moorage would not be feasible**. Additionally, the WAC Guidelines indicate that "master programs should contain provisions to require new residential development of two or more dwellings to provide joint use or community docks, when feasible, rather than allow individual docks for each residence". In response to this provision, staff would recommend adding **additional language to the land division provisions that would contain provisions for use of joint use moorage for the new lots**.

   Planning Commission Direction: Include language in the land division provisions that would address use of joint moorage.

   Houghton Community Council: Does the HCC have any questions on the approach for joint use or comments to transmit to the Planning Commission?

J. Boatlifts and canopies. As discussed during the policy preparation work completed in the Spring of 2008, the current SMP standards do not allow canopies within the shoreline environment. Boatlifts are currently permitted through review as a Substantial Development Permit. There was discussion of amending the prohibition on canopies, as requested by several property owners, and crafting new standards to include design provisions that would minimize impacts to shoreline ecological functions. (Note: A boat lift canopy is different from a boathouse. A canopy would refer to a cover installed as a component of a boat lift, while a boathouse would include other types of coverage. A boathouse is not currently permitted nor would theybe permitted under the draft regulations).

The Army Corps of Engineers has adopted a Regional General Permit (RGP 1, a copy of which can be viewed at http://www.nws.usace.army.mil/PublicMenu/documents/REG/RGP_1_Rev_Text(1-29-07).pdf) that provides standards for watercraft lifts (and associated canopies) in Washington State that, like the RGP 3 provisions, can provide some guidance for installation standards that have been identified as having minimal individual and cumulative impacts on the aquatic environment. These provisions also need to be balanced with other important considerations,

including aesthetics and community character. A key question that needs to be resolved for any new standards, includes the following:

- How many canopies should be permitted on commercial piers or piers serving multiple residences (e.g. for attached or stacked dwelling units)? This issue is primarily a concern of aesthetics and community character. Staff would recommend that canopies not be permitted at commercial piers and that they be limited to not more than one canopy on a piers serving multiple residences in order to limit the potential proliferation of canopies and resulting visual impacts.

Attachment 13 contains a summary of the RGP 1 standards for watercraft lifts (and associated canopies) in Washington State.

Houghton Community Council: Does the HCC have any questions on boatlifts and canopies or comments to transmit to the Planning Commission?

K. Public Comments on Piers. There have been a number of public comments received addressing piers and staff would encourage you to review the comments included in this packet as well as those included your November 24th packet. Attachment 8 contains a **summary of some of the key themes** from the public comments relating to piers, together with a brief response from staff on the proposed conceptual approaches.

VI. PUBLIC INVOLVEMENT

A. Since the last Houghton Community Council meeting on this topic in November, 2008, the following key initiatives have taken place relative to public participation:

4. **Shoreline Property Owners Forum**. A Shoreline Property Owners forum has been scheduled for Saturday, February 28, 2009, 10:00 a.m. to 12:00 p.m. (with doors open at 9:30 a.m.) at the Peter Kirk Community Center, 352 Kirkland Avenue. The primary goals of the forum are to:

    - To answer questions about the draft regulations
    - To hear the community's thoughts about key issues including setback provisions, standards for new and modified piers and shoreline protection structures (i.e. bulkheads), incentives for restoring the shoreline and others
    - To identify next steps to incorporate this feedback

    Houghton Community Council members are invited to attend this important meeting. Based upon the input received, staff will be working with the Planning Commission and Houghton Community Council to re-examine recommendations as needed.

5. **Green Shoreline Guidebook**. Seattle's Department of Planning and Development, in collaboration with Seattle Public Utilities, WRIA 8, and the King Conservation District, has developed Green Shorelines as a guidebook for lakefront homeowners. The publication uses photos, text, and illustrations to inform readers about alternatives to conventional shoreline armoring, stressing the aesthetic and ecological benefits of plants and beaches. The City has received a number of copies and is

making those available at City Hall. In addition, notice was sent to property owners about the availability of the guidebook. Copies will also be available at the Shoreline Property Owners Forum.

A hard copy has been provided in your packet and is posted on the City's website.

B. **Public Comments**. Since the last Houghton Community Council meeting on this topic in November, the City has received 18 written comment letters (see Attachments 15-33). Attachment 8 contains a response or clarification to several questions that are included in the attached comments.

VII. ATTACHMENTS

1. Draft Shoreline Stabilization Standards
2. WAC 173-26-231(2) and (3a)
3. Excerpts from Final Kirkland Shoreline Analysis Report addressing shoreline stabilization
4. Copy of PowerPoint presentation by Dave Douglas, Waterfront Construction
5. Summary of Permitting Requirements for Shoreline Stabilization
6. Programmatic Biological Evaluation for Shoreline Protection Alternatives in Lake Washington
7. Department of Ecology Fall 2008 Lake Washington/Sammamish SMP Guidance
8. Summary of key public comments and staff responses
9. WAC 173-26-231(3)(b)
10. Summary of history for new, enlarged, or replacement piers that have taken place since the RGP-3
11. Excerpts from Final Kirkland Shoreline Analysis Report, addressing piers
12. Summary of RGP-3 Regulations
13. KMC 24.05.165
14. Summary of RGP-1 Regulations
15. Letter from Dave Douglas dated November 17, 2008
16. Letter from Bob Style dated November 18, 2008
17. Letter from Dave Douglas dated November 24, 2008
18. Letter from Mark Nelson dated November 24, 2008
19. Letter from Bob Style dated November 25, 2008
20. Letter from Bob Style dated December 2, 2008
21. Letter from Jim Tosti dated December 10, 2008
22. Letter from Eastside Audubon dated December 8, 2008
23. Letter from Futurewise dated December 10, 2008
24. Letter from Dave Douglas dated January 2, 2009
25. Letter from Dave Douglas dated January 2, 2009
26. Letter from Bob Style dated January 6, 2009
27. Letter from Richard Sandaas dated January 8, 2009
28. Letter from Thielsen Architects dated January 8, 2009
29. Letter from Bob Style dated January 21, 2009
30. Letter from Bob Style dated January 27, 2009

31. Letter from Dave Douglas dated January 22, 2009
32. Letter from Dave Douglas dated January 28, 2009
33. Letter from Richard Sandaas dated February 7, 2009

cc: File No. ZON06-00017, Sub-file #1

Shoreline Modification Regulations

83.270 General
83.280 Piers, Docks, Floats and Boatlifts
83.290 Marinas
83.300 Shoreline stabilization
83.310 Breakwaters, jetties, rock weirs, groins
83.320 Dredging and dredge material disposal
83.330 Land Surface Modification
83.340 Landfill
83.350 Shoreline habitat and natural systems enhancement projects

……

83.300 Shoreline Stabilization

1. General – The purpose of this section is to provide standards and guidelines for the location and design of ~~bulkheads and other~~ hard structural and soft structural shoreline stabilization measures that have the potential to adversely impact the shoreline natural environment. New development, however, shall be located and designed to avoid the need for future shoreline stabilization to the extent feasible. In all cases, the feasibility of soft structural shoreline stabilization shall be evaluated prior to hard structural stabilization. The following standards apply to all developments and uses in shoreline jurisdiction:

2. New or e~~xpanded~~ nlarged~~hard~~ structural shoreline stabilization - ~~Hard structural~~New structural shoreline stabilization measures shall include measures installed to address erosion impacts, including both hard and soft structural shoreline stabilization measures. Enlargement of a structural shoreline stabilization shall include additions to or increases in size (such as height, width, length, or depth) to existing shoreline stabilization measures. Structural stabilization measures shall not be allowed, except as follows:

   a. To protect an existing primary structure, including residences, when conclusive evidence, documented by a geotechnical analysis, is provided that the structure is in danger from shoreline erosion caused by waves. The geotechnical analysis should evaluate on-site drainage issues and address drainage problems away from the shoreline edge before considering hard or soft structural shoreline stabilization. The geotechnical analysis requirement shall be waived when a primary structure, including residences, is located ten (10) feet or less from the ordinary high water mark.

   b. In support of new non-water-dependent development, including a detached dwelling unit, when all of the conditions below apply:

      1) The erosion is not being caused by upland conditions, such as drainage and the loss of vegetation.

      2) Nonstructural measures, such as placing the development farther from the shoreline, planting vegetation, or installing on-site drainage improvements, are not feasible or not sufficient.

      3) The need to protect primary structures from damage due to erosion is demonstrated through a geotechnical report. The damage must be caused by natural processes, such as waves.

   c. In support of water-dependent development when all of the conditions below apply:

      1) The erosion is not being caused by upland conditions, such as drainage and the loss of vegetation.

2) Nonstructural measures, planting vegetation, or installing on-site drainage improvements~~,~~ are not feasible or not sufficient.

3) The need to protect primary structures from damage due to erosion is demonstrated through a geotechnical report.

d. To protect projects for the restoration of ecological functions or for hazardous substance remediation projects pursuant to Chapter 70.105D RCW when nonstructural measures, planting vegetation, or installing on-site drainage improvements, are not feasible or not sufficient.

3. Replacement or repair of existing shoreline stabilization measures - This section allows repair and replacement of existing legally established shoreline stabilization measures.

a. Minor Repair - Minor repair is permitted, subject to the following standards:

1) Minor repair shall include modifications or improvements to an existing shoreline stabilization measure that are designed to ensure the continued function of the stabilization measure by preventing failure of any part of the stabilization measure. ~~A repair that is proposed after more than 25% of the linear feet of the stabilization measure~~

2) The following activities shall not be considered as "minor repair":

a) A repair needed to a portion of an existing stabilization structure that has collapsed, eroded away or otherwise demonstrated a loss of structural integrity ~~is not a minor repair. Any proposed~~ , or in which the repair ~~that~~ work involves modification of the toe rock or footings ~~is considered a major repair.~~ , and is greater than 15 feet in continuous linear length;

b) A repair to more than 75 percent of the linear length of the existing hard structural shoreline stabilization measure in which the repair work involves replacement of top or middle course rocks or other similar repair activities.

Repair activities not meeting the definition of minor repair shall be considered major repair or replacement and the portion of the shoreline stabilization that is being repaired shall be subject to the provisions contained in subsection b) below.

3) Areas of temporary disturbance within the shoreline setback shall be expeditiously restored to their pre-project condition or better.

b. Major Repair or Replacement - The following standards apply to major repair or replacement of existing hard and soft structural shoreline stabilization measures:

1) ~~Major repair or replacement shall be treated as a new shoreline stabilization measure, subject to the provisions of subsection 2. above, including the requirement to prepare a geotechnical analysis and consider soft shoreline stabilization techniques.~~ For purposes of this section, "replacement" means the construction of a new structure to perform a shoreline stabilization function of an existing structure that can no longer adequately serve its purpose. Additions to or increases in size of existing shoreline stabilization measures shall also be considered new structures.

2) Major repair or replacement shall be treated as a new shoreline stabilization measure subject to the restrictions of subsection 2. above, as well as the submittal requirements of subsection 4 below, except for the requirement to prepare a geotechnical analysis. A geotechnical analysis is not required for major repairs or replacements of existing hard or soft structural shoreline stabilization with a similar measure if the applicant demonstrates need to protect principal uses or structures from erosion caused by waves or other natural processes operating at or waterward of the ordinary high water mark. In those circumstances where a primary structure,

including residences, is located ten (10) feet or less from the ordinary high water mark, need will be presumed to have been demonstrated.

3) Replacement hard structural shoreline stabilization measures shall not encroach waterward of the ordinary high water mark or waterward of the existing shoreline stabilization measure unless the primary structure was constructed prior to January 1, 1992, and there is overriding safety or environmental concerns. In such cases, the replacement structure shall abut the existing shoreline stabilization structure. All other replacement structures shall be located at or landward of the existing shoreline stabilization structure.

3) ~~Soft~~Hard and soft shoreline stabilization measures ~~that provide restoration of shoreline ecological functions~~ may allow some fill waterward of the ordinary high water mark to provide enhancement of shoreline ecological functions through creation of nearshore shallow-water habitat.

4. Submittal Requirements - In addition to submitting an application, the applicant shall submit the following as part of a request to construct a new, enlarged, major repair or replacement shoreline stabilization measure:

a. For a new~~,~~ or enlarged~~, major repair or replacement~~ hard or soft structural shoreline stabilization measure, a geotechnical report prepared by a qualified professional with an engineering degree. The report shall include the following:

1) An assessment of the necessity for structural shoreline stabilization by estimating time frames and rates of erosion and ~~report~~reporting on the urgency associated with the specific situation. New ~~or replacement~~ hard or soft structural shoreline stabilization measures shall not be authorized, except when a report confirms that that there is a significant possibility that an existing structure will be damaged generally within three (3) years as a result of shoreline erosion in the absence of such hard structural shoreline stabilization measures, or where waiting until the need is immediate results in the loss of opportunity to use measures that would avoid impacts on ecological functions.

2) An assessment of the cause of erosion, looking at processes occurring both waterward and landward of the ordinary high water mark.

3) Where structural shoreline stabilization is determined to be necessary in subsection 4 a. above, the assessment must evaluate the feasibility of using soft shoreline stabilization measures in lieu of hard structural shoreline stabilization measures. Soft shoreline stabilization may include the use of gravels, cobbles, boulders, and logs, as well as vegetation.

4) Design recommendations for minimum sizing of hard structural or soft structural shoreline stabilization materials, including gravel and cobble beach substrates~~,~~ necessary to dissipate wave energy, eliminate scour, and provide long-term shoreline stability.

b. ~~For all~~ Geotechnical report requirements for new or enlarged hard or soft structural shoreline stabilization measures may be waived when a primary structure, including residences, is located ten (10) feet or less from the ordinary high water mark.

c. For major repairs or replacements of existing hard structural shoreline stabilization measures with a similar measure, the applicant shall submit a written narrative providing a demonstration of need. The narrative must be prepared by a qualified professional (e.g., shoreline designer or other consultant familiar with lakeshore processes and shore stabilization), but not necessarily a licensed geotechnical engineer. The demonstration of need shall consist of the following:

a. An assessment of the necessity for continued structural shoreline stabilization, considering site-specific conditions such as water depth, orientation of the shoreline, wave fetch, and location of the nearest structure.

b. An assessment of erosion potential resulting from the action of waves or other natural processes operating at or waterward of the ordinary high water mark in the absence of the hard structural shoreline stabilization.

c. An assessment of the feasibility of using soft shoreline stabilization measures in lieu of hard structural shoreline stabilization measures. Soft shoreline stabilization may include the use of gravels, cobbles, boulders, and logs, as well as vegetation.

d. Design recommendations for minimizing impacts of any necessary hard structural shoreline stabilization.

d. A demonstration of need may be waived when an existing hard structural shoreline stabilization measure is proposed to be repaired or replaced using soft structural shoreline stabilization measures, or when a primary structure, including residences, is located ten (10) feet or less from the ordinary high water mark.

e. As part of any approval of a new, enlarged, or replacement structural shoreline stabilization measure, the applicant shall be required to fund a review by the City's shoreline consultant of the shoreline stabilization plan, the monitoring and maintenance program, the narrative justification of demonstrated need, and drawings. In addition, the Planning Official may require funding of a qualified professional, selected and retained by the City subject to a three-party contract, to review the geotechnical report and recommendations.

f. For all structural shoreline stabilization measures, including soft structural shoreline stabilization, detailed construction plans, including the following:

1) Plan and cross-section views of the existing and proposed shoreline configuration, showing accurate existing and proposed topography and ordinary high water marks.

1) Detailed construction sequence and specifications for all materials, including gravels, cobbles, boulders, logs, and vegetation. The sizing and placement of all materials shall be selected to accomplish the following objectives:

a) Protect the property and structures from erosion and other damage over the long term, and accommodate the normal amount of alteration from wind- and boat-driven waves;

b) Allow safe passage and migration of fish and wildlife; and

~~a)~~c) Minimize or eliminate juvenile salmon predator habitat.

2) Detailed five-year vegetation maintenance and monitoring program to include the following:

a) Goals and objectives of the shoreline stabilization plan;

b) Success criteria by which the implemented plan will be assessed;

c) A five (5) year maintenance and monitoring plan, consisting of two site visits per year by a qualified professional, with annual progress reports submitted to the Planning Official and all other agencies with jurisdiction;

d) A contingency plan in case of failure; and

e) Proof of a written contract with a qualified professional who will perform the monitoring.

~~e~~g. The Planning Official shall require a performance or maintenance bond or security, as determined to be appropriate by the Planning Official, to ensure compliance with any aspect of this chapter or any decision or determination made pursuant to this chapter.

1) Performance or Maintenance Bond or Security Requirement - The performance or maintenance security required by the Planning Official shall be provided in such forms and amounts as the Planning Official deems necessary to assure that all work or actions are satisfactorily completed or maintained in accordance with the approved plans, specifications, permit or approval requirements, and applicable regulations, and to assure that all work or actions not satisfactorily completed or maintained will be corrected to comply with approved plans, specifications, requirements, and regulations to restore environmental damage or degradation, protect fish and wildlife habitat, and protect the health, safety, and general welfare of the public.

2) Form of Performance Security - The performance security shall be a surety bond obtained from companies registered as surety in the state or certified as acceptable sureties on federal bonds. In lieu of a surety bond, the Planning Official may allow alternative performance security in the form of an assignment of funds or account, an escrow agreement, an irrevocable letter of credit, or other financial security device in an amount equal to that required for a surety bond. The surety bond or other performance security shall be conditioned on the work being completed or maintained in accordance with requirements, approvals, or permits; on the site being left or maintained in a safe condition; and on the site and adjacent or surrounding areas being restored in the event of damages or other environmental degradation from development or maintenance activities conducted pursuant to the permit or approval.

3) Amount of Performance Security - The amount of the performance or maintenance security shall be a percentage of the estimated cost based on the City's established percentage at the time of the security submittal. , The estimated cost shall be approved by the Planning Official and include conformance to plans, specifications, and permit or approval requirements under this chapter, including corrective work and compensation, enhancement, mitigation, maintenance, and restoration of sensitive areas. In addition, an administrative deposit shall be paid as required in KZC 175.25. All bond or performance security shall be submitted in their original form with original signatures of authorization.

4) Administration of Performance Security - If during the term of the performance or maintenance security, the Planning Official determines that conditions exist which do not conform with plans, specifications, approval or permit requirements, the Planning Official may issue a stop work order prohibiting any additional work or maintenance until the condition is corrected. The Planning Official may revoke the performance or maintenance security, or a portion thereof, in order to correct conditions that are not in conformance with plans, specifications and approval or permit requirements. The performance or maintenance security may be released upon written notification by the Planning Official, following final site inspection or completion, as appropriate, or when the Planning Official is satisfied that the work or activity complies with permits or approved requirements.

5) Exemptions for Public Agencies - State agencies and local government bodies, including school districts, shall not be required to secure the performance or maintenance of permit or approval conditions with a surety bond or other financial security device. These public agencies are required to comply with all requirements, terms, and conditions of the permit or approval, and the Planning Official may enforce compliance by withholding certificates of occupancy or occupancy approval, by administrative enforcement action, or by any other legal means.

d. The cost of producing and implementing the shoreline stabilization plan, the monitoring and maintenance program, reports, and drawings, as well as the review of each component by the City and the City's consultant(s), shall be borne by the applicant.

5. General Design Standards - When a hard or soft structural shoreline stabilization measure is demonstrated to be necessary, the following design standards shall be incorporated into the stabilization design:

a. Soft structural shoreline stabilization measures shall be used to the maximum extent practicable for new, enlarged, major repair or replacement shoreline stabilization measures, limiting hard structural shoreline stabilization measures to the portion or portions of the site where necessary to protect or support existing shoreline structures or trees, or where necessary to connect to existing shoreline stabilization measures on adjacent properties. The length of hard structural shoreline stabilization connections to adjacent properties should be minimized to the maximum extent practicable, and extend into the subject property from adjacent properties no more than 10 feet.

b. For enlarged, major repair or replacement soft and hard structural shoreline stabilization measures, the following location and design standards are preferred in descending order:

1) Conduct excavation and fill activities associated with the soft or hard structural shoreline stabilization landward of the existing ordinary high water mark to the maximum extent practicable.

2) Where 1) is not practicable because of existing site conditions, conduct necessary excavation and fill activities waterward of the existing ordinary high water mark as needed to implement a soft structural shoreline stabilization technique or to mitigate the impacts of hard structural shoreline stabilization.

~~b~~c. ~~The shoreline stabilization measure shall be designed to not significantly interfere with normal surface and/or subsurface drainage into Lake Washington.~~

~~c. The shoreline stabilization measure shall be designed so as not to constitute a hazard to navigation or substantially interfere with visual access to the water.~~

~~d. Stairs or other water access measures may be incorporated into the shoreline stabilization, but shall not extend waterward of the shoreline stabilization measure.~~

~~e. The shoreline stabilization measures shall be designed to ensure that the measures do not restrict appropriate public access to the shoreline, except where such access is modified under the provisions of KZC Section 83.370 for public access.~~

~~f.~~ To the extent feasible~~,~~ and warranted by site-specific conditions, all approved new, enlarged, minor repair, major repair or replacement shoreline stabilization measures must minimize and mitigate any adverse impacts to ecological functions resulting from short-term construction activities. Impact minimization techniques may include compliance with appropriate timing restrictions, use of best management practices to prevent water quality impacts related to upland or in-water work, and stabilization of exposed soils following construction.

~~e~~d. To the extent feasible and warranted by site-specific conditions, all new, enlarged, major repair, or replacement hard structural shoreline stabilization measures should minimize any long-term adverse impacts to ecological functions by incorporating the following measures into the design:

1) Limiting the size of hard structural shoreline stabilization measures to the minimum necessary, including height, depth, and mass.

2) Shifting the bulkhead landward and/or sloping the bulkhead landward to provide some dissipation of wave energy and increase the quality or quantity of nearshore shallow-water habitat.

~~d~~e. To the extent feasible and warranted by site-specific conditions, approved new and enlarged shoreline stabilization measures should mitigate any adverse impacts to ecological functions by incorporating the following measures at a minimum into the design:

1) To increase shallow-water habitat, install gravel/cobble beach fill waterward of the ordinary high water mark, grading slope to a maximum of 1 Vertical (V):4 Horizontal (H). The material should be sized and placed to remain stable and accommodate alteration from wind- and boat-driven waves.

2) Plant native riparian vegetation ~~at an average of ten (10) feet deep across~~ , as necessary, in at least ~~50%~~75 percent of the ~~width of the shoreline. Vegetation must include a mix of trees, shrubs and groundcovers, which may be distributed along the shoreline area in a manner that provides maximum benefit to fish and wildlife, while preserving views and water-dependent uses.~~nearshore riparian area located along the water's edge. The vegetated portion of the nearshore riparian area shall average ten (10) feet in depth from the ordinary high water mark, but may be a minimum of five (5) feet wide to allow for variation in landscape bed shape and plant placement. Restoration of native vegetation shall consist of a mixture of trees, shrubs and groundcover and be designed to improve habitat functions. At least three (3) trees per 100 linear feet of shoreline must be included in the plan. Plant materials must be native and selected from the Kirkland Native Plant List. An alternative planting plan or mitigation measure in lieu of meeting these requirements may be allowed if approved by other state and federal agencies.

~~e~~f. The shoreline stabilization measure shall be designed to not significantly interfere with normal surface and/or subsurface drainage into Lake Washington.

~~f~~g. The shoreline stabilization measure shall be designed so as not to constitute a hazard to navigation ~~or substantially interfere with visual access to the water~~.

~~g~~h. Vegetation associated with or installed as mitigation for shoreline stabilization measures shall comply with the following standards:

i. Vegetation shall be selected and positioned on the property so as not to obscure the public view within designated view corridors from the public right-of-way to the waters of Lake Washington and the shoreline on the opposite side of the Lake at the time of planting or upon future growth.

ii. Vegetation may be selected and positioned to maintain private views of the water by clustering low-growing vegetation in a selected area, provided that the minimum landscape standard is met.

i. Stairs or other water access measures may be incorporated into the shoreline stabilization, but shall not extend waterward of the shoreline stabilization measure.

~~h~~ij. The shoreline stabilization measures shall be designed to ensure that the measures do not restrict appropriate public access to the shoreline, except where such access is modified under the provisions of KZC Section 83.370 for public access.

Additional mitigation measures may be required depending on the level of impact.

~~g.~~ijk. Shoreline stabilization measures shall not extend waterward more than the minimum amount necessary to achieve effective stabilization.

~~hj~~~~k~~l. When a structural shoreline stabilization measures is required at a public access site, provisions for safe access to the water shall be incorporated into the shoreline stabilization structure design. Access measures should not extend farther waterward than the face of the shoreline stabilization structure.

~~k~~~~l~~m. When shoreline stabilization measures intended to improve ecological functions shift the ordinary high water mark landward of the pre-modification location, any structure setbacks from the ordinary high water mark or lot area for the purposes of calculating lot coverage shall be measured from the pre-modification location. The pre-modification ordinary high water mark shall be recorded in a form approved by the City Attorney and recorded in the King County Department of Elections and Records.

~~i.~~~~l~~~~m~~n. If shoreline stabilization measures intended to improve ecological functions shift the ordinary high water mark landward of the pre-modification location and result in expansion of the shoreline jurisdiction on any property other than the subject property, the plan shall not be approved until the applicant submits to the Planning Official a copy of a statement signed by the property owners of all affected properties, in a form approved by the City Attorney and recorded in the King County Department of Elections and Records, consenting to the shoreline jurisdiction creation and/or increase on such property.

6. Specific Hard Structural Shoreline Stabilization Design Standards - When hard structural shoreline stabilization measures, such as bulkheads, are demonstrated to be necessary, incorporate the following standards into the design:

   a. When shoreline stabilization is approved on a site where bulkheads are not located on adjacent properties, the construction of a bulkhead shall tie in with the existing contours of the adjoining properties, as feasible, such that the proposed bulkhead would not cause erosion of the adjoining properties.

   ~~b.~~ When shoreline stabilization is approved on a site where bulkheads are located on adjacent properties, the proposed bulkhead may tie in flush with existing bulkheads on adjoining properties, provided that the new bulkhead does not extend waterward of OHWM, except as necessary to make the connection to the adjoining bulkhead. In such circumstances, the remaining portion of the bulkhead shall be placed landward of the existing OHWM such that no net intrusion into the lake occurs nor does net creation of uplands occur.

   ~~c. Limit the size~~The length of hard structural shoreline stabilization ~~measures~~connections to ~~the minimum necessary, including height, depth, and mass.~~

   ~~d. To the~~adjacent properties should be minimized to the maximum extent ~~feasible, shift the bulkhead landward and slope the bulkhead landward to provide some dissipation of wave energy.~~

   ~~e.~~b. ~~When a bulkhead is required at a public access site, provisions for safe access to the water shall be incorporated~~practicable, and extend into ~~bulkhead design.~~the subject property from adjacent properties no more than 10 feet.

   ~~f.~~c. Fill behind bulkheads shall be limited to an average of one (1) cubic yard per running foot of bulkhead. Any filling in excess of this amount shall be considered a regulated activity subject to the regulations in this Chapter pertaining to fill activities and the requirement for obtaining a Shoreline Substantial Development permit.

7. Specific Soft Structural Shoreline Stabilization Design Standards – In addition to applicable general design standards and hard structural shoreline stabilization standards above, incorporate the following standards into the design:

   a. The soft shoreline stabilization design shall provide sufficient protection of adjacent properties by tying in with the existing contours of the adjoining properties to prevent

erosion at the property line. Projects that include necessary use of hard structural shoreline stabilization measures only at the property lines to tie in with adjacent properties shall be permitted as soft shoreline stabilization measures. The length of hard structural shoreline stabilization connections to adjacent properties should be minimized to the maximum extent practicable, and extend into the subject property from adjacent properties no more than 10 feet.

~~c.~~b. The soft shoreline stabilization design shall size and arrange any gravels, cobbles, logs, and boulders so that the project remains stable in the long-term and dissipate wave energy, without presenting extended linear faces to oncoming waves.

Attachment 2
File ZON06-00017

173-26-221 << 173-26-231 >> 173-26-241

WAC 173-26-231 Agency filings affecting this section

Shoreline modifications.

(1) ***Applicability.*** Local governments are encouraged to prepare master program provisions that distinguish between shoreline modifications and shoreline uses. Shoreline modifications are generally related to construction of a physical element such as a dike, breakwater, dredged basin, or fill, but they can include other actions such as clearing, grading, application of chemicals, or significant vegetation removal. Shoreline modifications usually are undertaken in support of or in preparation for a shoreline use; for example, fill (shoreline modification) required for a cargo terminal (industrial use) or dredging (shoreline modification) to allow for a marina (boating facility use).

The provisions in this section apply to all shoreline modifications within shoreline jurisdiction.

(2) ***General principles applicable to all shoreline modifications.*** Master programs shall implement the following principles:

(a) Allow structural shoreline modifications only where they are demonstrated to be necessary to support or protect an allowed primary structure or a legally existing shoreline use that is in danger of loss or substantial damage or are necessary for reconfiguration of the shoreline for mitigation or enhancement purposes.

(b) Reduce the adverse effects of shoreline modifications and, as much as possible, limit shoreline modifications in number and extent.

(c) Allow only shoreline modifications that are appropriate to the specific type of shoreline and environmental conditions for which they are proposed.

(d) Assure that shoreline modifications individually and cumulatively do not result in a net loss of ecological functions. This is to be achieved by giving preference to those types of shoreline modifications that have a lesser impact on ecological functions and requiring mitigation of identified impacts resulting from shoreline modifications.

(e) Where applicable, base provisions on scientific and technical information and a comprehensive analysis of drift cells for marine waters or reach conditions for river and stream systems. Contact the department for available drift cell characterizations.

(f) Plan for the enhancement of impaired ecological functions where feasible and appropriate while accommodating permitted uses. As shoreline modifications occur, incorporate all feasible measures to protect ecological shoreline functions and ecosystem-wide processes.

(g) Avoid and reduce significant ecological impacts according to the mitigation sequence in WAC 173-26-201 (2)(e).

(3) ***Provisions for specific shoreline modifications.***

(a) **Shoreline stabilization.**

(i) **Applicability.** Shoreline stabilization includes actions taken to address erosion impacts to property and dwellings, businesses, or structures caused by natural processes, such as current, flood, tides, wind, or wave action. These actions include structural and nonstructural methods.

Nonstructural methods include building setbacks, relocation of the structure to be protected, ground water management, planning and regulatory measures to avoid the need for structural stabilization.

(ii) **Principles.** Shorelines are by nature unstable, although in varying degrees. Erosion and accretion are natural processes that provide ecological functions and thereby contribute to sustaining the natural resource and ecology of the shoreline. Human use of the shoreline has typically led to hardening of the shoreline for various reasons including reduction of erosion or providing useful space at the shore or providing access to docks and piers. The impacts of hardening any one property may be minimal but cumulatively the impact of this shoreline modification is significant.

Shoreline hardening typically results in adverse impacts to shoreline ecological functions such as:

• Beach starvation. Sediment supply to nearby beaches is cut off, leading to "starvation" of the beaches for the gravel, sand, and other fine-grained materials that typically constitute a beach.

• Habitat degradation. Vegetation that shades the upper beach or bank is eliminated, thus degrading the value of the shoreline for many ecological functions, including spawning habitat for salmonids and forage fish.

• Sediment impoundment. As a result of shoreline hardening, the sources of sediment on beaches (eroding "feeder" bluffs) are progressively lost and longshore transport is diminished. This leads to lowering of down-drift beaches, the narrowing of the high tide beach, and the coarsening of beach sediment. As beaches become more coarse, less prey for juvenile fish is produced. Sediment starvation may lead to accelerated erosion in down-drift areas.

• Exacerbation of erosion. The hard face of shoreline armoring, particularly concrete bulkheads, reflects wave energy back onto the beach, exacerbating erosion.

• Ground water impacts. Erosion control structures often raise the water table on the landward side, which leads to higher pore pressures in the beach itself. In some cases, this may lead to accelerated erosion of sand-sized material from the beach.

• Hydraulic impacts. Shoreline armoring generally increases the reflectivity of the shoreline and redirects wave energy back onto the beach. This leads to scouring and lowering of the beach, to coarsening of the beach, and to ultimate failure of the structure.

• Loss of shoreline vegetation. Vegetation provides important "softer" erosion control functions. Vegetation is also critical in maintaining ecological functions.

• Loss of large woody debris. Changed hydraulic regimes and the loss of the high tide beach, along with the prevention of natural erosion of vegetated shorelines, lead to the loss of beached organic material. This material can increase biological diversity, can serve as a stabilizing influence on natural shorelines, and is habitat for many aquatic-based organisms, which are, in turn, important prey for larger organisms.

• Restriction of channel movement and creation of side channels. Hardened shorelines along rivers slow the movement of channels, which, in turn, prevents the input of larger woody debris, gravels for spawning, and the creation of side channels important for juvenile salmon rearing, and can result in increased floods and scour.

Additionally, hard structures, especially vertical walls, often create conditions that lead to failure of the structure. In time, the substrate of the beach coarsens and scours down to bedrock or a hard clay. The footings of bulkheads are exposed, leading to undermining and failure. This process is exacerbated when the original cause of the erosion and "need" for the bulkhead was from upland water drainage problems. Failed bulkheads and walls adversely impact beach aesthetics, may be a safety or navigational hazard, and may adversely impact shoreline ecological functions.

"Hard" structural stabilization measures refer to those with solid, hard surfaces, such as concrete bulkheads, while "soft" structural measures rely on less rigid materials, such as biotechnical vegetation measures or beach enhancement. There is a range of measures varying from soft to hard that include:

• Vegetation enhancement;

• Upland drainage control;

• Biotechnical measures;

• Beach enhancement;

• Anchor trees;

• Gravel placement;

• Rock revetments;

• Gabions;

• Concrete groins;

• Retaining walls and bluff walls;

• Bulkheads; and

• Seawalls.

Generally, the harder the construction measure, the greater the impact on shoreline processes, including sediment transport, geomorphology, and biological functions.

Structural shoreline stabilization often results in vegetation removal and damage to near-shore habitat and shoreline corridors. Therefore, master program shoreline stabilization provisions shall also be consistent with WAC 173-26-221(5), vegetation conservation, and where applicable, WAC 173-26-221(2), critical areas.

In order to implement RCW 90.58.100(6) and avoid or mitigate adverse impacts to shoreline ecological functions where shoreline alterations are necessary to protect single-family residences and principal appurtenant structures in danger from active shoreline erosion, master programs should include standards setting forth the circumstances under which alteration of the shoreline is permitted, and for the design and type of protective measures and devices.

(iii) **Standards.** In order to avoid the individual and cumulative net loss of ecological functions attributable to shoreline stabilization, master programs shall implement the above principles and apply the following standards:

(A) New development should be located and designed to avoid the need for future shoreline stabilization to the extent feasible. Subdivision of land must be regulated to assure that the lots created will not require shoreline stabilization in order for reasonable development to occur using geotechnical analysis of the site and shoreline characteristics. New development on steep slopes or bluffs shall be set back sufficiently to ensure that shoreline stabilization is unlikely to be necessary during the life of the structure, as demonstrated by a geotechnical analysis. New development that would require shoreline stabilization which causes significant impacts to adjacent or down-current properties and shoreline areas should not be allowed.

(B) New structural stabilization measures shall not be allowed except when necessity is demonstrated in the following manner:

(I) To protect existing primary structures:

• New or enlarged structural shoreline stabilization measures for an existing primary structure, including residences, should not be allowed unless there is conclusive evidence, documented by a geotechnical analysis, that the structure is in danger from shoreline erosion caused by tidal action, currents, or waves. Normal sloughing, erosion of steep bluffs, or shoreline erosion itself, without a scientific or geotechnical analysis, is not demonstration of need. The geotechnical analysis should evaluate on-site drainage issues and address drainage problems away from the shoreline edge before considering structural shoreline stabilization.

• The erosion control structure will not result in a net loss of shoreline ecological functions.

(II) In support of new nonwater-dependent development, including single-family residences, when all of the conditions below apply:

• The erosion is not being caused by upland conditions, such as the loss of vegetation and drainage.

• Nonstructural measures, such as placing the development further from the shoreline, planting vegetation, or installing on-site drainage improvements, are not feasible or not sufficient.

• The need to protect primary structures from damage due to erosion is demonstrated through a geotechnical report. The damage must be caused by natural processes, such as tidal action, currents, and waves.

• The erosion control structure will not result in a net loss of shoreline ecological functions.

(III) In support of water-dependent development when all of the conditions below apply:

• The erosion is not being caused by upland conditions, such as the loss of vegetation and drainage.

• Nonstructural measures, planting vegetation, or installing on-site drainage improvements, are not feasible or not sufficient.

• The need to protect primary structures from damage due to erosion is demonstrated through a geotechnical report.

• The erosion control structure will not result in a net loss of shoreline ecological functions.

(IV) To protect projects for the restoration of ecological functions or hazardous substance remediation projects pursuant to chapter 70.105D RCW when all of the conditions below apply:

• Nonstructural measures, planting vegetation, or installing on-site drainage improvements, are not feasible or not sufficient.

• The erosion control structure will not result in a net loss of shoreline ecological functions.

(C) An existing shoreline stabilization structure may be replaced with a similar structure if there is a demonstrated need to protect principal uses or structures from erosion caused by currents, tidal action, or waves.

• The replacement structure should be designed, located, sized, and constructed to assure no net loss of ecological functions.

• Replacement walls or bulkheads shall not encroach waterward of the ordinary high-water mark or existing structure unless the residence was occupied prior to January 1, 1992, and there are overriding safety or environmental concerns. In such cases, the replacement structure shall abut the existing shoreline stabilization structure.

• Where a net loss of ecological functions associated with critical saltwater habitats would occur by leaving the existing structure, remove it as part of the replacement measure.

• Soft shoreline stabilization measures that provide restoration of shoreline ecological functions may be permitted waterward of the ordinary high-water mark.

• For purposes of this section standards on shoreline stabilization measures, "replacement" means the construction of a new structure to perform a shoreline stabilization function of an existing structure which can no longer adequately serve its purpose. Additions to or increases in size of existing shoreline stabilization measures shall be considered new structures.

(D) Geotechnical reports pursuant to this section that address the need to prevent potential damage to a primary structure shall address the necessity for shoreline stabilization by estimating time frames and rates of erosion and report on the urgency associated with the specific situation. As a general matter, hard armoring solutions should not be authorized except when a report confirms that there is a significant possibility that such a structure will be damaged within three years as a result of shoreline erosion in the absence of such hard armoring measures, or where waiting until the need is that immediate, would foreclose the opportunity to use measures that avoid impacts on ecological functions. Thus, where the geotechnical report confirms a need to prevent potential damage to a primary structure, but the need is not as immediate as the three years, that report may still be used to justify more immediate authorization to protect against erosion using soft measures.

(E) When any structural shoreline stabilization measures are demonstrated to be necessary, pursuant to above provisions.

• Limit the size of stabilization measures to the minimum necessary. Use measures designed to assure no net loss of shoreline ecological functions. Soft approaches shall be used unless demonstrated not to be sufficient to protect primary structures, dwellings, and businesses.

• Ensure that publicly financed or subsidized shoreline erosion control measures do not restrict appropriate public access to the shoreline except where such access is determined to be infeasible because of incompatible uses, safety, security, or harm to ecological functions. See public access provisions; WAC 173-26-221(4). Where feasible, incorporate ecological restoration and public access improvements into the project.

• Mitigate new erosion control measures, including replacement structures, on feeder bluffs or other actions that affect beach sediment-producing areas to avoid and, if that is not possible, to minimize adverse impacts to sediment conveyance systems. Where sediment conveyance systems cross jurisdictional boundaries, local governments should coordinate shoreline management efforts. If beach erosion is threatening existing development, local governments should adopt master program provisions for a beach management district or other institutional mechanism to provide comprehensive mitigation for the adverse impacts of erosion control measures.

(F) For erosion or mass wasting due to upland conditions, see WAC 173-26-221 (2)(c)(ii).

(b) **Piers and docks.** New piers and docks shall be allowed only for water-dependent uses or public access. As used here, a dock associated with a single-family residence is a water-dependent use provided that it is designed and intended as a facility for access to watercraft and otherwise complies with the provisions of this section. Pier and dock construction shall be restricted to the minimum size necessary to meet the needs of the proposed water-dependent use. Water-related and water-enjoyment uses may be allowed as part of mixed-use development on over-water structures where they are clearly auxiliary to and in support of water-dependent uses, provided the minimum size requirement needed to meet the water-dependent use is not violated.

New pier or dock construction, excluding docks accessory to single-family residences, should be permitted only when the applicant has demonstrated that a specific need exists to support the intended water-dependent uses. If a port district or other public or commercial entity involving water-dependent uses has performed a needs analysis or comprehensive master plan projecting the future needs for pier or dock space, and if the plan or analysis is approved by the local

government and consistent with these guidelines, it may serve as the necessary justification for pier design, size, and construction. The intent of this provision is to allow ports and other entities the flexibility necessary to provide for existing and future water-dependent uses.

Where new piers or docks are allowed, master programs should contain provisions to require new residential development of two or more dwellings to provide joint use or community dock facilities, when feasible, rather than allow individual docks for each residence.

Piers and docks, including those accessory to single-family residences, shall be designed and constructed to avoid or, if that is not possible, to minimize and mitigate the impacts to ecological functions, critical areas resources such as eelgrass beds and fish habitats and processes such as currents and littoral drift. See WAC 173-26-221 (2)(c)(iii) and (iv). Master programs should require that structures be made of materials that have been approved by applicable state agencies.

(c) **Fill.** Fills shall be located, designed, and constructed to protect shoreline ecological functions and ecosystem-wide processes, including channel migration.

Fills waterward of the ordinary high-water mark shall be allowed only when necessary to support: Water-dependent use, public access, cleanup and disposal of contaminated sediments as part of an interagency environmental clean-up plan, disposal of dredged material considered suitable under, and conducted in accordance with the dredged material management program of the department of natural resources, expansion or alteration of transportation facilities of statewide significance currently located on the shoreline and then only upon a demonstration that alternatives to fill are not feasible, mitigation action, environmental restoration, beach nourishment or enhancement project. Fills waterward of the ordinary high-water mark for any use except ecological restoration should require a conditional use permit.

(d) **Breakwaters, jetties, groins, and weirs.** Breakwaters, jetties, groins, and weirs located waterward of the ordinary high-water mark shall be allowed only where necessary to support water-dependent uses, public access, shoreline stabilization, or other specific public purpose. Breakwaters, jetties, groins, weirs, and similar structures should require a conditional use permit, except for those structures installed to protect or restore ecological functions, such as woody debris installed in streams. Breakwaters, jetties, groins, and weirs shall be designed to protect critical areas and shall provide for mitigation according to the sequence defined in WAC 173-26-201 (2)(e).

(e) **Beach and dunes management.** Washington's beaches and their associated dunes lie along the Pacific Ocean coast between Point Grenville and Cape Disappointment, and as shorelines of statewide significance are mandated to be managed from a statewide perspective by the act. Beaches and dunes within shoreline jurisdiction shall be managed to conserve, protect, where appropriate develop, and where appropriate restore the resources and benefits of coastal beaches. Beaches and dunes should also be managed to reduce the hazard to human life and property from natural or human-induced actions associated with these areas.

Shoreline master programs in coastal marine areas shall provide for diverse and appropriate use of beach and dune areas consistent with their ecological, recreational, aesthetic, and economic values, and consistent with the natural limitations of beaches, dunes, and dune vegetation for development. Coastal master programs shall institute development setbacks from the shoreline to prevent impacts to the natural, functional, ecological, and aesthetic qualities of the dune.

"Dune modification" is the removal or addition of material to a dune, the reforming or reconfiguration of a dune, or the removal or addition of vegetation that will alter the dune's shape or sediment migration. Dune modification may be proposed for a number of purposes, including protection of property, flood and storm hazard reduction, erosion prevention, and ecological restoration.

Coastal dune modification shall be allowed only consistent with state and federal flood protection standards and when it will not result in a net loss of shoreline ecological functions or significant adverse impacts to other shoreline resources and values.

Dune modification to protect views of the water shall be allowed only on properties subdivided and developed prior to the adoption of the master program and where the view is completely obstructed for residences or water-enjoyment uses and where it can be demonstrated that the dunes did not obstruct views at the time of original occupancy, and then only in conformance with the above provisions.

(f) **Dredging and dredge material disposal.** Dredging and dredge material disposal shall be done in a manner which avoids or minimizes significant ecological impacts and impacts which cannot be avoided should be mitigated in a manner that assures no net loss of shoreline ecological functions.

New development should be sited and designed to avoid or, if that is not possible, to minimize the need for new and maintenance dredging. Dredging for the purpose of establishing, expanding, or relocating or reconfiguring navigation

channels and basins should be allowed where necessary for assuring safe and efficient accommodation of existing navigational uses and then only when significant ecological impacts are minimized and when mitigation is provided. Maintenance dredging of established navigation channels and basins should be restricted to maintaining previously dredged and/or existing authorized location, depth, and width.

Dredging waterward of the ordinary high-water mark for the primary purpose of obtaining fill material shall not be allowed, except when the material is necessary for the restoration of ecological functions. When allowed, the site where the fill is to be placed must be located waterward of the ordinary high-water mark. The project must be either associated with a MTCA or CERCLA habitat restoration project or, if approved through a shoreline conditional use permit, any other significant habitat enhancement project. Master programs should include provisions for uses of suitable dredge material that benefit shoreline resources. Where applicable, master programs should provide for the implementation of adopted regional interagency dredge material management plans or watershed management planning.

Disposal of dredge material on shorelands or wetlands within a river's channel migration zone shall be discouraged. In the limited instances where it is allowed, such disposal shall require a conditional use permit. This provision is not intended to address discharge of dredge material into the flowing current of the river or in deep water within the channel where it does not substantially affect the geohydrologic character of the channel migration zone.

(g) **Shoreline habitat and natural systems enhancement projects.** Shoreline habitat and natural systems enhancement projects include those activities proposed and conducted specifically for the purpose of establishing, restoring, or enhancing habitat for priority species in shorelines.

Master programs should include provisions fostering habitat and natural system enhancement projects. Such projects may include shoreline modification actions such as modification of vegetation, removal of nonnative or invasive plants, shoreline stabilization, dredging, and filling, provided that the primary purpose of such actions is clearly restoration of the natural character and ecological functions of the shoreline. Master program provisions should assure that the projects address legitimate restoration needs and priorities and facilitate implementation of the restoration plan developed pursuant to WAC 173-26-201 (2)(f).

[Statutory Authority: RCW 90.58.060 and 90.58.200. 04-01-117 (Order 03-02), § 173-26-231, filed 12/17/03, effective 1/17/04.]

5.2 EFFECTS OF SHORELINE MODIFICATIONS ON AQUATIC ORGANISMS AND THEIR HABITATS

Shoreline modifications and nearshore structures around Lake Washington have dramatically altered the lake's aquatic ecosystem. Although some changes in the Lake environment are not completely understood, the effects of physical modifications to shoreline habitats on some aquatic species, particularly chinook salmon, have been very well studied. Because of their sensitivity to changes in the aquatic ecosystem, anadromous salmonids are commonly used as a biological indicator species for the aquatic health of Lake Washington. There are many indigenous aquatic species inhabiting Lake Washington, but salmonids are one of the most sensitive. Due to their "threatened" status under the ESA, funding and other resources have been made available for the study of chinook salmon utilizing Lake Washington, which are an important part of the Puget Sound Chinook Salmon Evolutionary Significant Unit (ESU). The life history pattern and habitat requirements of the chinook salmon reflects the needs of other salmonid and non-salmonid aquatic species indigenous to Lake Washington, and information concerning the chinook salmon serves as a good proxy for other species in the Lake. Similarly, habitat restoration efforts designed to benefit chinook or other salmonids will also be beneficial for other native species inhabiting Lake Washington.

An important part of the City, the Kirkland waterfront has been extensively modified with bulkheads, piers, and other overwater structures (Toft 2001). Common modifications to nearshore aquatic habitats around much of Lake Washington include 1) the construction of bulkheads, which result in the structural simplification of shoreline habitats, and 2) the construction of piers, which block sunlight and create large areas of overhead cover within the littoral zone. These types of structural modifications to shorelines are now known to benefit non-native predators (like largemouth and smallmouth bass), while reducing the amount of complex aquatic habitat formerly available to salmonids rearing and migrating through Lake Washington (Kahler et al. 2000; Kerwin 2001; Tabor et al. 2006). Adult salmonids tend to utilize deepwater habitats in Lake Washington and structural changes to nearshore habitats typically have a lesser affect on adults than they do on juvenile salmonids. Lake Washington serves as an important rearing area and migration corridor for juvenile salmonids, however, and due to their affinity to nearshore, shallow-water habitats, juvenile salmonids are greatly affected by physical changes at the shoreline.

5.2.1 Anadromous Fish in the Lake Washington Watershed

Adult chinook salmon migrate from Puget Sound through the Chittenden Locks and into Lake Washington between July and September, continuing on to various tributary streams where they spawn in October and November. Although most chinook salmon production in the Lake Washington watershed occurs in the Cedar River, the North Lake Washington tributary streams (feeding into the Sammamish River), or at the Issaquah Fish Hatchery, chinook salmon (as well as coho and sockeye) also use many other, smaller Lake Washington tributary streams. A few of the tributary streams in or near the Kirkland area that are used by chinook salmon or other anadromous salmonids include Juanita Creek, Yarrow Creek, Forbes Creek, and Kelsey Creek. Chinook fry emerge from their redds between January and March, and either rear in their natal stream or emigrate to Lake Washington for a rearing period extending from three to five months. Emigrating through the Chittenden Locks and into Puget Sound between May and August,

juvenile chinook salmon leave the Lake Washington system during their first year (Kerwin 2001; Tabor and Piaskowski 2002). Other anadromous salmonids spawning and/or rearing in the Lake Washington watershed include sockeye salmon, coho salmon, steelhead trout, and possibly bull trout.

After emerging from the gravel, chinook fry from Lake Washington tributaries either emigrate directly to the Lake, or rear to the fingerling stage in their natal stream before entering the Lake (Seiler et al. 2005). This process occurs between February and June. After they enter Lake Washington, juvenile chinook often congregate near the mouths of tributary streams, and prefer low gradient, shallow-water habitats with small substrates (Tabor and Piaskowski 2002; Tabor et al. 2004b; Tabor et al. 2006). Chinook fry entering Lake Washington early in the emigration period (February and March) are still relatively small, typically do not disperse far from the mouth of their natal stream, and are largely dependant upon shallow-water habitats in the littoral zone with overhanging vegetation and complex cover (Tabor and Piaskowski 2002; Tabor et al 2004b). The mouths of creeks entering Lake Washington (whether they support salmon spawning or not), as well as undeveloped lakeshore riparian habitats associated with these confluence areas, attract juvenile chinook salmon and provide important rearing habitat during this critical life stage (Tabor et al. 2004b; Tabor et al. 2006). Later in the emigration period (May and June), most chinook juveniles have grown to fingerling size and begin utilizing limnetic areas of the Lake more heavily. As the juvenile chinook salmon mature to fingerlings and move offshore, their distribution extends throughout Lake Washington. Although early emigrating chinook fry from the Cedar River and North Lake Washington tributaries (primary production areas) initially do not disperse to shoreline areas in Kirkland, any salmon fry from smaller tributaries such as Juanita, Forbes, or Yarrow Creeks would depend on nearshore habitats of the Kirkland waterfront. Later in the spring (May and June), however, juvenile chinook are known to be well distributed throughout both limnetic and littoral areas of Lake Washington, and certainly utilize shoreline habitats in Kirkland.

5.2.2 The Effects of Overwater Shading and Shoreline Armoring

Piers and other overwater structures shade the lake bottom and inhibit the growth of aquatic vegetation. Overwater structures affect the size, density, and species composition of aquatic macrophytes living directly beneath them (Fresh and Lucchetti 2000). The magnitude of this effect on aquatic macrophytes varies with the size (square footage) of the structure and the amount of sunlight it blocks. Changes in the physical structure of the aquatic plant community affect juvenile salmonids, as well as other indigenous fishes that use this vegetation in the nearshore environment. Spatial heterogeneity in aquatic vegetation increases the amount of edge habitat, improving the quality of foraging habitat available to ambush predators like the bass (Bryan and Scarnecchia 1992; Weaver et al 1997; Kahler et al. 2000). The combined effect of an overwater structure and a dramatic change in aquatic vegetation results in a behavior modification in juvenile salmonids moving through both littoral and limnetic habitats. Juvenile salmonids migrating parallel to the shoreline will often change course to circumvent large piers or other overwater structures rather than swimming beneath them (Tabor and Piaskowski 2002; Tabor et al. 2004b; Tabor et al. 2006). These behavior modifications disrupt natural patterns of migration and can expose juvenile salmonids to increased levels of predation. Minimizing overwater coverage and associated support structures will benefit salmon fry rearing in the littoral zone as well as older salmon fingerlings utilizing the limnetic zone. Studies related to

shading effects from varying types of pier decking indicate that grated decking provides significantly more light to the water surface than traditional decking methods and may lead to improved migratory conditions for juvenile chinook salmon (Gayaldo and Nelson 2006).

Bulkheads or other types of shoreline armoring affect juvenile salmonids by eliminating shallow-water refuge habitat, or indirectly, by the elimination of shoreline vegetation and in-water woody debris that generally accompanies bulkhead construction. Placing bulkheads waterward of OHWM creates an abrupt, deep-water drop-off at the shoreline while eliminating shallow water habitat in the nearshore. Lange (1999) found that bank stabilization (i.e., various forms of erosion control structures that we refer to as "bulkheads") was negatively correlated to fish abundance and species richness at all spatial scales investigated. Juvenile chinook salmon and other small fishes rely on shallow-water habitats in the littoral zone for foraging, refuge, and migration (Collins et al. 1995; Tabor and Piaskowski 2002). Shoreline armoring and bulkheads are also known to result in local reductions to the species diversity and abundance of both the fish community as well as the macroinvertebrate population inhabiting the littoral zone (Schmude et al. 1998; Lange 1999; Jennings et al. 1999).

5.2.3 Predator-prey Interactions in Lake Washington

Indigenous Lake Washington fish species that prey on juvenile salmonids include cutthroat trout, rainbow trout, coho salmon, northern pikeminnow, five species of sculpin, and lamprey. Non-native predators currently present in the Lake include smallmouth bass, largemouth bass, and yellow perch. Native cutthroat trout populations (adfluvial and anadromous) are strong in Lake Washington, and this species is currently considered the primary predator of juvenile chinook, sockeye, and coho salmon. Smaller-sized cutthroat trout prey on juvenile salmonid fry inhabiting the littoral zone early in the spring, while larger individuals feed on salmonid fingerlings migrating and rearing in the limnetic zone later in the season (Nowak et al. 2004; Tabor et al 2004a). A small proportion of northern pikeminnow, yellow perch, and smallmouth bass reside in nearshore regions during winter, but the majority moves offshore in the spring as temperatures in nearshore areas warm (Bartoo 1972; Olney 1975; Coutant 1975). The distributions of these fishes overlap primarily with the peak out-migration of chinook through the littoral zone, whereas the overlap of cutthroat and chinook distributions is continuous. Sculpins are present in the littoral zone year-round and are also known to eat juvenile chinook salmon (Tabor et al. 1998; Tabor et al 2004a). In mid-summer, temperatures in the littoral zone become undesirable for juvenile chinook and coho salmon, and the majority leave the lake or seek cooler temperatures away from the littoral zone, thus segregating themselves from littoral predators, but remaining vulnerable to cutthroat trout and potentially prickly sculpin.

Shoreline development could potentially increase the rate of predation on juvenile salmonids by several principal means: 1) reducing the amount of refuge habitat available to prey species like juvenile salmonids by modifying the structure of the shoreline; 2) providing concealment structures for ambush predators such as bass and sculpin; 3) providing artificial lighting that allows for around-the-clock foraging by predators; and 4) altering migration routes for smolts and rearing fry. Although many predators that feed on juvenile salmonids are active, cruising hunters (i.e., other salmonids, piscivorous birds, northern pikeminnow), smallmouth and largemouth bass generally utilize ambush or habituation foraging strategies (Hobson 1979). Fayram and Sibley (2000) determined that smallmouth bass in Lake Washington occupied

littoral home ranges that radiated 100 to 200 meters from the focal point and generally did not extend below 8-meter depths. Because of their propensity for ambush foraging and shoreline orientation, bass in Lake Washington benefit from artificial structures placed in the littoral zone, whereas yellow perch are more likely to utilize "non-structural" areas (Paxton and Stevenson 1979). Increased useage of complex cover (e.g., aquatic vegetation, woody debris, substrate interstices, and undercut banks) by prey fishes in the presence of predators, and reduced foraging efficiency of predators due to habitat complexity has been well documented (Wood and Hand 1985; Werner and Hall 1988; Bugert and Bjornn 1991; Tabor and Wurtsbaugh 1991; Persson and Eklov 1995). Juvenile salmonids, like many other prey species, modify their behavior in the presence of predators by seeking or orienting to complex refuge (Gregory and Levings 1996; Reinhardt and Healey 1997), emigrating from areas with predators (Bugert and Bjornn 1991), aggregating (Tabor and Wurtsbaugh 1991), and adopting diel vertical migrations (Eggers et al. 1978). Complex habitat features that exclude predators, physically or through risk-aversion can function as prey refuge. Examples of effective prey refuge include complex substrate, aquatic and emergent vegetation, overhanging terrestrial vegetation, undercut banks, and submerged pieces of large wood. Shallow water also functions as a refuge from predation for small fish, especially in the absence of complex habitat features such as woody debris or submerged vegetation. Historically, Lake Washington's riparian and littoral zones were well vegetated, and interspersed with an abundance of large wood that had fallen along the shoreline (Evermann and Meek 1897; Stein 1970). The lowering of the Lake Washington water level and substantial shoreline development eliminated much of the vegetation and structural complexity historically available to juvenile salmonids rearing and migrating in the nearshore. Management plans seeking to encourage healthy assemblages of native fish should avoid the simplification of shoreline habitat, and the reduction of refuge-habitat for prey species.

Although the magnitude of avian predation in Lake Washington is unknown, piscivorous birds are present and this source of predation must be considered among potential threats to most fish, including juvenile salmonids. Common mergansers are abundant in the spring. Double-crested cormorants are common in Lake Washington, typically perching on the log booms at Union Bay and May Creek rather than on docks and bulkheads. Cormorants also commonly perch on individual piles. Western grebes inhabit enclosed bays (and some marinas), and forage throughout the lakes on calm days. Gulls are common, perching on log booms and on low docks, and are also known to feed on juvenile salmonids (Ruggerone 1986). In-water structures provide perching platforms for avian predators, from which they can launch feeding forays or dry plumage (Kahler et al. 2000). Incorporating anti-perching devices and grating in the design of overwater piers or related structures would work to minimize any advantage these structures convey to piscivorous birds.

5.2.4 Non-native Predators in the Nearshore Environment

The habitat requirements and behavior patterns of bass species have been studied extensively throughout their range, including Lakes Washington and Sammamish. A growing body of bass-related research has collectively demonstrated that bass species have an affinity for structural elements, and that bass prey on juvenile salmonids in Lake Washington. Smallmouth bass are more abundant in Lake Washington than largemouth bass, but both species are present in the system.

Although smallmouth and largemouth bass are known to prefer natural cover types like brush, logs, aquatic vegetation, or boulders (Stein 1970), these adaptive species readily utilize floating docks and the support piles of piers in the absence of natural cover types. Artificial structures and cover types that promote shade or darkness are frequently favored by yearling bass species (Haines and Butler 1969; Bassett 1994). Bass species are known to select low-gradient, shallow-water (0.6-1.5 meters), silty to gravelly habitats near structural features for spawning (Pflug 1981; Heidinger 1975; Allan and Romero 1975), and prefer similar habitat types near cover while foraging or resting (Vogele and Rainwater 1975). Although the habitat preferences of largemouth and smallmouth bass are generally similar, smallmouth bass generally select drop-offs or outcroppings, cover in the form of logs or rocks, and hard substrates without aquatic vegetation (Pflug 1981; Pflug and Pauley 1984), whereas largemouth bass generally prefer softer-bottom substrates and aquatic macrophytes (Coble 1975). These aspects of bass ecology are consistent with observations of bass behavior from across their geographic range (Bryan and Scarnecchia 1992; Kraai et al. 1991; Bassett 1994).

Logs, brush, or other pieces of large wood are rare along developed sections of the shoreline within the City of Kirkland. Piers provide alternative sources of shade, overhead cover, and in-water structure (piles and boatlifts) that attract bass (Fresh et al. 2003). Piers and piles differ from natural cover/structure elements, such as brush piles, primarily in their lack of structural complexity. This difference is critical for prey fish, which rely on structural complexity for avoidance cover in the presence of predators. In developed lakes, piers become the dominant structural features, at the expense of natural complex structures such as woody debris and emergent vegetation (Bryan and Scarnecchia 1992; Poe et al. 1986; Lange 1999). In areas of Lake Washington where smallmouth bass are present, they preferentially select habitats beneath piers and near in-water support pilings (Fresh et al. 2003). Lake Washington smallmouth concentrations tend to be highest around large docks extending over deeper water, equipped with skirting and numerous support piles. Management plans designed to minimize any advantage non-native predators hold over juvenile salmonids in the littoral zone of Lake Washington should also seek to minimize the amount of overwater cover and support structure associated with pier or dock projects along the shoreline.

5.3 CITY OF KIRKLAND SHORELINE JURISDICTION

5.3.1 Summary of City's Analysis

The segment-specific discussion in Section 4 adequately summarizes existing conditions for most of Kirkland's shoreline jurisdiction, including the PAA. Section 5.1 presents lake-wide conditions and function/process performance, with the latter organized per NOAA Fisheries' draft *Lake Matrix of Pathways and Indicators* established for chinook salmon (see Table 17). The latter discussion is focused on the aquatic lake environment, not the associated upland shoreline areas. The following discussion ties together Sections 4 and 5.1 consistent with the lake function delineation as presented in WAC 173-26-201(3)(d)(i)(C) and the processes outlined in WAC 173-26-201(3)(d)(i)(D). Table 18 summarizes the performance of ecological functions of Segments A, C and D. Segment B (Juanita Bay and Yarrow Bay Wetlands) is a notable exception, and is summarized in Table 19.

The Shoreline Permitting Process

"A System of Checks and Balances: An Applicant's Perspective"

Presented by David Douglas, Waterfront Construction, Inc.

- The Shoreline Permitting Process involves local, state and federal agencies, multiple permits and has more checks and balances than most other regulatory programs.
- Most property owners and the general public are not aware of or familiar with the process shoreline projects must go through and many have never heard of a Shoreline Master Program.
- Government employees, including local Land Use and Planning Department staff and state legislators have varying degrees of experience and understanding of the entire Shoreline Permitting Process.
- Planning Commissioners, City and County Council Members, and local leaders have varying degrees of experience and understanding of the Shoreline Permitting Process and associated costs and it represents only a small portion of their responsibilities.

The Shoreline Permitting Process

Checks and Balances

- The Shoreline Permitting Process is a system of checks and balances that requires:
  - Cooperative effort between property owner, contractor, and government including:
    - Property owners working within the process.
    - Contractors designing and building responsible projects and refusing to conduct unauthorized work.
    - Government using its authority and responsibility by managing an equitable and flexible regulatory process that encourages participation by property owners, recognizes improvements, and balances their responsibility to protect the environment and natural resources with the reasonable wants and rights of property owners.

The Shoreline Permitting Process

Checks and Balances (cont.)

- The Shoreline Permitting Process is a system of checks and balances that requires:
  - A thorough knowledge of the permitting process including:
    - The process is complex.
    - The process is expensive.
    - The process takes time and patience and most property owners cannot or will not be able to work through it.
    - The process places the burden of proof on the applicant, even when improvements are made.
    - The process is the responsibility of all parties.
    - The process places similar responsibilities on various agencies leading to overlapping reviews, redundancy, conflict and frustration on the part of applicants.

The Shoreline Permitting Process

Agencies Involved in the Process

- City or County Land Use/Planning Department
  - Shoreline Substantial Development Permit (Approval)
  - State Environmental Policy Act (SEPA) (Determination)
  - Shoreline Variance Permit (Review and Recommendation)
  - Conditional Use Permit (Review and Recommendation)
  - Shoreline and SEPA Exemptions (Approval)

- WA Department of Ecology
  - Shoreline Substantial Development Permit (Review, Comment and Appeal Authority)
  - Shoreline Variance (Approval)
  - Shoreline Conditional Use Permit (Approval)
  - Shoreline and SEPA Exemptions (Administrative Oversight)
  - Coastal Zone Management (Issuance)
  - Water Quality Certification (Issuance)

The Shoreline Permitting Process

Agencies Involved in the Process (cont.)

- WA Department of Fish and Wildlife
  - Hydraulic Project Approval (Approval)
  - State Species of Concern
- WA Department of Natural Resources
  - Aquatic Lands Lease (Approval)
- U. S. Army Corps of Engineers
  - Section 10 Permit (Rivers & Harbors) (Approval)
  - Section 404 Permit (Clean Water Act) (Approval)
- U. S. Fish and Wildlife Service (Concurrence)
  - *Section 7 Endangered Species Act Consultation
  - Biological Opinion
- National Marine Fisheries Service (Concurrence)
  - *Section 7 Endangered Species Act Consultation
  - Biological Opinion

The Shoreline Permitting Process

Steps Involved in the Process

- Each agent or applicant may handle the permitting process differently although the same result must be reached. Based on experience, Waterfront Construction has found the following step-by-step process to be the most efficient, flexible and cost effective way to manage shoreline permits:

1. Receive call from prospective client.
2. Conduct initial meeting on site.
3. If client stands firm on a project that cannot or will not be permitted we recommend they work with others.
4. Begin property research.
5. Request site survey if required.
6. Conduct site visit.

The Shoreline Permitting Process

Steps Involved in the Process (cont.)

7. Work with Project Manager and Drafter to design project.
8. Coordinate services of a landscape designer, biological firm and geotechnical engineer.
9. Complete all local and federal application documents.
10. Review drawings and make changes for drafter.
11. If there is an inwater sewer line involved, send copy of approved drawings to local utility.
12. Send completed drawings and applicable local forms to client for review, approval, and signature
13. Schedule and attend pre-application meeting with local government if required.
14. If project qualifies, complete Shoreline SDP and SEPA exemption request letter.

The Shoreline Permitting Process

Steps Involved in the Process (cont.)

15. Submit Shoreline SDP and SEPA (Variance or CUP) and Corps permit application packets to local government and Army Corps of Engineers.
16. Monitor and wait for SEPA Determination from local government's SEPA Responsible Official.
17. Upon receipt of SEPA, review conditions, prepare and submit HPA Application to WDFW.
18. Monitor and wait for SDP review and approval from local government.
19. For any approvals other than administrative, attend PC, CC, or Public Hearing.
20. Receive SDP approval from local government.
21. Concurrently during the SEPA and SDP reviews, work with WDFW and Army Corps of Engineers.

The Shoreline Permitting Process

Steps Involved in the Process (cont.)

22. WDFW evaluates impacts of the project on fish and critical habitat.

23. The U. S. Army Corps of Engineers Section 10 Permit process reviews projects in navigable waterways of the U.S.

24. During the Corps review process, back and forth communication takes place if needed, mainly for projects submitted under the LOP process or which do not fully comply with RGP, NWP and Programmatic guidelines.

25. U.S. Fish and Wildlife Service and NMFS reviews Memorandum from the Corps and all supporting documentation against ESA Section guidelines and concurs with the Corps determination or recommends changes.

26. If a Water Quality Certification Determination cannot be made by the Corps of Engineers, application materials are sent to WA Dept of Ecology for review and certification.

The Shoreline Permitting Process

Steps Involved in the Process (cont.)

27. Prepare local building application packet which can include Building, Demolition, Grading, Clearing, or Drainage Permits.

28. Receive Building Permit, review all project permits and conditions, prepare Permit Completion Project Manager Information Sheet to ensure PM and Crew are aware of all vital information so no violations are committed.

29. If work may not be completed prior to inwater work window closure apply for extension or delay construction until next window if extension is unlikely to be approved.

30. Schedule interim inspections required during the construction of a project and conduct site visits for compliance.

The Shoreline Permitting Process

Steps Involved in the Process (cont.)

Following Construction:

31. Schedule final building permit inspection after electrical and plumbing inspections are completed.

    Note: Plantings may or may not be required to be installed prior to final inspection.

32. Contact WDFW for compliance inspection.

33. Submit Certificate of Compliance to Corps of Engineers.

34. Prepare Initial Planting Monitoring Report and Annual Monitoring Reports for Client with instructions to submit report with photos for 5 years ensuring 100% survival or replanting for 3 years and 80% after 5 years.

35. Close out project. Depending on project total duration for permitting is 6 to 24 months with the average being approximately 10 to 14 months.

The Shoreline Permitting Process

Positive Elements of the Current Process

- The process is transparent and thorough with each regulatory level taking ownership of their responsibility for protecting natural resources.
- The tri-level (local, state and federal) process has resulted in environmental improvements over the last 10 years.
- The process allows flexibility in design.
- The process protects listed species, species of concern and their critical habitat.
- The process is designed to promote a cooperative effort between all parties.

The Shoreline Permitting Process

Positive Elements of the Current Process (cont.)

- Partial and full bulkheads have been voluntarily replaced with more natural shorelines.
- New piers have been designed and built to incorporate impact minimization, conservation and mitigation measures.
- Thousands of feet of shoreline have had native riparian and/or emergent vegetation planted.
- When administered fairly the process encourages property owners and contractors to participate.

The Shoreline Permitting Process

Negative Elements of the Current Process

- The Shoreline Permitting Process as administered has resulted in a relatively low level of cooperation and teamwork between property owner, contractor and government.
- The best available science used is often inconclusive and uses studies funded by governmental agencies or special interest groups with a desired or predetermined goal and lack of objectivity.
- Multiple levels of government reviewing the same project and drawing different conclusions.
- Process is complicated and expensive.
- Property owners are not given fair and equitable credit for improvements or removal of existing structures.

The Shoreline Permitting Process

Negative Elements of the Current Process (cont.)

- Regulatory staff place disproportionate mitigation requirements on property owners to get as much as they can.
- Property owners have no representation from local, state or federal leaders making them easy targets for special interest and environmental groups and regulatory agencies.
- Progressive rewording and narrow interpretation of guidelines over the years has resulted in misapplication of written regulations.
- For many shoreline planners and regulatory staff preventing or greatly restricting development along the shoreline is a personal quest.
- Waterfront property owners are often viewed by regulatory agencies and many citizens as privileged so they must do their part and pay the price.

The Shoreline Permitting Process

Negative Elements of the Current Process (cont.)

- The current process as administered by the various agencies results in:
  - Property owner, agents and contractors against government.
  - Government against property owner, agents and contractors.
  - Conservation groups against property owners, agents, contractors and government.
  - Property owners against local staff, commissions, councils and leaders.
  - Property owner against contractor.
  - Government agency against government agency.

The Shoreline Permitting Process

Negative Elements of the Current Process (cont.)

- The current process as administered by the various agencies:
  - Operates from a position of mistrust toward the very property owners and contractors who are working within it.
  - Creates an environment for property owners to use self-help or unqualified contractors to do unauthorized and unsafe work.
  - Makes property owners resistant to following through and maintaining agreed mitigation.
  - Renegade contractors doing unauthorized work with a very small chance of being caught.
  - Pushing many people who would never consider breaking the law or doing something illegal beyond their usual way of thinking.

The process currently promotes an “everyone for themselves” attitude.

Recently Approved Shoreline Projects

- The following slides are a small sample of the hundreds of pier and bulkhead projects approved and constructed on Lake Washington after the Endangered Species Act Update and/or the Shoreline Management Act requirement for “No Net Loss of Shoreline Ecological Functions” (2003) and the Corps Regional General Permit 3 (2005).

- All projects for replacement of existing piers and bulkheads represent improvements over previously existing conditions and structures.

- The vast majority of projects include a riparian and/or emergent planting plan of native trees, plants or shrubs and/or nearshore fill to improve fish habitat.

Bulkheads

Beaches

Shoreline Renovation

Rockeries

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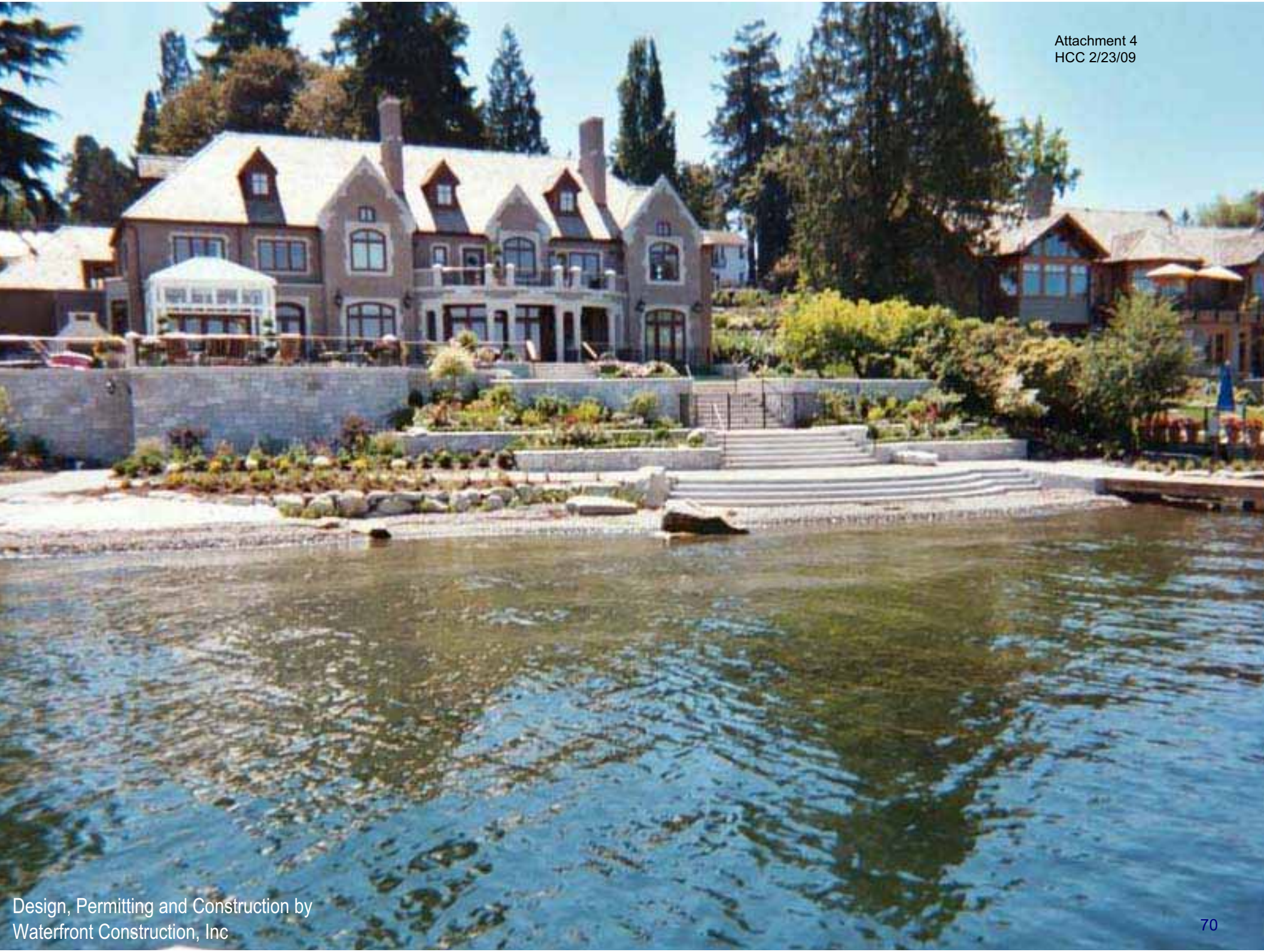

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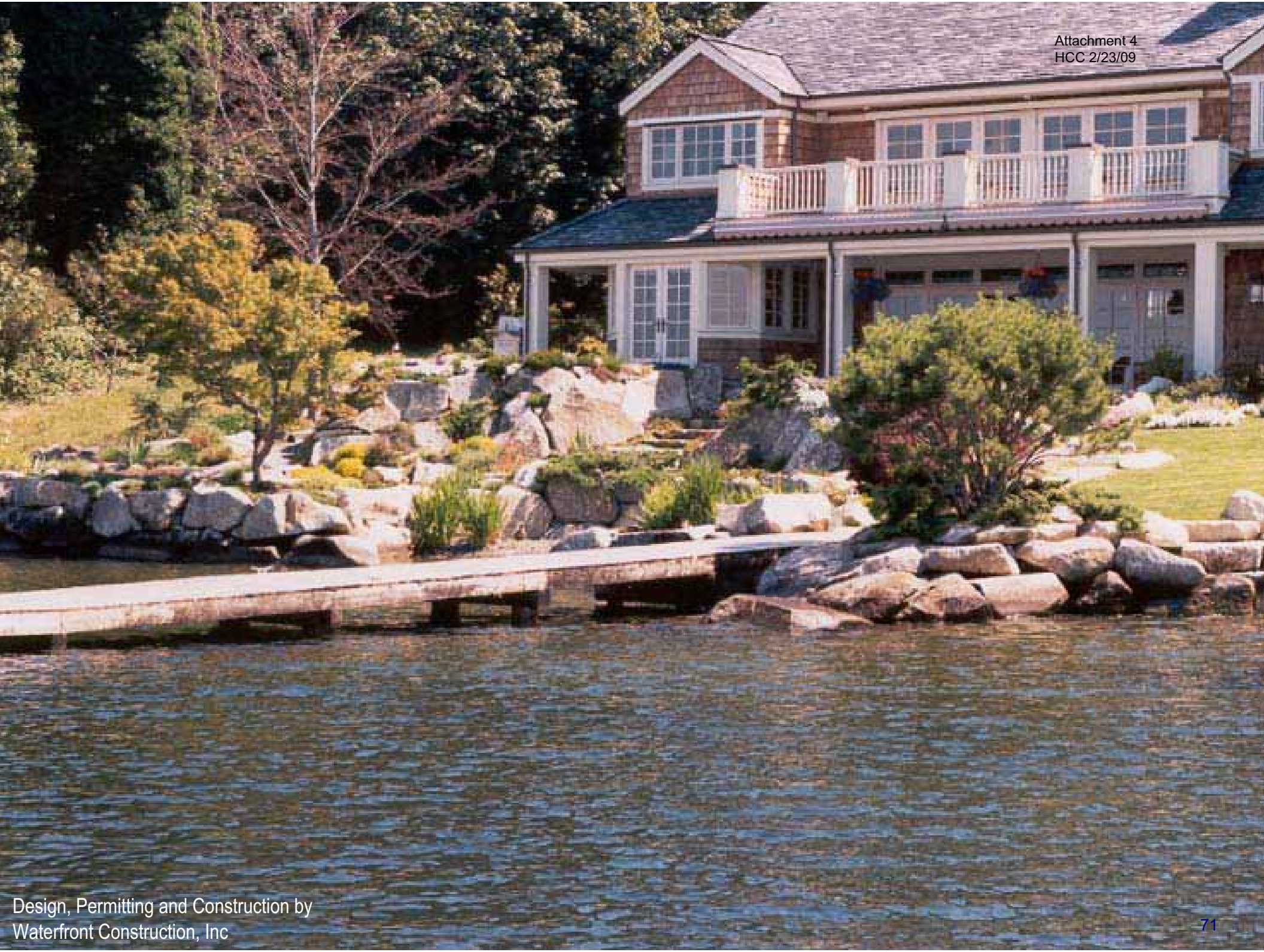

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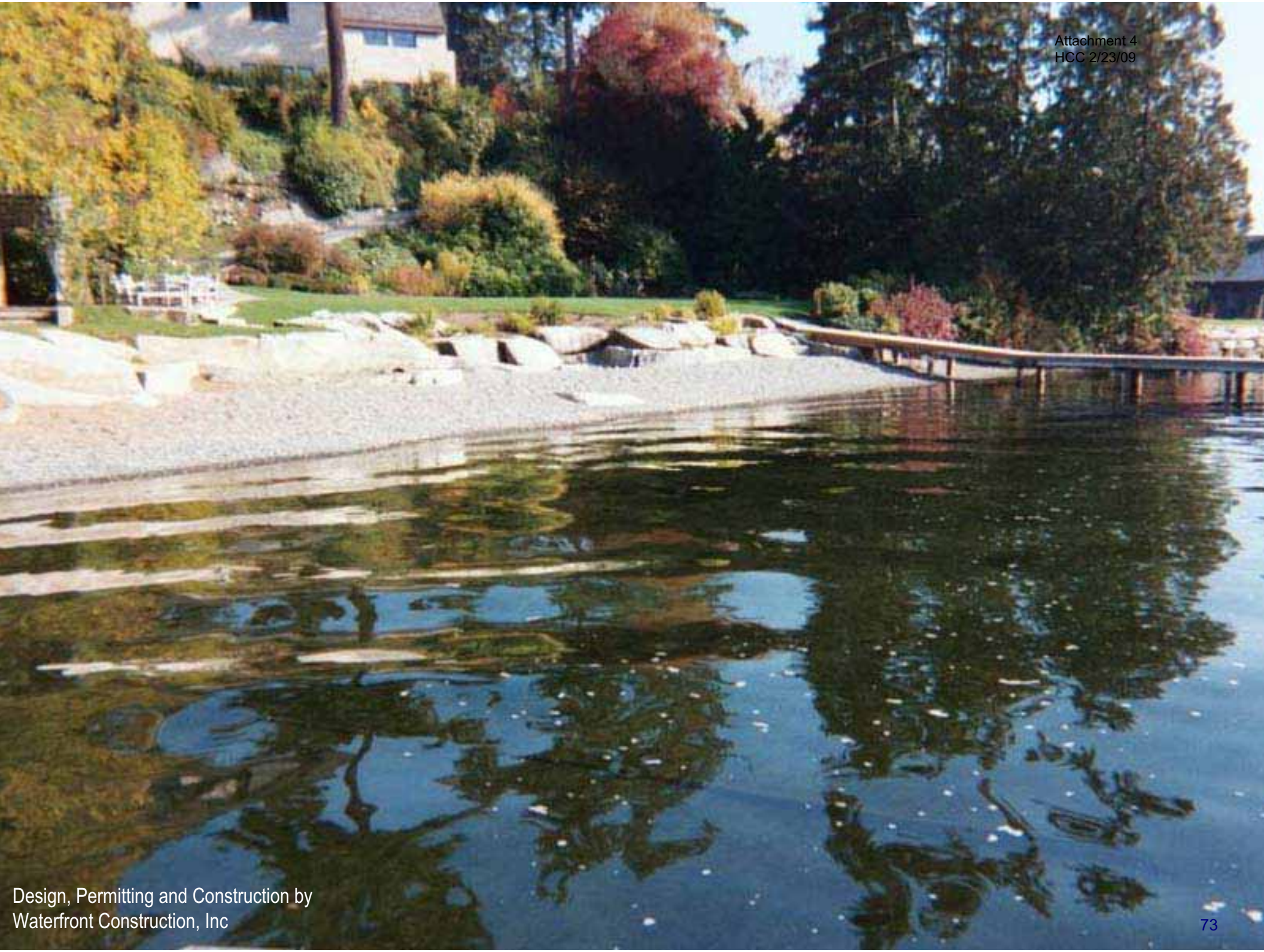

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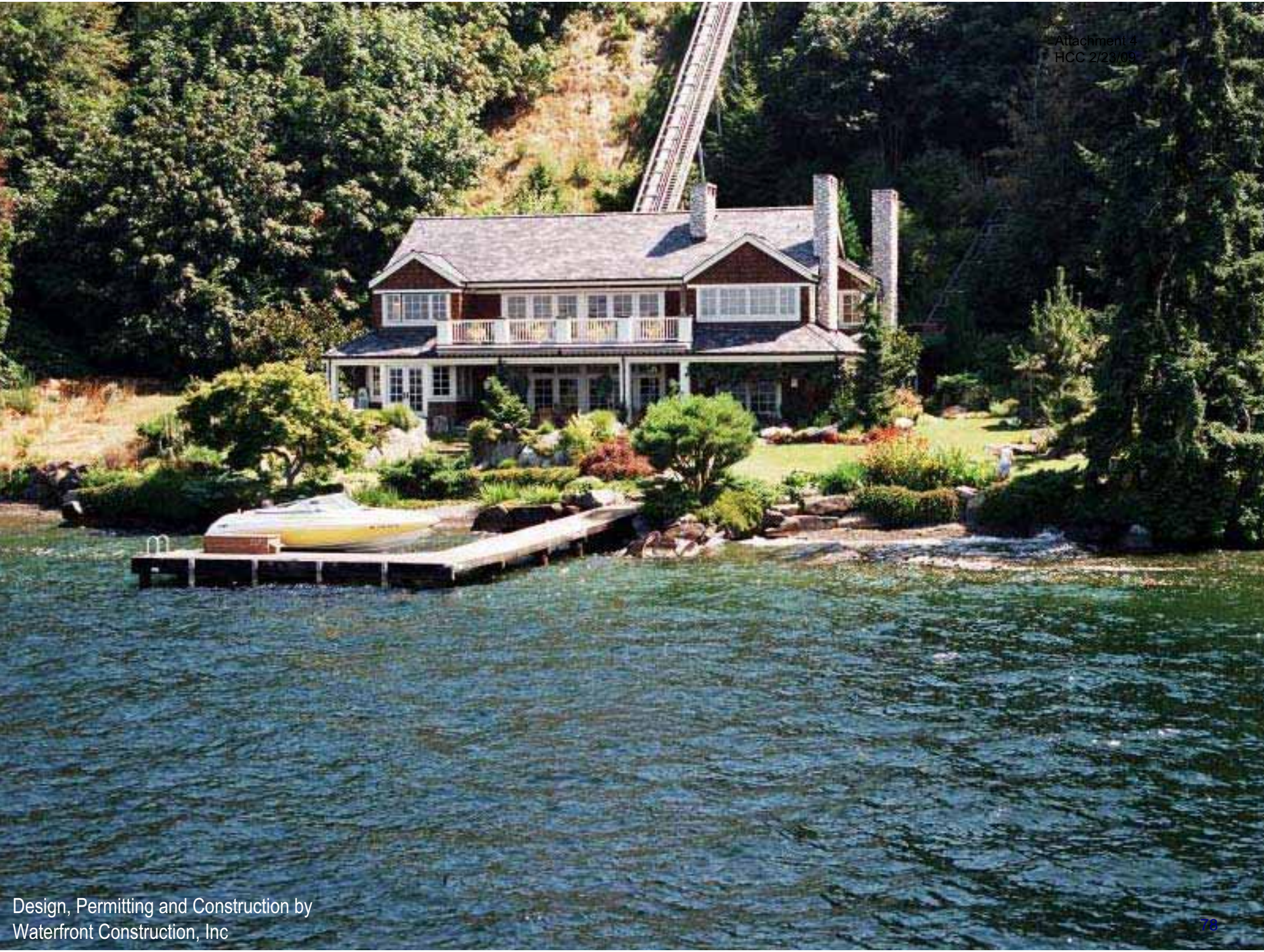

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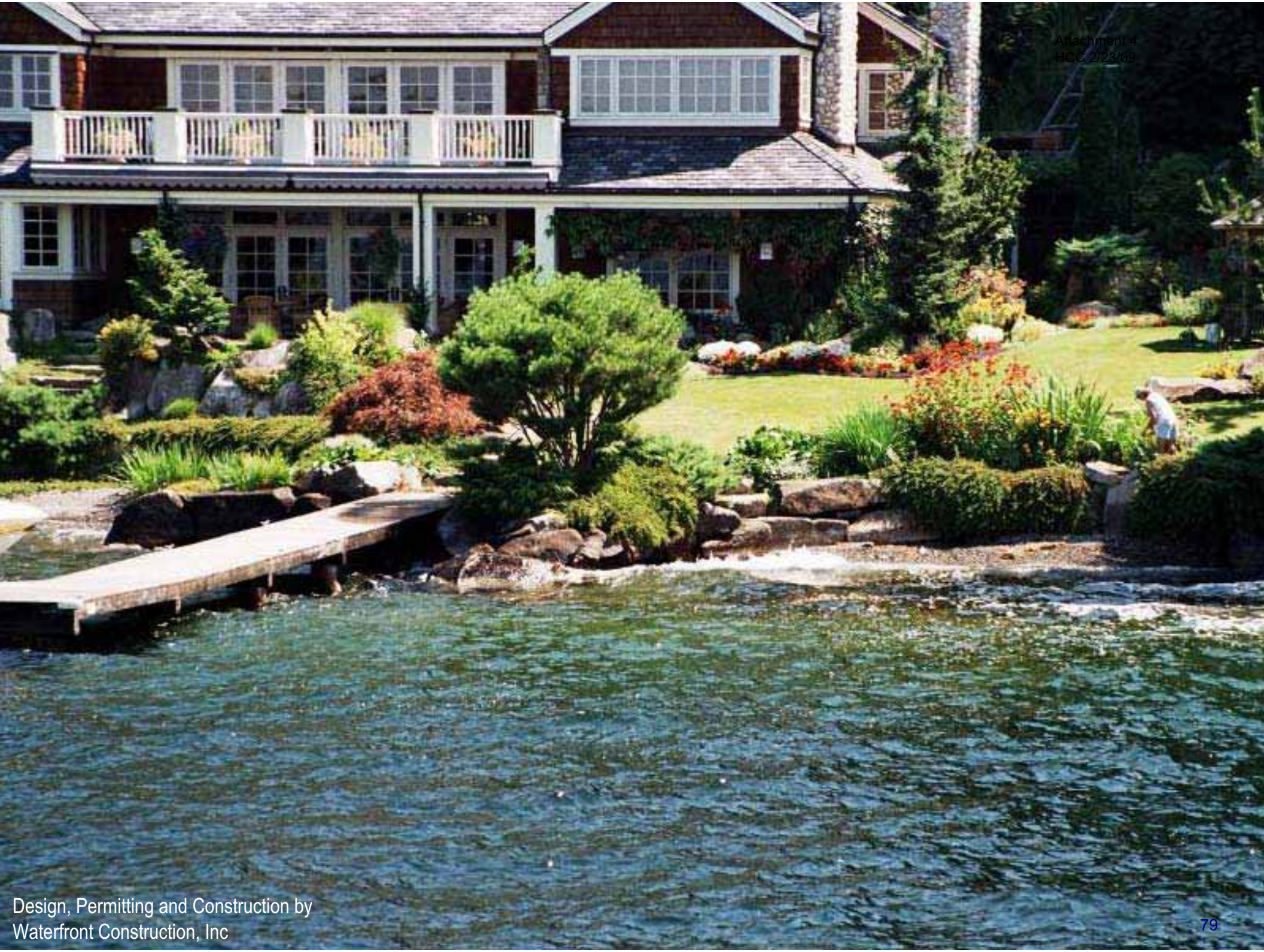

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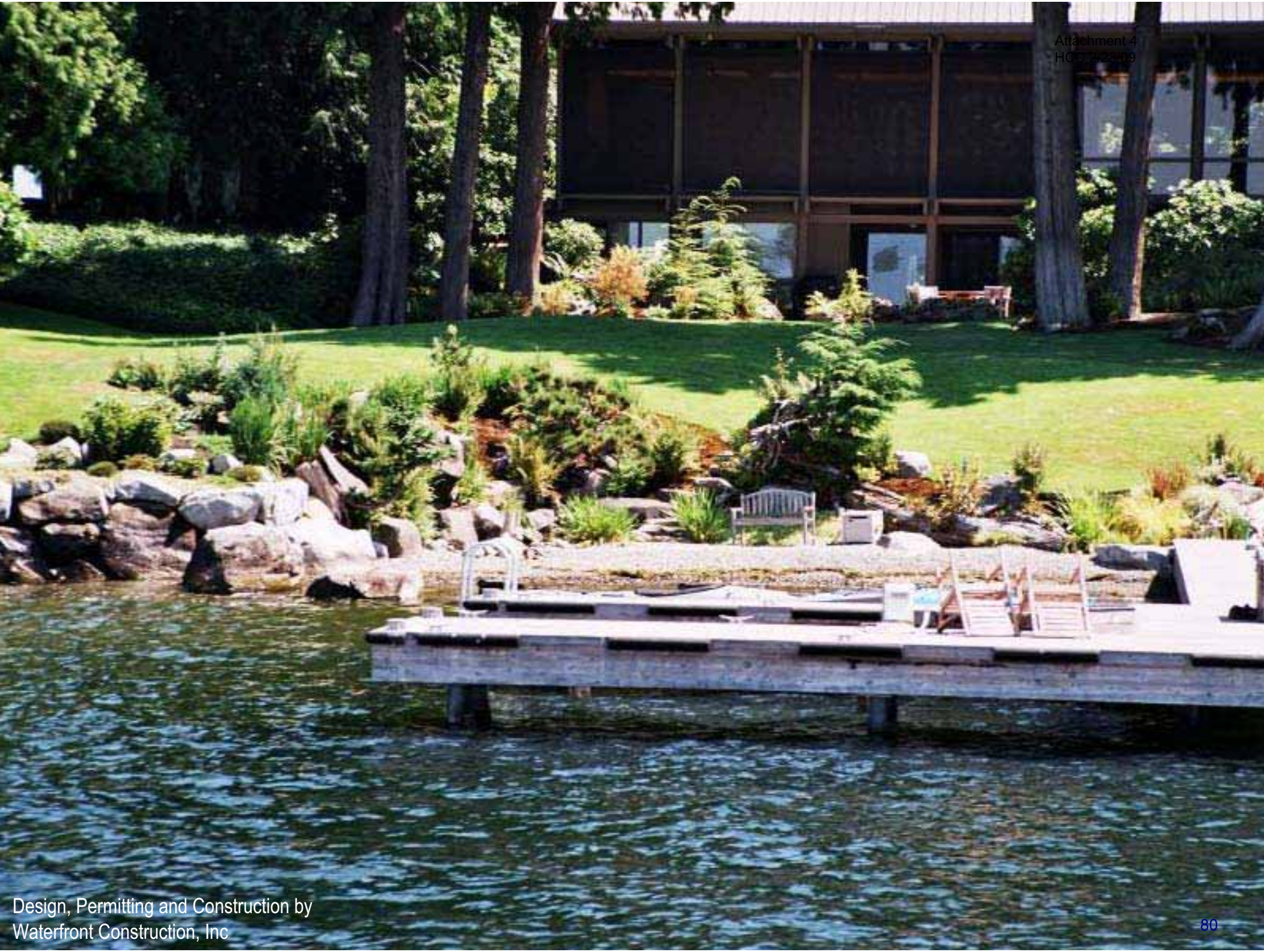

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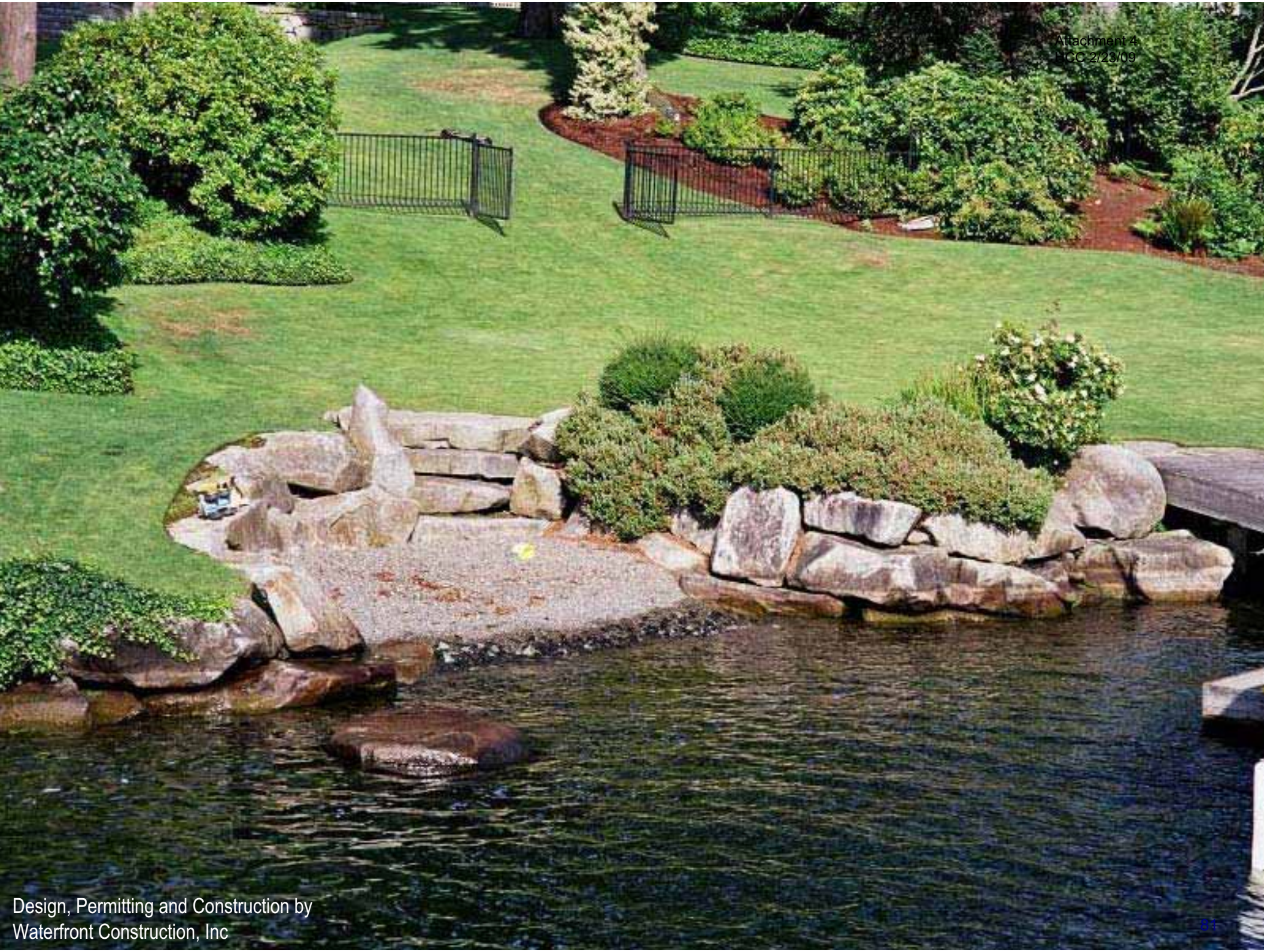

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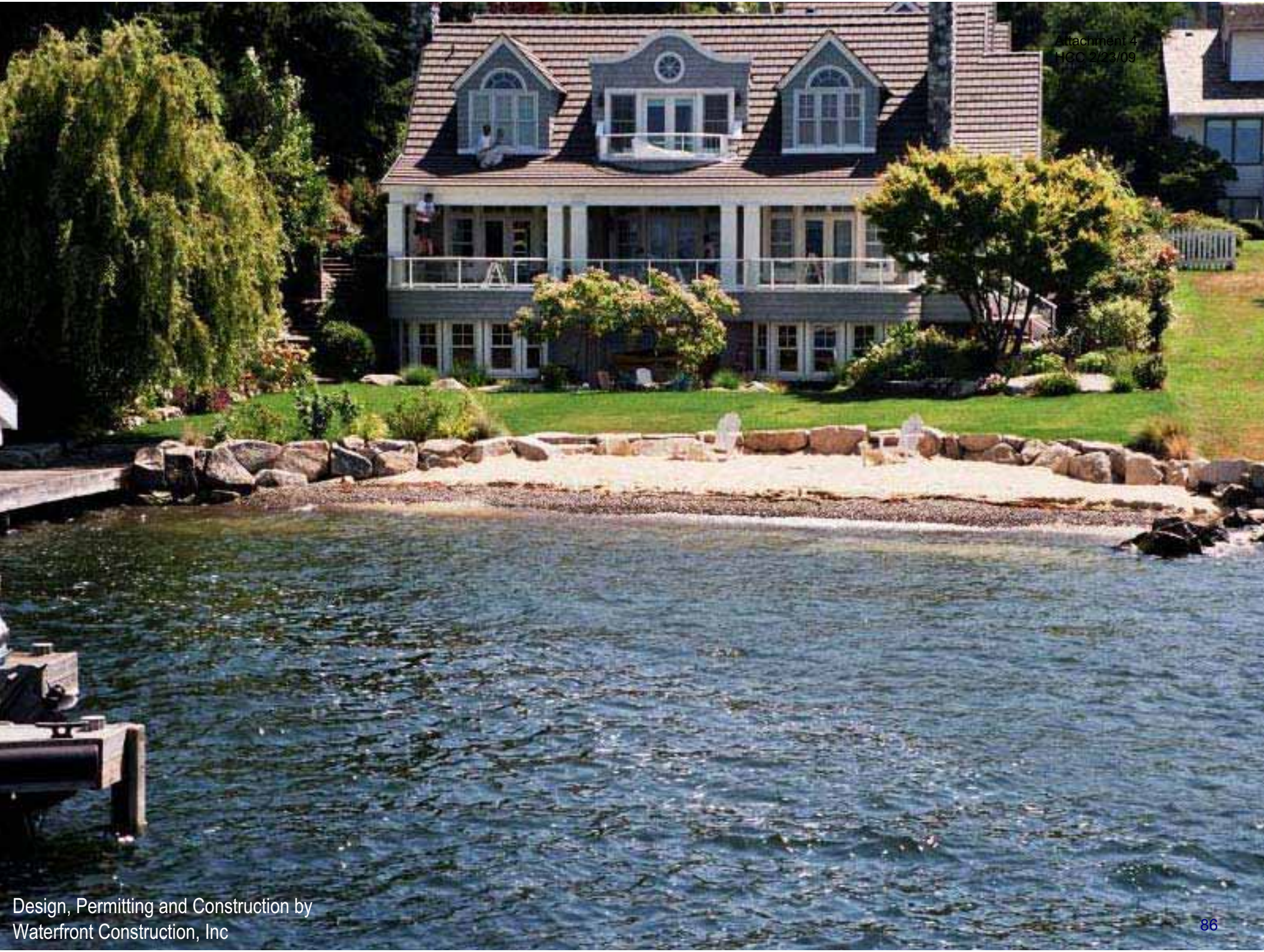

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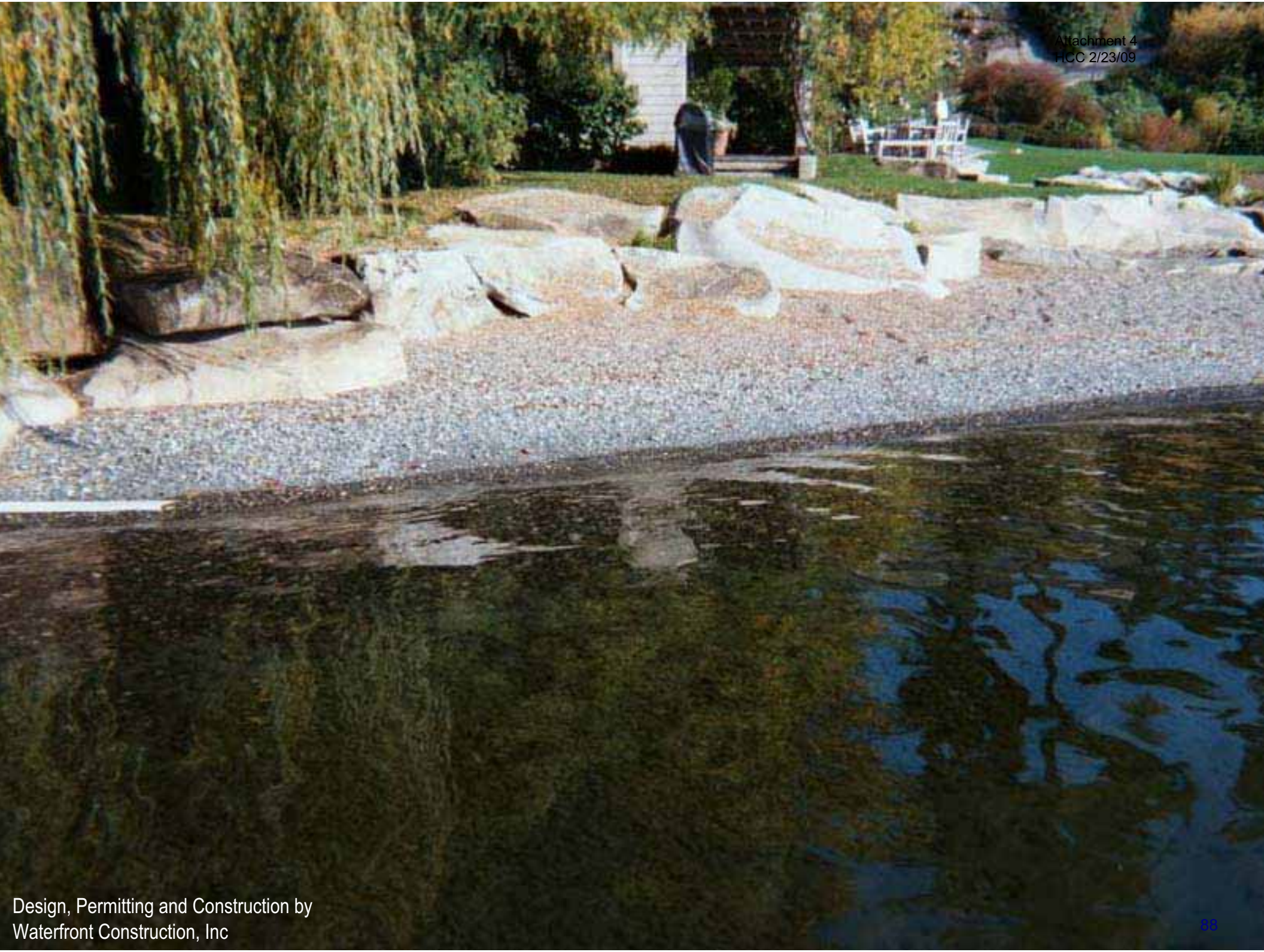

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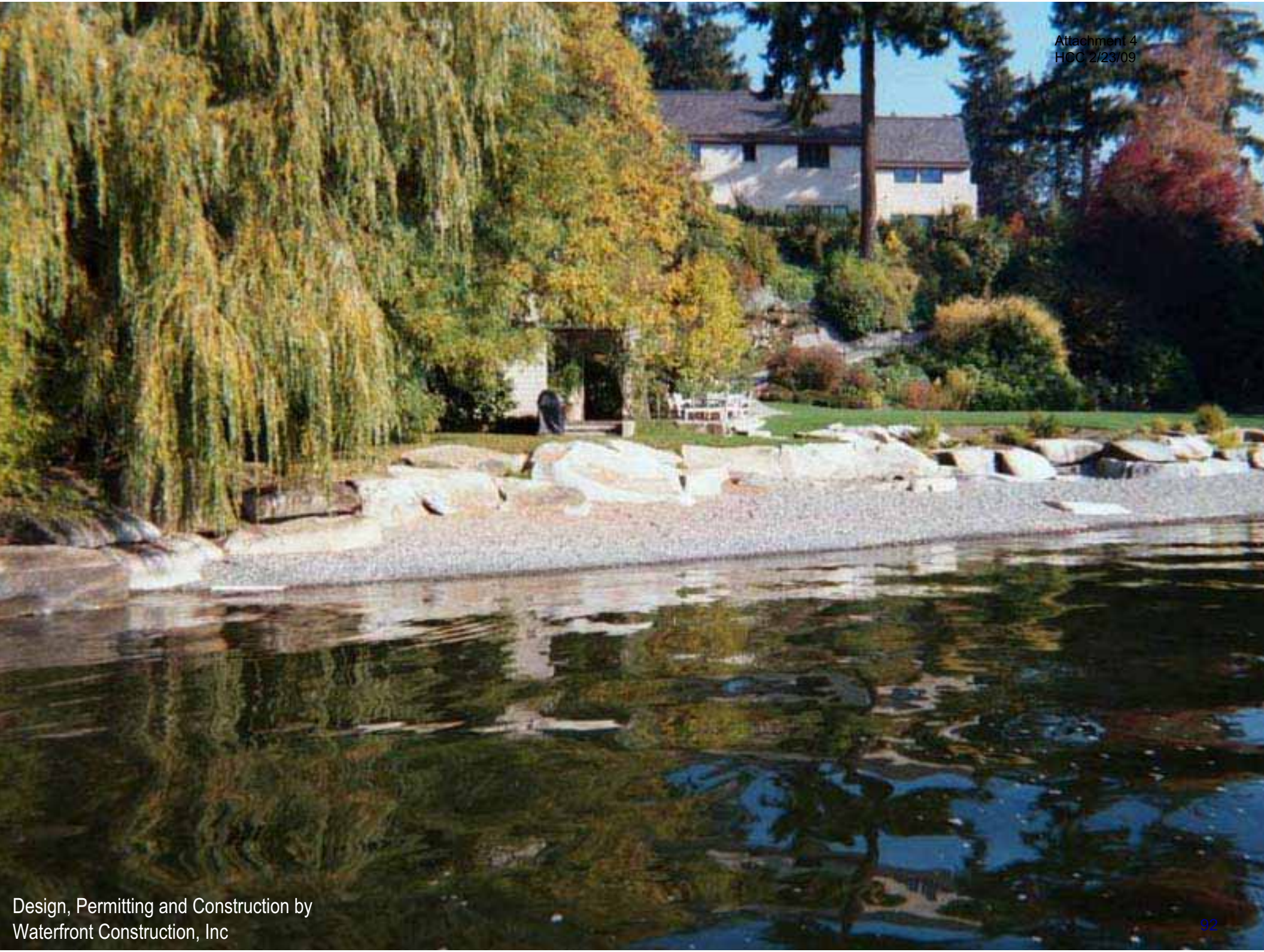

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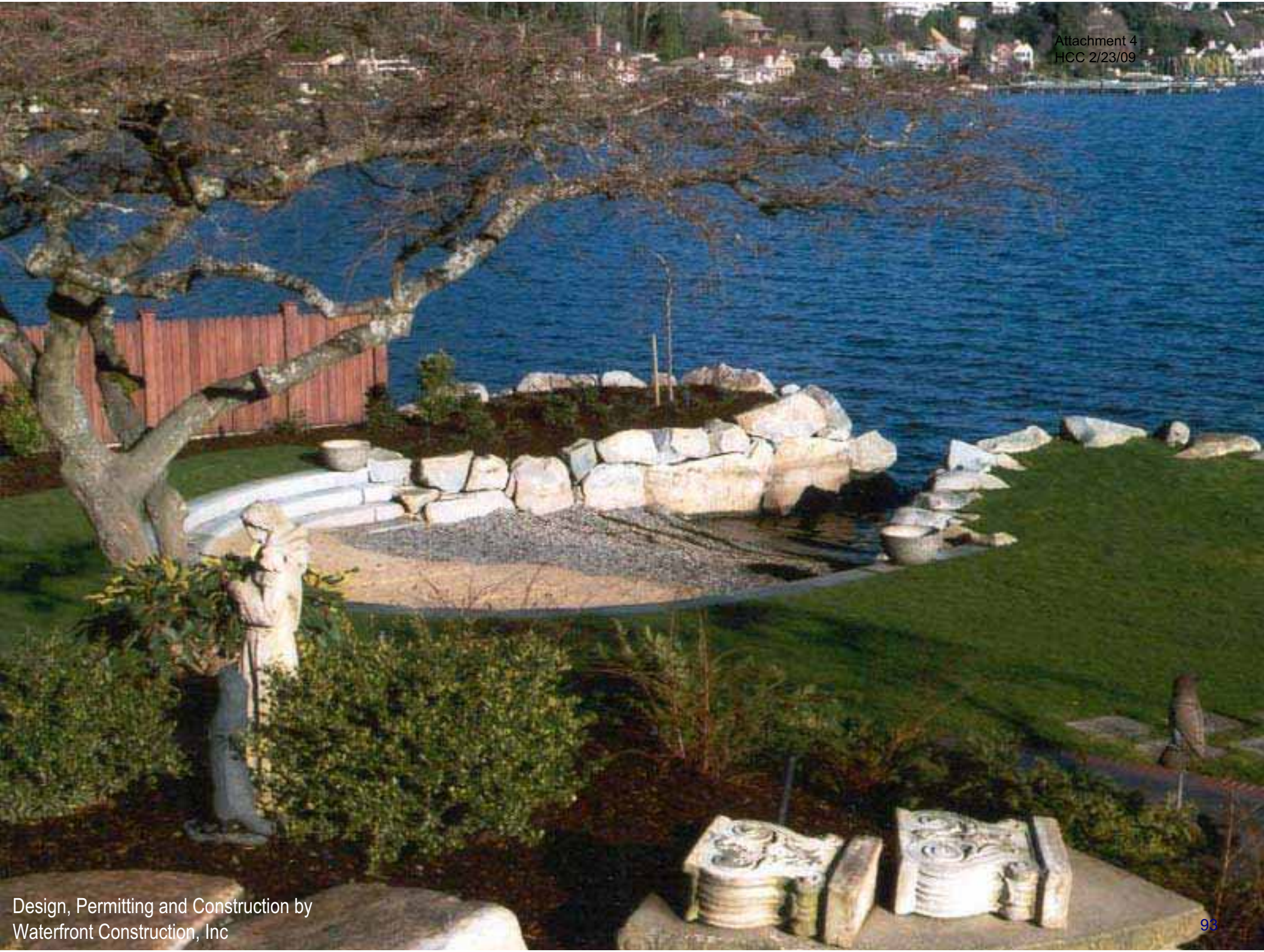

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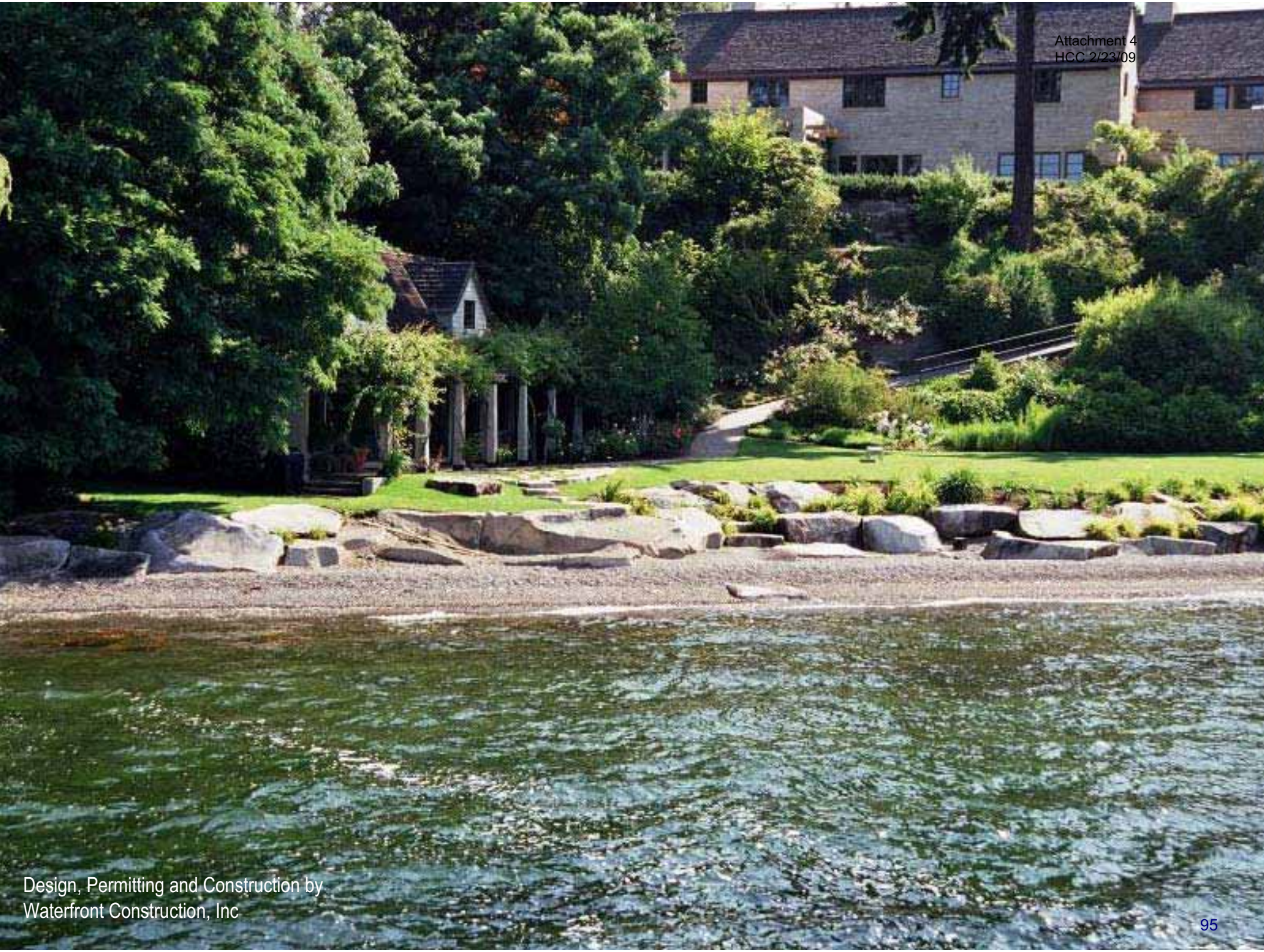

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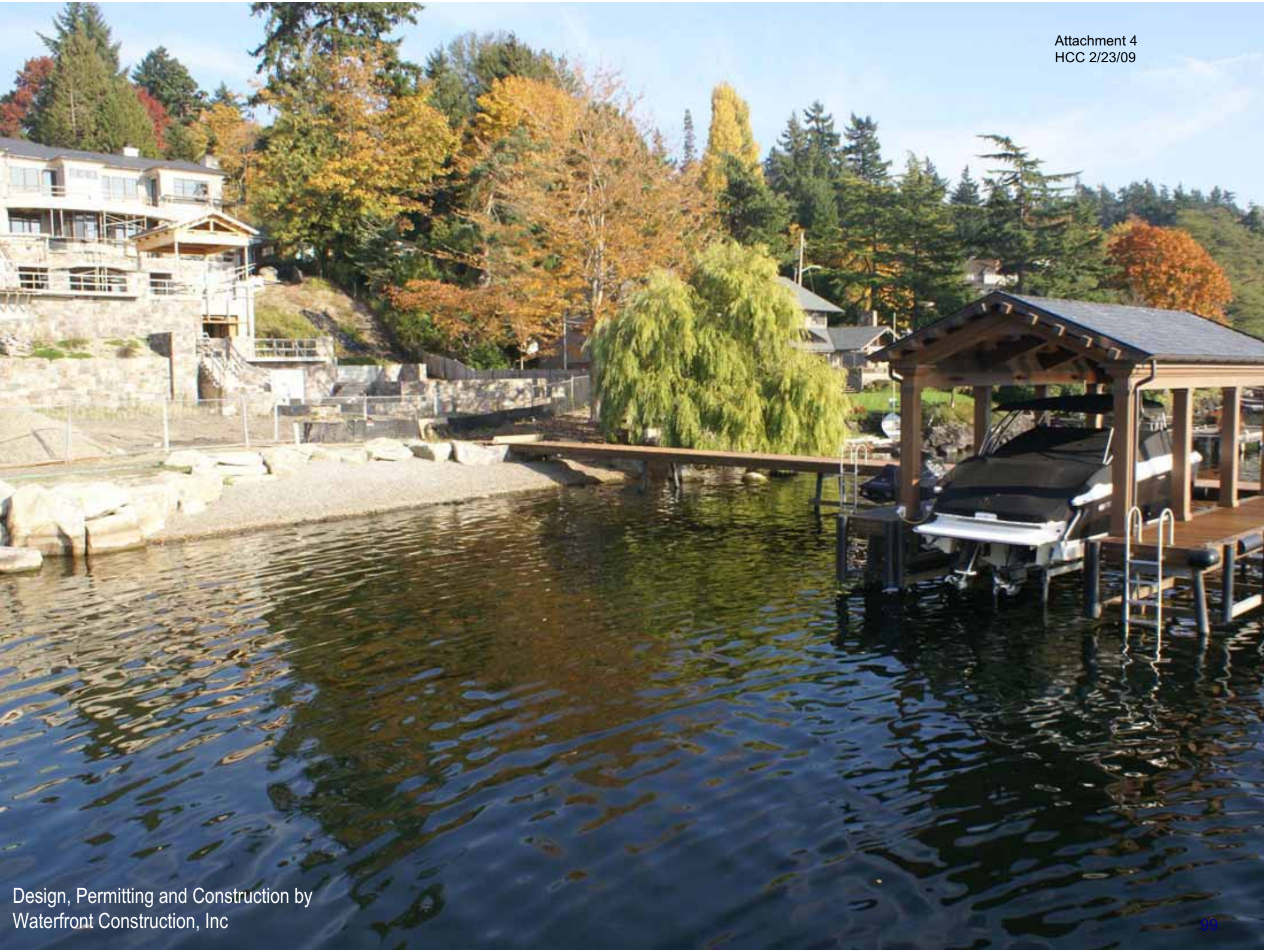

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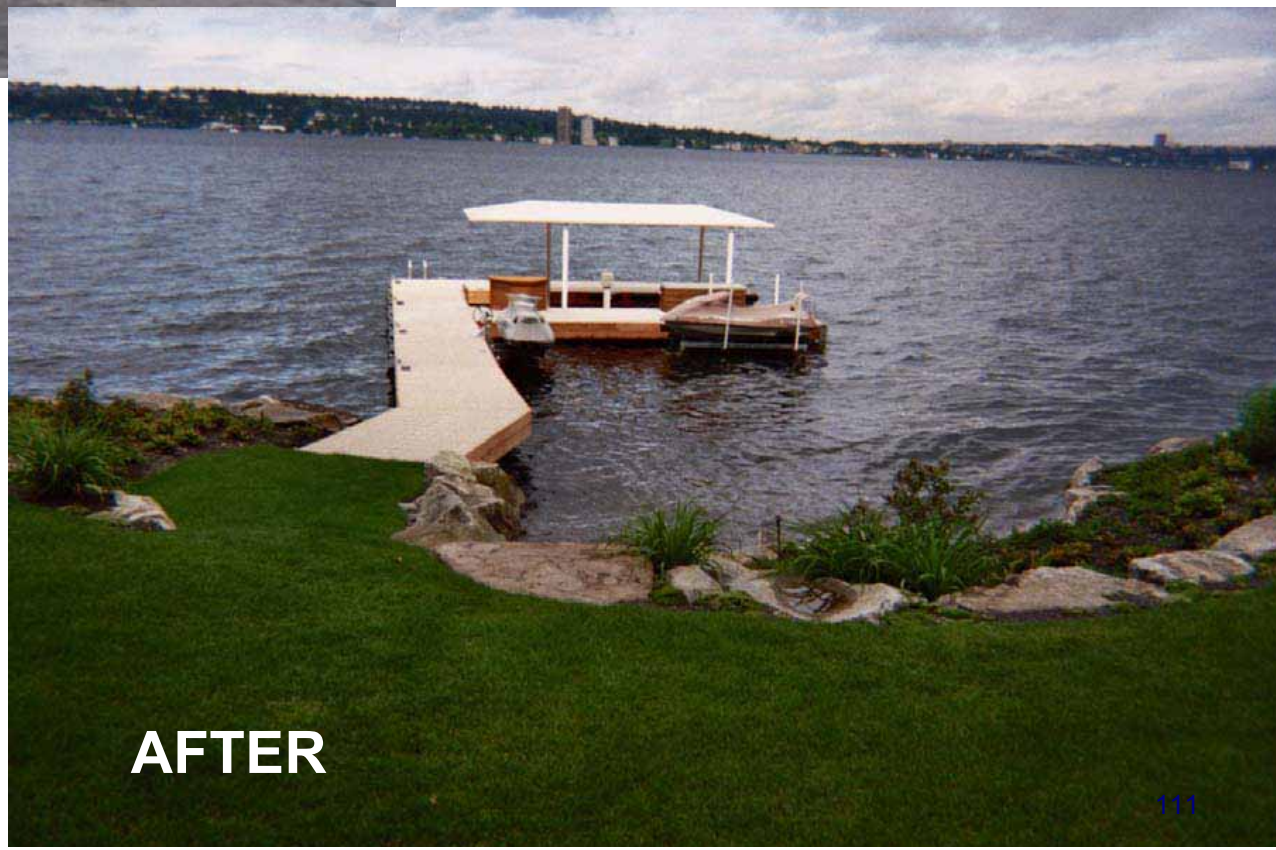

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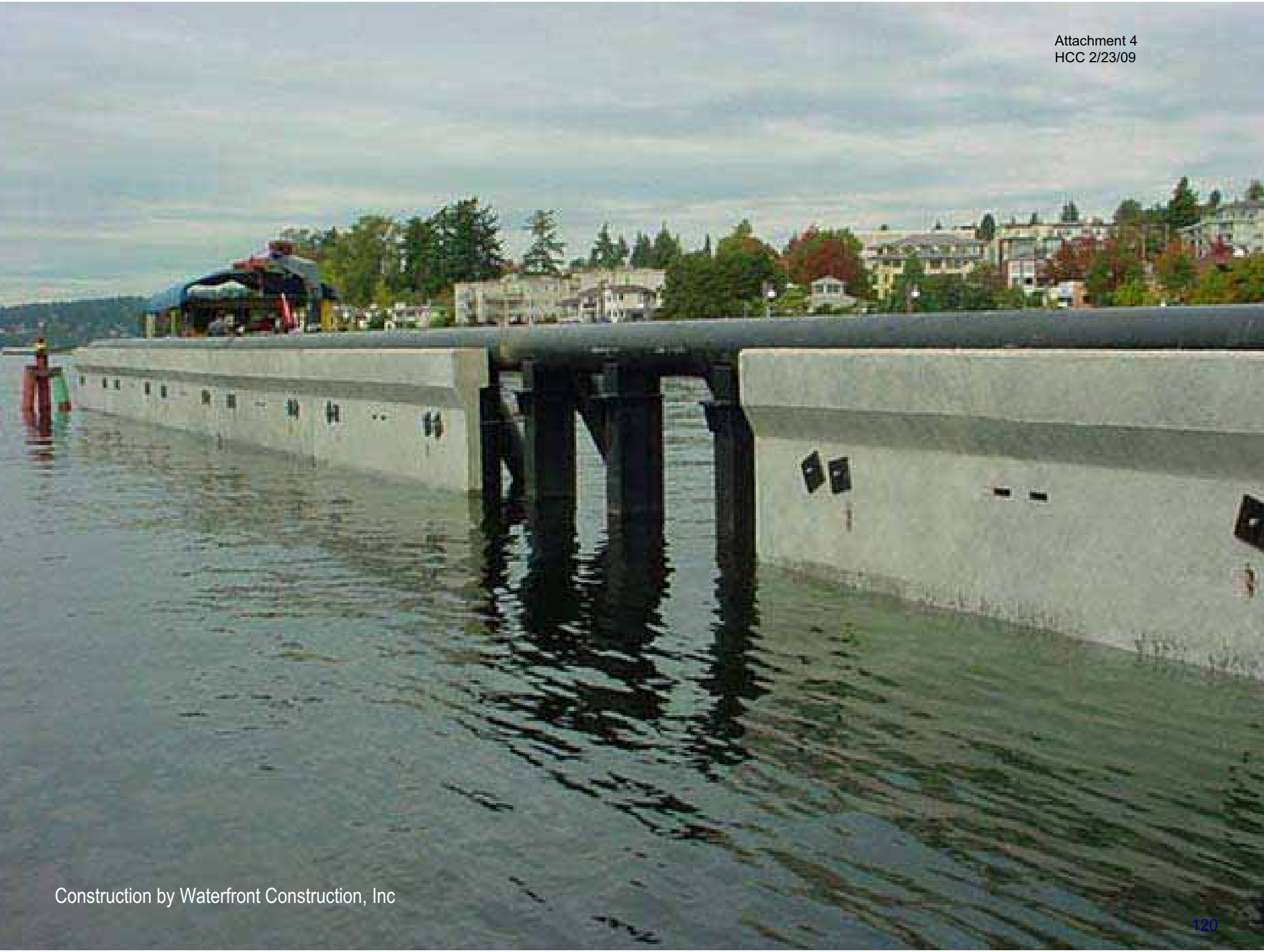

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