

# **BELLEVUE SHORELINE MASTER PROGRAM UPDATE**

BACKGROUND AND EXPLANATION  
SUPPORTING BELLEVUE'S  
UPDATED SHORELINE MASTER PROGRAM

## Table of Contents

GENERAL MATTERS.....	1
BELLEVUE’S SHORELINES AND HISTORICAL DEVELOPMENT .....	1
ORDINARY HIGH WATER MARK: GENERAL BACKGROUND .....	4
ORDINARY HIGH WATER MARK: LAKE WASHINGTON .....	5
ORDINARY HIGH WATER MARK: LAKE SAMMAMISH.....	5
ORDINARY HIGH WATER MARK: PHANTOM LAKE.....	6
CONSIDERATION OF CITY COUNCIL PRINCIPLES AND USE OF SCIENTIFIC AND TECHNICAL INFORMATION .....	7
SHORELINE BUFFER/SETBACK -- BACKGROUND .....	13
SHORELINE BUFFER/SETBACK – PROPOSED RULES .....	15
SHORELINE STABILIZATION.....	19
MOORAGE REGULATIONS.....	20
EXISTING DEVELOPMENT .....	21

# **BELLEVUE SHORELINE MASTER PROGRAM UPDATE**

## **BACKGROUND AND EXPLANATION SUPPORTING BELLEVUE'S UPDATED SHORELINE MASTER PROGRAM**

The Planning Commission conducted a Shoreline Master Program update process leading to the recommendation of a comprehensive Shoreline Master Program amendment. This document contains background information and explanation supporting the adopted Shoreline Master Program, including reasoned, objective evaluation of the relative merits of conflicting data.

### **GENERAL MATTERS**

1. The Commission recognizes that the Shoreline Management Act, Chapter 90.58 RCW, seeks to provide for “coordinated planning” of the use and development of shorelines which “is necessary in order to protect the public interest associated with the shorelines of the state while, at the same time, recognizing and protecting private property rights consistent with the public interest.” RCW 90.58.020. The Commission’s work was guided by the findings, policies, and preferences of the Act and sought to implement the State Department of Ecology regulations known as the Shoreline Guidelines (Part 3 of Chapter 173-26 WAC) and other Ecology guidance.

### **BELLEVUE'S SHORELINES AND HISTORICAL DEVELOPMENT**

2. The City’s shoreline jurisdiction encompasses Lake Washington and Lake Sammamish, which are designated shorelines of statewide significance, and the following other shorelines: Mercer Slough, portion of Kelsey Creek, and Phantom Lake (including associated wetlands to the northwest). The substantial debate of the Commission involved the three lakes, Lake Washington, Lake Sammamish, and Phantom Lake. The Shoreline Management Act regulates the shorelines, the upland area within 200 feet of ordinary high water mark (OHWM), and associated wetlands extending beyond 200 feet. The Act defines the 200 foot area as “shorelands,” and this document utilizes the reference to shorelands throughout.
3. Lake Washington has been part of the urban development of the Seattle area since the late 1800s. The Lake’s historic outflow was to the south through the old Black River, to the Duwamish River, and then to Elliott Bay. The Cedar River flowed into the Black River just south of the Lake’s outlet. Then, in 1916, the United States Army Corps of Engineers supervised massive changes to the fundamental water flow in the Lake for the purpose of facilitating industrial

development on the Lake by opening it to shipping. The Mountlake Cut was made to connect Lake Washington to Lake Union and the Chittenden Locks were constructed. The Cedar River was redirected into Lake Washington, and the Black River dried up. The new outlet of the Lake was the Mountlake Cut and the result was the lowering of the Lake level nine feet to the current Lake elevation. Since then, the Army Corps of Engineers has carefully controlled the Lake water level at an OHWM of 18.6' elevation NAVD 88.

4. Lake Sammamish has also been the subject of urban development since the late 1800s. The railroad was constructed on the east shore of the Lake in about 1887 to link Seattle to Issaquah by the Seattle, Lake Shore and Eastern Railroad Company. Residential development on Lake Sammamish within what is now the City of Bellevue was well under way by the mid-1930s when the large Rosemont Beach Plat was developed. The large portion of lake inflow is from Issaquah Creek at the south end of the Lake and the outlet is the Sammamish River in Marymoor Park at the north end. The Issaquah Hatchery was constructed in 1936 to restore the historic salmon runs that once thrived in Issaquah Creek but had been destroyed by logging, coal mining and other activities in the Issaquah Creek Basin. In 1962, the Army Corps of Engineers supervised major changes to the Sammamish River including dredging, channelizing, and straightening (including what is now Marymoor Park). The Corps' project also included the construction of a weir at the Lake Sammamish outlet to control water level of Lake Sammamish and the Corps established ordinary high water as elevation 30.6 feet NAVD 88.
5. The 65 acre Phantom Lake is a "kettle lake" which formed by the melting of a block of glacial ice. Typically, these small lakes have no inlet or outlet and the main source of water is groundwater supplemented by precipitation and localized drainage. Phantom Lake appears to have been a natural kettle lake with no inlet or outlet, though the historic facts are not totally clear. Some water appears to have exited to the northwest to Larson Lake and from there to Kelsey Creek (though that may have been manmade). The water flowing northwest may have helped form the large wetland complex that stretches from Phantom Lake to Larson Lake. A local farmer dug a ditch that is now known as Phantom Creek which provides an outlet from the Lake to the east through Weowna Park and down to Lake Sammamish. That occurred reportedly in 1890. The City has an easement to maintain a weir at the Phantom Lake outlet to Phantom Creek which can be controlled by adding or removing boards. Another major change was the construction of a channel and inlet to the Lake designed to drain an area containing an airfield and landfill to the south. That artificial drainage course now

collects stormwater from the Eastgate commercial area north of I-90 and the old landfill and discharges into the lake. The City controls the drainage channel and inlet, and regulates development in the Eastgate area, including plans for expansion.

6. Development of the Bellevue area began with the discovery of coal in the Coal Creek area in 1869. Seattleites William Meydenbauer and Aaron Mercer staked large claims in what is now Bellevue in 1869. By the early 1900s, Meydenbauer Bay was the center of commercial activity with the Bellevue Ferry Dock serving to link primarily berry farms in Bellevue to markets in Seattle, as well as to provide a link for Seattleites seeking recreation or estate homes in the “country.” Meydenbauer Bay was also the home to wintering whaling vessels, and thus was a full-fledged port. The first bridge across Lake Washington was constructed in 1939-1940 and that created the opportunity for Bellevue to become a suburban community with auto commuters to Seattle. The City of Bellevue was incorporated in 1953 with just 4.7 square miles centered on Meydenbauer Bay. Annexations followed including the Newport Shores area in 1957 then onto to Lake Sammamish starting in 1969. Source: City of Bellevue and History Link.
7. Residential development on Lake Washington and Lake Sammamish was substantially completed in the first half of the 20<sup>th</sup> Century. Plats on Lake Washington included Lochleven (1906), Shorelands (1929), Enatai Waterfront, Lakehurst, and Pleasure Point Park. Plats on Lake Sammamish included Sammamish Beach (1926), Rosemont Beach (1937), Sammavista (1949), Weowna Beach, Dellwood Park, and Strandvik. Newport Shores on Lake Washington was developed in the late 1950s and it contains waterfront homes on Lake Washington and an artificially created canal system connected to the lake. Almost every one of these plats included ownership of the second class shorelands.
8. The area around Phantom Lake was originally farmed, but residential development began in the 1940s with most of the original homes constructed by the early 1960s. Because Phantom Lake was isolated, it was deemed a nonnavigable lake, *i.e.*, no public right of navigation, so waterfront property owners own the lake and the platted lots lines go to the middle of the lake (riparian ownership). The City’s ownership of the property on the lake does not create full public access on the lake, but only the right to use the lake in the same limited manner as private waterfront property owners would use the lake. This issue was determined by the Washington Supreme Court in *Botton v. State*, 69 Wn. 2d 751 (1966) (prior to the City taking over the park).

9. The Shoreline Analysis Report reflects this history of residential development in concluding: “Shorelands surrounding Lake Washington and Lake Sammamish are almost completely built-out with residential uses, while also containing public parks. Phantom Lake is primarily built-out with residential uses, although portions of its shoreline contain undeveloped residential properties and public park open space.” At page 11, section 3.1.

#### ORDINARY HIGH WATER MARK: GENERAL BACKGROUND

10. The SMA specifically defines "Ordinary high water mark" on all lakes to be: “that mark that will be found by examining the bed and banks and ascertaining where the presence and action of waters are so common and usual, and so long continued in all ordinary years, as to mark upon the soil a character distinct from that of the abutting upland, in respect to vegetation as that condition exists on June 1, 1971, as it may naturally change thereafter, or as it may change thereafter in accordance with permits issued by a local government or the department: PROVIDED, That in any area where the ordinary high water mark cannot be found, . . . the ordinary high water mark adjoining freshwater shall be the line of mean high water.” RCW 90.58.030(2)(c).
11. This definition has three distinct elements. First, the OHWM is determined by the mark on the land and in respect to vegetation, so this element is often called the vegetation line. The State Shorelines Hearings Board and various cases have further determined how to define the vegetation line. Second, the OHWM is based on the vegetation as it existed on June 1, 1971, “as it may naturally change thereafter.” This second element is often overlooked, but is absolutely clear in meaning that unnatural or artificial changes to OHWM occurring since 1971 do not change the OHWM recognized by the SMA. It is noted that the definition also cites changes due to issued *shoreline* permits which references, for example, the changed OHWM after a portion of a lake is filled to create dry land which would permanently displace the OHWM. Third, the definition states that where OHWM, *i.e.*, the vegetation line, cannot be found then the line of mean high water on lakes serves as the OHWM and substitutes for the vegetation line.
12. The permanency of OHWM is tied directly to vested property rights since the OHWM is typically *the property line* for properties on Lake Washington and Lake Sammamish. Most properties on these lakes also have ownership of “second class shorelands” which is ownership of the shallow lakebed transferred by the State as not needed for state purposes. However, even in those situations and

most others, the OHWM defines *the property line* between the upland and the lake. The second class shorelands are still subject to public navigation, but the OHWM defines the line beyond which the public cannot go, *i.e.*, the line constituting trespass. The public may boat over the second class shorelands, but may not beach their boat across the line of OHWM. The City has long defined lot size based on the upland—landward of OHWM, not including the second class shorelands. Thus, the historic plats on the lakes and hundreds of subsequent City permitting decisions, including short plats, boundary line adjustments, building setbacks from the lake, and other decisions have been based on the historic OHWM as the property line. This principle is an important factor in any consideration regarding OHWM.

#### ORDINARY HIGH WATER MARK: LAKE WASHINGTON

13. Lake Washington has not had a natural lake level since 1916 when the Mountlake Cut was constructed as the new lake outlet. The Army Corps of Engineers controls the lake level at the Locks, so the lake level is totally manmade. The Army Corps of Engineers has carefully controlled the lake water level at the Corps' datum of 21.8' as the mean high water or OHWM in the summer and 19.8' as low water in the winter. The Corps datum computes to an OHWM of 18.6' elevation NAVD 88—the datum used by the City. The Corps uses that OHWM for all permitting decisions under the Clean Water Act and Rivers and Harbors Act. That elevation has not changed since 1971, and that mean high water level should continue to be used as OHWM for all purposes within the City.

#### ORDINARY HIGH WATER MARK: LAKE SAMMAMISH

14. The Army Corps of Engineers supervised the changes to the Sammamish River in 1964 including the installation of the weir to control water levels. Those improvements also included a designed channel downstream from the weir with a main channel and two overflow side channels. The Corps established maintenance standards that required vegetation removal in the main channel and side channels to keep them open for navigation (main channel) and flood control (side channels). The Corps then transferred control of the weir and channels to King County based on a written operating agreement that required King County to continue the maintenance.
15. Based on the designed outlet improvements, the Army Corps of Engineers has determined that Lake Sammamish mean high water or OHWM is elevation 27.0 feet based on datum NGVD 29, which computes to the datum used by the City as 30.6 feet NAVD 88. The Corps uses that OHWM elevation for all permitting

decisions under the Clean Water Act and Rivers and Harbors Act. The Corps has used that elevation since before 1971 when the Shoreline Management Act was enacted, and that mean high water level should continue to be used as OHWM for all purposes within the City.

16. King County contracted with the Corps to maintain the outlet channel. However, the County reduced the frequency of maintenance approximately a decade ago and also introduced obstructive vegetation. The original agreement required annual maintenance, but the County reduced trimming to one side channel every other year, and failed to consistently remove trimmings. The result has been the accumulation of flow blocking debris and sediment.
17. King County's failure to maintain the outlet channel has caused a massive blockage or damming of the channel, and the result has been the artificial raising of the level of Lake Sammamish. The raising of the lake level has been further affected by additional stormwater runoff into the lake from new development in the watershed—another artificial input. Thus, the channel needed its full designed flow to move the additional stormwater through the outlet. The lake level typically went up for a time during winter rains, but the lake level always went down to normal by about April. In the last few years, the water level has stayed exceedingly high until May or even late June. The high water has caused: substantial damage to docks and other property, severe erosion in certain locations, and adverse impacts to the lake ecosystem. The City had a study conducted in 2004 to review ordinary high water on Lake Sammamish. The study, however, was flawed because it failed to recognize or discuss the artificial changes caused by the lack of maintenance in the outfall channel.

#### ORDINARY HIGH WATER MARK: PHANTOM LAKE

18. The historic changes to Phantom Lake have created a non-natural situation strongly affected by stormwater discharge from the Eastgate commercial area and the maintenance, or lack thereof, of the weir to Phantom Creek and creek channel. Longtime residents of Phantom Lake confirmed that the lake level has risen and that residential properties around the lake have become newly saturated on a more frequent basis. These residential lands which were formerly upland areas now often meet the definition of wetlands. No evidence indicates that these residential areas were historically wetlands. Historic wetlands did exist and continue to exist to the northwest of the lake where no residential platting occurred. Thus, the residential properties which were historically uplands have been affected by the artificial raising of the water level due to the influx of stormwater from Eastgate, the lack of maintenance of the Phantom Creek outlet



channel and weir, and the construction of a berm to protect 156th Avenue northwest of the lake. The artificial wetland conditions on residential properties causes substantial damage to property and safety hazards from falling trees (destabilized by wet soil). Based on all the information, the mean high water or OHWM on Phantom Lake in 1971 was 260.7 NAVD 88, and that mean high water level should continue to be used as OHWM for all purposes within the City. Without substantial alteration of the lake's drainage mechanisms, subsequent increases in that elevation will be caused by artificial sources, primarily the extensive discharge of stormwater from the Eastgate commercial area.

#### CONSIDERATION OF CITY COUNCIL PRINCIPLES AND USE OF SCIENTIFIC AND TECHNICAL INFORMATION

19. The City Council set forth "principles" to guide the Planning Commission. Generally, the principles were based on the premise that the 2006 critical area regulations were based on adequate information and public input, but that turned out to be incorrect. The principles, nevertheless, also directed the Planning Commission to consider whether changes were needed due to permit experience, new scientific information, and input from the regulated community.
20. The reports that initially were considered by the City in relation to the shorelines were the following: City of Bellevue Critical Area Update: 2005 Best Available Science (BAS) Review (dated March 2005) and the Shoreline Analysis Report (dated Jan. 16, 2009). These documents and others were relied upon by City staff in initially advising the Planning Commission and drafting proposed regulations. However, the Planning Commission received a massive amount of highly relevant information from the public over the course three years since the release of the Shoreline Analysis Report. The totality of that information contradicts fundamental conclusions previously relied upon by the City.
21. In particular, the Planning Commission received documents and heard testimony from Dr. Gilbert B. Pauley. Of all the sources for reports and information provided to the Planning Commission, Dr. Pauley was by far the most qualified expert on fisheries science with 40 years as a fisheries scientist. Dr. Pauley holds a Bachelors of Science in Salmon Management and Geology, a Master's of Science in Shellfisheries Biology and Invertebrate Zoology, a doctorate, Ph.D., in Biology/Microbiology and Immunology, and an MBA in Finance and Statistics. Dr. Pauley was a Professor at the University of Washington for 24 years in the College of Fisheries in the discipline of Recreational Fisheries Management and Fish Diseases. Dr. Pauley was Chairman of the U.S. Fishery Advisory Board (FAB) on Salmon and Steelhead Issues for 14 years, served as the federal court

technical advisor on the Boldt Decision, and participated in 27 major fishery issue trials and 92 FAB arbitration recommendations. Dr. Pauley authored or coauthored 175 scientific papers and 20 peer reviewed journal articles.

22. Dr. Pauley's conclusions were provided primarily in a special presentation to the Planning Commission on March 24, 2010 and in comments to the Commission as part of the Public Hearing in May 2011. A compilation of Dr. Pauley's materials was created entitled Fishery Science And its Use in Bellevue Shoreline Management: A Compendium of Materials by Dr. Gilbert B. Pauley (Nov. 2012). Dr. Pauley reviewed the three major documents relied upon by the City including the BAS Report and Shoreline Analysis Report, and his conclusions were primarily based on the BAS Report which was the foundational document for the Shoreline Analysis Report. Dr. Pauley summarized his conclusions by stating that the report: (1) Failed to present opposing science, alternative views and alternative options; (2) Used a considerable amount of non-peer (colleague) reviewed science; (3) Misinterpreted and misquoted scientific citations; (4) Made conflicting statements, recommendations and conclusions; and, (5) Made conclusions and recommendations without supporting science.
  
23. Dr. Pauley also explained the key aspects of salmon life history in the Puget Sound. Numbers of returning salmon fluctuate every year due to many factors some of which are scientists no little about. Fluctuations are expected and normal as long as long term equilibrium is maintained or exceeded. Returning Chinook and Coho at the Issaquah Hatchery have greatly exceeded goals for the 18 years from 1990 to 2008. Predation of salmon fry occurs in Lake Washington and Lake Sammamish by naturally occurring Cottids and trout (cutthroat and rainbow) and by non-native pikeminnow, black crappie (Lake Washington only), and bass (large and small mouth). Although predation is a natural process, the introduction of bass in these lakes impacted the natural balance to some extent. Bass eat primarily Cottids and crayfish, but will eat salmon fry on an opportunist basis. However, bass predation of salmon fry requires three events to occur at the same time: (1) the bass become active and spawn in the spring when water temperature is 59-60 degrees; (2) the salmon fry are moving out along the shore (a six week period) at the same time the bass are moving to the shoreline to spawn; and, (3) the salmon fry are less than four inches. Bass are territorial and will attach to (stay near) any shore structure including trees, rocks, drop offs, points, logs, and docks. So, even the removal of docks would likely result in the bass attaching to other structures. Lake Sammamish and Lake Washington contain only a tiny portion of the total distance traveled by salmon from spawning

creeks through the lakes to the ocean and the salmon fry move through the lakes very, very rapidly.

24. The Shoreline Analysis Report contains characterization conclusions that do not follow from the analysis of shoreline conditions. The Report cites accepted information in concluding that for Lake Washington and Lake Sammamish: “The riparian shoreline is highly altered from its historic state. Current and future land use practices all but eliminate the possibility of the shoreline to function as a natural shoreline to benefit salmonids.” Section 5.1.3, page 79. The Report cites to studies for this conclusion, but then improperly and inconsistently comes to a different conclusion that functions and values still exist without adequate basis.
25. The Planning Commission also received substantial and important information from the public on a wide variety of other relevant subjects, including: (1) survey of shoreline armoring on Lake Sammamish; (2) analysis of tree canopy; (3) evaluation of shoreline urbanization; (4) appropriate and inappropriate wildlife in residential areas; (5) marina redevelopment; (6) recreational moorage; (7) impacts of high wave action; and, (8) issues involved in accomplishing replacement shoreline stabilization. Overall, the input by the public on these subjects was the most detailed and accurate information presented and was very specific to Bellevue’s lakes. In particular, the following significant studies were presented: all the presentations at the Special Planning Commission meeting (March 24, 2010), a detailed study of shoreline armoring on Lake Sammamish, A Comparative Study of Vegetative Cover – A Sampling of Bellevue Neighborhoods (October 2010), The Sensible Shoreline Plan (March 2011), Shoreline Inventory and Urbanization Report (Nov. 2012). In addition, the oral and written comments received from the public at the Public Hearing (May 25, 2011) were excellent in describing the facts and circumstances of Bellevue’s lake shorelines and the problems related to the existing regulatory program.
26. The Bellevue Shoreline Analysis Report contains a characterization study of lake shorelines. The primary emphasis of the Report is the protection of salmon, which applies to Lake Washington and Lake Sammamish, but not Phantom Lake since it does not contain salmon. The following is a discussion of shoreline ecological functions primarily for the urbanized areas on Lake Washington and Lake Sammamish, which relates to the residential reaches in the Shoreline Analysis Report. The characterization analyzes three types of functions:

hydrologic, vegetation, and habitat.<sup>1</sup> These three functions are further analyzed with sub-functions, but many of the sub-functions overlap and so the actual functions can be summarized by six sub-functions analyzed below. The characterization in the Report does not adequately address existing developed conditions where the upland shoreline is previously developed with homes, patios, landscaping and grass, and bulkheads. This conclusion is further supported by the Shoreline Inventory and Urbanization Study. In general, the shoreline ecological functions in these developed urban areas is low and the analysis is flawed in some respects, specifically in concluding that Residential Reaches have low to moderate function. Based on the documents and testimony presented to the Planning Commission, the following analysis provides background and discussion pointing out the errors in the Shoreline Analysis Report related to each of the six sub-functions.

- a. **Storing Water and Sediment.** Storing water relates to forest cover that soaks up water and avoids erosion in streams. That is not an issue when water is released directly into a lake because the lake provides the storage function—there are no erosion issues. This result is confirmed by the DOE Stormwater Manual which treats Lake Washington and Lake Sammamish as “receiving waters” where retention is not required or desired—direct discharge is preferred to “get ahead” of watershed discharges. Thus, the Shoreline Analysis Report incorrectly concludes that “rapidly send[ing] water ‘downstream’” (page 87) is a problem. Rather, the highly developed shorelands surrounding these lakes are not much different than the natural condition where water flowed directly into the lake from immediately surrounding land, and that flow does not cause erosion problems. Also, the highly developed shorelands surrounding the lakes have significantly altered the natural sediment processes along these lakes. The highly developed shoreline means that the Residential Reaches should all be considered low in these functions.
- b. **Attenuating Wave Energy.** This function considers the ability of conditions in nature to dissipate wave energy and prevent unnatural erosion of the shoreland areas. Lake Washington and Lake Sammamish are highly urbanized residential areas with a large majority of the properties protected by hard or relatively hard shoreline stabilization. Natural conditions do not exist on these lakes with rare exceptions and the Residential Reaches should all be considered low in this function. The area of Lake Washington around the Mercer Slough contains “natural” conditions, but even those conditions

---

<sup>1</sup> The Report also mistakenly considered a fourth function in lakes, hyporheic, but the hyporheic zone applies to streambeds and does not apply to lake shorelines. The updated WAC Shoreline Guidelines eliminate hyporheic as an ecological function applicable to lakes.

evolved after the Lake was lowered nine feet. The existing shoreline development on these lakes is not conducive to natural wave attenuation. Substantial testimony was received demonstrating that soft shoreline stabilization is inadequate to protect shoreline properties against the large storm driven waves due to the long fetch (distance waves can travel) and unnatural waves from recreational boating. The artificially high water on Lake Sammamish in the last 10 years also exacerbates these conditions beyond historical and natural conditions. Substantial evidence in the nature of testimony of waterfront residents with photographs demonstrated the severity of waves. Therefore, harder shoreline stabilization of some type is generally necessary to protect existing development. Dr. Pauley testified that rock revetments (riprap) laid back at 45 degrees (1:1 slope angle) would mitigate wave reflection and provide complex species habitat with interstitial spaces. No evidence or studies were received to demonstrate that soft shoreline stabilization would withstand the storm waves on these lakes.

- c. Recruitment of LWD and Other Organic Material. LWD or Large Woody Debris relates to trees falling and remaining in a stream. Thus, this is a stream function and really does not apply in the same manner to Lake Washington and Lake Sammamish. Dr. Pauley testified that for these lakes LWD along the shore would promote bass habitat which would encourage propagation of bass and hence increased predation of young salmon. Besides, these urban lakes have recreational boating which conflicts with LWD obstructions. Dr. Pauley testified that terrestrial insects (that might drop from shoreline vegetation) are not a major source of food for young salmon on these large lakes. Rather, the young salmon predominately eat aquatic insects and crustaceans on their journey to saltwater. The Shoreline Analysis Report correctly concludes that essentially all of the lakeshore forest vegetation has been removed for the Residential Reaches (page 91), so those areas should all be considered low in these functions.
- d. Temperature Regulation. The Shoreline Analysis Report states with respect to Lake Washington that, “given the overall size of the lake, the degree to which its shoreline lacks vegetation, and the low percentage of its overall surface area subject to potential shading from the shore, any vegetation likely does not have a measureable effect on lake water temperature” (page 93). In another circumstance, the Report indicates that the factors used to evaluate temperature regulation rated the area low-moderate, when qualitative analysis would rate the area low (page 93)—indicating a flaw in the reliance on the factors approach. Dr. Pauley supported the conclusion that both Lake Washington and Lake Sammamish were too large to gain any temperature reduction benefit by additional shading of shoreline vegetation (which would also encourage bass propagation and increased predation on young salmon). Thus, this function does not apply to these lakes.

- e. **Water Quality Improvement, Removing Excess Nutrients and Toxic Compounds.** The key issue regarding water quality is to identify specific sources of pollution in these lakes. Substantial information was presented that stormwater is by far the primary source of water pollution in these lakes. Stormwater from surrounding urban developments (prior to the last 15 years) is typically untreated which leads to discharge of road runoff (hydrocarbons) and other pollutants. In addition, excessive stormwater runoff causes erosion in urban streams which leads to discharge of massive amounts of sediment into the lakes. An example of this problem is the discharge from Phantom Creek to Lake Sammamish where photos showed a massive plume of sediment entering the lake during storms. Sediment released by erosion is the primary source of excess phosphorous in these lakes. Phosphorous is essential for plant growth, but excess phosphorous in freshwater lakes encourages growth of unwanted algae—creating poor water quality. Phosphorous is also in fertilizer. Most studies indicate that proper use of fertilizer is not a source of excess phosphorous to freshwater lakes, but that improper use can be such a source. Similarly, herbicides and pesticides do not pose a water quality problem when used properly, but may if used improperly. No evidence was presented that proper or improper use of fertilizer, herbicides, and pesticides on residential shoreline properties is a measurable source of contamination to these lakes. New driveways and uncovered parking areas in the shorelands could create additional sources of road runoff pollution especially if piped directly to the lakes, but mitigation measures are already required by City stormwater regulations. Other new impervious surfaces created by roofs, patios, etc. have not been shown to be sources of lake pollution. The Shoreline Analysis Report focused on assessing the potential “removal function” of shoreland areas—removal of excess nutrients and toxic compounds (page 90). However, in the natural condition, the only excess nutrients or toxic compounds would have been excess phosphorous due to naturally occurring erosion. The highly developed shoreline in the Residential Reaches demonstrates that the removal function is low in these areas. However, there has been no monitoring to distinguish types and proportions of pollutants from major, known sources versus sources on adjacent shorelands.
- f. **Habitat: Physical Space and Conditions for Life History; Food Production and Delivery.** Dr. Pauley’s conclusions demonstrate that salmon are only modestly affected by predation by trout (naturally occurring) and bass (unnatural and opportunistic only) even though trout and bass are plentiful. Chinook and Coho salmon numbers exceeded goals at the Issaquah Hatchery from 1990 to 2008. The size of docks (larger or smaller) would have little effect on salmon fry predation and the introduction of LWD would cause additional predation on salmon fry. The salmon fry move very rapidly through the lakes after rearing in the spawning creeks and creek deltas. Dr. Pauley concluded that the BAS Report and Shoreline Analysis Report do not contain scientifically valid information about salmon. The existing developed

urban areas have long ago occupied space that was occupied by wildlife in the pre-settlement era. The State recognizes the basic incompatibility of inappropriately mixing of man and wildlife noting: “Fish and wildlife habitat conservation” means land management for maintaining populations of species in suitable habitats within their natural geographic distribution so that the habitat available is sufficient to support viable populations over the long term and isolated subpopulations are not created.” WAC 365-190-130(1). Bellevue’s lake shorelines have been designated for residential development since before the City’s original 1974 Shoreline Master Program. Subsequently, the urban areas of Bellevue are recognized under the Growth Management Act as urban areas appropriate for dense urban development. Dense urban development is by definition inconsistent with wildlife. As recognized in the Shoreline Analysis Report, the lack of shoreline vegetation in highly developed urban shoreline areas is a severe limiting factor to promotion of terrestrial species (birds, mammals, amphibians) due to absence of cover, food, nesting sites, and travel corridors. The Report also recognizes that native seed and fruit bearing vegetation is generally not available in areas dense with homes, driveways, and landscaped yards with lawns. The Planning Commission heard substantial testimony about the conflicts between wildlife and residential living. Larger animals create safety problems, and additional native vegetation promotes vermin such as rats, opossums, and raccoons. Thus, the shorelands in all Residential Reaches provide low habitat function.

27. In summary, the Shoreline Analysis Report contains some points that need modification as set forth herein.

#### SHORELINE BUFFER/SETBACK -- BACKGROUND

28. The City’s 2006 critical area regulations created a 25 foot critical area buffer with an overall 50 foot structure setback from shorelines including Lake Washington, Lake Sammamish, and Phantom Lake. At the same time, the City made no changes to the existing Shoreline Master Program and its 25 foot setback that regulated the same lake shorelines, thus creating conflicting regulations. The Legislature subsequently made it clear that Shoreline Management Act predominates over critical area regulations and that shorelines are not automatically critical areas. RCW 36.70A.480. As explained above, the critical area regulations were based on the BAS Report which was flawed in certain respects.
29. There were other problems with the shoreline buffer and setback established in the 2006 critical area regulations. The City’s critical area regulations did not contain any shoreline regulations prior to the 2006 update. The first time inclusion of the shoreline regulations in the CAO was not accompanied by

additional outreach to shoreline property owners—the regulated public, who were also not alerted by changes to the Shoreline Master Program since none were proposed. During the Shoreline Master Program Update process, the public had a massive outpouring of concern about the 25/50 foot rules with little to no support for the shoreline critical area regulations. Overall, the public’s concerns were well reasoned, carefully supported, and identified serious conflicts and problems with the CAO rules. This indicates that the regulated public was not aware that critical area regulations were being applied to shorelines for the first time in 2005-2006 without changing the Shoreline Master Program.

30. Finally, the experience under the shoreline critical area regulations demonstrates the imprudence of a mandatory no touch buffer and rules requiring mandatory conversion of the buffer to a native growth protection area. Numerous problematic examples were provided.
31. One example was a code enforcement case triggered by a shoreline owner tearing up patio pavers and replacing the area with grass. City staff determined that removal of patio pavers was a disturbance of the shoreline no touch buffer requiring planting the entire shore frontage 10 feet deep including five fir or maple trees that would eventually completely block water views from that home and partially block water views of neighboring homes. The property owner managed to negotiate a compromise at great expense with plantings near the side property lines rather than across the shore frontage.
32. The City Parks Department faced a similar situation at Newcastle Beach Park in which a strip of lawn within the no touch buffer needed to be dug up to install a new water line. The Development Services staff wanted native growth plantings to be used instead of replanting grass even though the native plantings would form a strip surrounded by lawn. The Parks Department argued correctly that tearing up grass and replanting grass created no impact to the shoreline—an argument rejected in the case of tearing up patio pavers. Development Services agreed without requiring a special study or other expensive procedures, however the conflict created some delay. A similar occurrence was a Puget Sound Energy shoreline permit in which Development Services, without requiring a report, did not require native growth plantings where there was disturbance within the shoreline buffer.
33. Another example involved a short plat in which a new lot was created on the upland side of the existing house well away from the shoreline. The critical area regulations required the 25 foot buffer area to be designated as a no touch



“native growth protection area” even though the area next the shore was an existing patio and grass lawn typical of a waterfront yard. The NGPA was to be recorded permanently on title on the short plat making it unclear whether mowing the lawn would be allowed. After an appeal to the Shorelines Hearings Board and great expense, a compromise eliminating the requirement was reached.

34. Another troublesome example was a handicapped person who faced incredible permitting hurdles and extra expense in order to obtain permits to construct a wheelchair accessible path and dock.
35. In summary, the critical area regulations and the no touch buffer have been inconsistently applied and on their face require so called “mitigation” for actions that obviously cause no harm to the existing shoreline. More troublesome is the conclusion that individual property owners were required to produce expensive reports or otherwise expend substantial resources to attempt to avoid inappropriate conditions while the City Parks Department and publically regulated utility were not subject to the same expensive reports and did not face the same onerous requirements.
36. For all the reasons, the shoreline critical area regulations needed to be reconsidered.

#### SHORELINE BUFFER/SETBACK – PROPOSED RULES

37. The staff agreed that the Lake Washington and Lake Sammamish were not automatically critical areas—the shoreline is far too urbanized. The Planning Commission concurred and determined that other critical areas (wetlands, streams, steep slope, and flood hazard) occurring in the shorelands area would be regulated by incorporation of the Critical Area Overlay regulations. Implementing changes will be needed to the CAO, and the flood hazard rules need to be further reviewed because those rules are more restrictive than FEMA requires and would unnecessarily hinder the implementation of the SMP. The Planning Commission considered a number of options for regulating a buffer/setback area along the lake shorelines in particular for residential development. For the options not selected, the general conclusion was that those options: (A) were not based on sound scientific principles; and, (B) would require major effort to navigate complicated regulations without benefits to the shoreline and with substantial expense to property owners and inconsistent application by staff. No option was presented that would respect existing development and was reasonably tied to protection of existing shoreline ecological functions. Specifically, the question was asked: what additional

ecological benefit is gained by a 50 foot setback versus a 25 foot setback? Neither the City's planning staff nor its consultants were able to identify **any** particular ecological benefit.

38. The recommended rules require a 25 foot buffer/setback with 50% of the area as required greenscape and a 50% limit on impervious surface/hardscape. The proposed rules go beyond the existing Shoreline Master Program 25 foot setback because the existing rule had no greenscape requirement and no limit on impervious surface/hardscape that was less than 30 inches. The proposal ensures that overall impervious surface in the 25 foot buffer/setback will not increase since the current level of impervious surface is greater than 50%. No valid scientific reasons were identified to justify a wider buffer/setback or additional restrictions. Despite the lack of scientific justification, the proposal includes a 50% greenscape requirement and a 50% cap on impervious surface/hardscape. Also, the City's tree preservation requirements (retain 30% of significant trees) will result in more trees preserved in the shorelands compared to other parts of the City (except Bridle Trails) because the shoreline property owners have preserved more trees than other neighborhoods. The rationale for this proposed buffer/setback follows.
39. The Shoreline Guidelines expressly recognize that imposing vegetation requirements retroactively on existing development is not required: "Like other master program provisions, vegetation conservation standards do not apply retroactively to existing uses and structures." WAC 173-26-221(5)(a). The existing residential shoreline is already developed and native vegetation is essentially nonexistent in those areas having been replaced with homes, landscaping, moorage, and other typical residential appurtenances. Additional vegetation requirements, beyond that proposed, are not scientifically justified or prudent on the developed urban shorelines. The asserted reasons for vegetation are: shade to reduce temperature, promote LWD, overhanging vegetation will promote insects to be eaten by salmon, capture excess nutrient and toxic compounds, attenuate wave energy, and provide habitat for upland wildlife. The need for vegetation on lake shorelines is asserted to be more important where salmon are present—but in Bellevue, on Lake Washington and Lake Sammamish, the salmon are just passing by on the trip to and from the ocean.
40. Planting trees in the buffer will not reduce lake temperature because Lake Washington and Lake Sammamish are too large for the trees to have any positive effect. Expecting those trees to fall over in 30-60 years creating large woody debris (LWD) in the lakes assumes that the trees will fall waterward and

not landward—the latter causing a safety hazard and property damage. Creating new LWD in Lake Washington or Lake Sammamish whether indirectly by future falls or directly through mitigation will promote predation of salmon fry by bass. Salmon fry do not eat terrestrial insects in the lakes so overhanging vegetation for that purpose provides no benefit. The problem of excess nutrients and toxic compounds is caused by untreated stormwater—road runoff, and from increased erosion in urban creeks that become charged with runoff from neighborhoods upslope in the watershed. The existing shorelands are densely developed with homes and landscaping and do not appreciably contribute to the problem. It is recognized that improper use of fertilizer, herbicides, and pesticides poses a concern to urban lakes, but that activity is already illegal under current regulations and there is no evidence or Bellevue specific assessment identifying shoreline properties as the source versus other sources including the City. The incidence of improper use of those legal compounds is small compared to the massive problem created by stormwater which is a citywide problem that cannot be solved in the shorelands area alone. Vegetation alone will not provide sufficient wave attenuation on Lake Washington and Lake Sammamish which are subject of large waves due to long fetch, and high boat traffic. Promoting wildlife in the shoreland area is inconsistent with residential living and improperly creates isolated wildlife pockets. Large animals create safety hazards in residential areas and belong in large park and open space areas. Dense native plantings on the shorelines promotes vermin such as mice, rats, opossums, and raccoons—vermin are recognized by existing regulations as a human health hazard, so promotion is improper and imprudent. The reasons for vegetated buffers generally assume that the entire shoreline or large portions of shoreline will be vegetated. But, that is not the case in Bellevue which is already fully developed. Forcing conversion of shorelines to vegetated native growth buffers will result in the odd property here or there that happens to redevelop having a detached vegetated native growth buffer. Decades would be required to see any appreciable expanse of such buffer, so those benefits are far outweighed by the burdens on property owners.

41. Restricting total impervious surface (hardscape and structures) in the shorelands is intended to slow stormwater flow into the lakes. However, such a requirement will not provide the same erosion reduction that occurs in urban streams. Rather, Department of Ecology recognizes that retention is not required near Lake Washington and Lake Sammamish because these lakes are receiving waters in which direct discharge is encouraged to “get ahead” of flood flows from upslope in the watershed. Water quality concerns from impervious surface relate to driveways and uncovered parking areas, and not to homes and other hardscape

which do not generate the same road runoff pollutants. Road runoff from new sources in the shorelands is adequately addressed in stormwater regulations incorporated into the proposed SMP.

42. Imposition of new no touch buffers intended for native vegetation is directly in conflict with existing established development and this conflict is recognized by the Shoreline Guidelines: “Like other master program provisions, vegetation conservation standards do not apply retroactively to existing uses and structures.” WAC 173-26-221(5)(a). The Shoreline Management Act establishes that single-family residential development is a preferred use of the shorelines, there “shall be given priority for single-family residences and their appurtenant structures [and for] shoreline recreational uses.” The Act calls for “coordination in the management and development of the shorelines of the state,” and that “coordinated planning is necessary in order to protect the public interest associated with the shorelines of the state while, at the same time, recognizing and protecting private property rights consistent with the public interest.” Bellevue’s lake shorelines have been planned for development, almost entirely single-family residential development since the City’s original 1974 Shoreline Master Program. A large portion of the lots on these lakes were created in the first half of the last century. That development pattern causes severe limitations on attempts to impose new regulations more suited for an undeveloped shoreline. Many lots are 50 feet or less in width and many others are less than 100 feet in depth from OHWM or have a developable depth of 100 feet or less due to steep slopes or the location of public or private access roads. Access roads and utilities have been located based on the existing lot development. There are only a dozen or two dozen odd undeveloped lots and a few larger undeveloped or underdeveloped parcels, and there is no justification for imposing different rules on these similarly situated properties. In short, the shoreline property owners have substantial expectations, created over many decades, that these shoreline properties will be able to be developed and redeveloped as waterfront residential homes and appurtenances in an urban setting. These property rights need to be respected and can be respected consistent with the public interest. For example, the totality of all residential development provides for recreational use by large numbers of people, the public, on Lake Washington and Lake Sammamish since the shoreline property owners share their waterfront and watercraft with substantial numbers of family and friends.

## SHORELINE STABILIZATION

43. A large portion of the shoreline properties on Lake Washington and Lake Sammamish are already protected by vertical walls, bulkheads, and rock revetments (riprap). As a result, the primary discussion was about repair and replacement of existing shoreline stabilization structures. The existing shoreline development on these lakes is not conducive to natural wave attenuation. Substantial testimony was received demonstrating that soft shoreline stabilization is inadequate to protect shoreline properties against the large storm driven waves due to the long fetch (distance waves can travel) and unnatural waves from recreational boating. The artificially high water on Lake Sammamish in the last 10 years also exacerbates these conditions beyond historical and natural conditions. Substantial evidence in the nature of testimony of waterfront residents with photographs demonstrated the severity of waves. Therefore, harder shoreline stabilization of some type is generally necessary to protect existing development. Dr. Pauley testified that rock revetments (riprap) laid back at 45 degrees (1:1 slope angle) would mitigate wave reflection and provide complex species habitat with interstitial spaces. No evidence or studies were received to demonstrate that soft shoreline stabilization would withstand the storm waves on these lakes.
44. The proposed regulations follow the Shoreline Guidelines in disfavoring new or enlarged shoreline stabilization except when required by strict necessity, and only based on conditions requiring soft stabilization unless not technically feasible.
45. Repair of existing shoreline stabilization contemplates solely repair. Repairing existing structures was not shown to cause any harm to existing ecological functions.
46. Replacement of existing shoreline stabilization is regulated to ensure no net loss of shoreline ecological functions, and will likely result in improved ecological functions. Replacement with angled rock revetments is promoted when designed with no greater than a 1:1 slope angle (45 degrees) as recommended by Dr. Pauley. Specifically, vertical walls and bulkheads are required to be replaced with angled rock revetments. An exception is provided where an angled rock revetment is determined to not be a practicable alternative after consideration of a report by a qualified professional.

47. It is challenging to construct shoreline stabilization on an existing site. Design must address wave forces, structural requirements, and indirect impacts to neighboring properties. Barges are used to bring materials and equipment, to undertake construction, and to remove undesired materials. Replacing vertical walls and bulkheads with angled rock revetments has unique challenges. Some existing sites have unresolvable constraints. Replacing vertical structures with angled rock revetments can cause movement of OHWM landward which shifts the shoreline structure setback landward and causes loss of land used for recreation and often needed to avoid flood damage to structures due to overtopping of the revetment. Because the OHWM is often the property line, shifting OHWM moves the property line which may create a cloud on property titles or result in a nonconforming size lot, and will likely cause lost property value. The precise location of the structure may require the toe of a rock revetment to be waterward of OHWM with additional structure below grade to protect the toe. Although rock revetments typically extend waterward of OHWM, location there causes concerns about impacts to nearshore habitat, loss of beach area, and other issues. These concerns can typically be resolved in favor of allowing angled rock revetments due to the overall ecological benefit gained by eliminating wave reflection from vertical structures and gaining the interstitial spaces in riprap. The proposed regulations balance mandatory replacement of vertical walls and bulkheads with recognition that replacement will not work in all circumstances.

## MOORAGE REGULATIONS

48. The proposed moorage regulations require compliance with dock standards for all new and reconfigured docks. Existing docks may be repaired or replaced in their existing configuration because replacing the existing docks will cause no new harm. Plus, new requirements for decking and piles will result in shoreline ecological improvements when docks are replaced.
49. The United States Army Corps of Engineers (Corps) and the Washington Department of Fish and Wildlife (WDFW) are the primary permitting agencies for docks. The Corps issues permits under the Clean Water Act and Rivers and Harbors Act. On fish issues, the Corps consults with the National Marine Fisheries Service (NMFS), which is part of the National Oceanic and Atmospheric Administration (NOAA), and the United States Fish and Wildlife Service (USFWS). WDFW is the state agency that regulates and issues permits for all in water work—hydraulic project approvals or HPAs. WDFW’s sole mission in issuing HPAs is protection of fish. The City does not have the resources to provide the same level of evaluation as these agencies. Plus, the

Corps and WDFW make the final decisions related to what is allowed for docks and related matters. Therefore, the proposal takes the approach that the City standards may be modified with State and Federal Approval for docks on Lake Washington and Lake Sammamish, and with State approval on Phantom Lake. Note: The Corps does not regulate docks on Phantom Lake because it is considered isolated.

## EXISTING DEVELOPMENT

50. The proposal follows SSB 5451 (2011) that specifically deals with existing and nonconforming development in preparing new SMPs. That law states that: “Classifying existing structures as legally conforming will not create a risk of degrading shoreline natural resources.” The proposal implements this law by declaring homes and appurtenances on the shorelands as conforming.