

City of Bellevue Watershed Management Plan



Small Lake Washington Tributaries Watershed Assessment EXECUTIVE SUMMARY

Purpose of This Assessment

The purpose of this report is to assess the conditions in the Small Lake Washington Tributaries Watershed that are limiting the health of its streams. The evaluation of potential limiting factors specifically focused on the “stressor sources” from the Conceptual Model that describe the primary effects of urban runoff on streams and their consequences for stream health.

The City of Bellevue (City) is preparing a series of Watershed Assessment Reports (ARs) that will provide the basis for the recommended actions to improve stream health, culminating in a city-wide Watershed Management Plan (WMP).

One AR will be prepared for each of the City’s major watersheds: Coal Creek, Greater Kelsey Creek, the Lake Sammamish Tributaries within Bellevue (including Lewis Creek), and the Small Lake Washington Tributaries within Bellevue.

In addition to the watershed condition assessment, each AR will include limiting factors, data gaps (if any), and identified opportunities for improving in-stream watershed conditions. The ARs are based on data from three primary sources: 1) the recent Open Streams Condition Assessment (OSCA) performed by the City; 2) existing data collected by the City from past projects and ongoing monitoring efforts; and 3) existing project and environmental monitoring data collected by the City and a variety of public resource agencies.



Watershed Management Plan
Our streams, our future

Description and History of the Small Lake Washington Tributaries Watershed

The Small Lake Washington Tributaries Watershed is comprised of six distinct subbasins and areas: Lakehurst Area (including Lakehurst Creek), Meydenbauer Creek Subbasin, Beaux Arts Area, Clyde Beach Area, Yarrow Creek Subbasin, and Point Cities Area. In addition to the larger Kelsey Creek and Coal Creek Watersheds, these smaller drainage areas cover the remaining portions of Bellevue that drain to Lake Washington.



The Lakehurst Area includes Lakehurst Creek, a small unnamed stream and associated wetlands in Newcastle Beach Park, and several other small seasonal drainages to Lake Washington. Approximately half (51 percent) of the area is located inside the City of Bellevue, with the remaining portions in the cities of Newcastle and Renton. Lakehurst Creek is piped from its mouth up to I-405; the highway runs near the Lake Washington shoreline for the entire length of the Lakehurst Area and is the highest-intensity land use in the predominantly residential area. The upper portion of Lakehurst Creek flows through residential areas that are often cleared or landscaped and may subject the stream to fertilizer and pesticide inputs. Similar to other creeks in the Small Lake Washington Tributaries Watershed, Lakehurst Creek is subject



to flashy flows, with severe streambank stabilization issues that are exacerbated by failing in-stream structures where the stream flows through a steep and well-vegetated ravine. Historic fish presence within Lakehurst Creek is unknown. Today, the piped lower portion of the Lakehurst Creek is a complete fish barrier that cuts off access to fish from Lake Washington. Lakehurst Creek is occasionally dry during low-precipitation years and has limited habitat potential under current conditions. City actions are further limited by private property ownership along Lakehurst Creek, which restricted City staff access for surveying.

Meydenbauer Bay has a rich history in the settlement of the Seattle area and the origins of Bellevue. An early passenger ferry wharf promoted settlement in the area and provided ferry service across Lake Washington until 1920. Prior to World War II, Meydenbauer Bay also housed the American Pacific Whaling Company fleet during the offseason. When the business closed, that dock area became the Bellevue Marina. Today, the Meydenbauer Creek Subbasin is densely developed and drains approximately half of the City of Bellevue's Central Business District (CBD). Meydenbauer Creek has been heavily altered and is mostly piped, with only 0.4 miles of open channel remaining. A high-flow bypass was constructed in the Meydenbauer Creek Subbasin in 1983, accompanied by relaxed flow control regulations in a "No Detention Zone" for

the CBD, which drains stormwater flows directly to the stream until a certain level is reached in the bypass structure. Due to the high percentage of impervious area (60 percent), flashy stream flows are a significant challenge for this subbasin, causing channel incision, streambank instability, and associated water quality concerns. Concerns over bank stabilization have prompted complaints from private land owners near the stream mouth, where beaver and nutria activity further complicate system capacity constraints. Accumulating sediment at the bypass outfall also requires regular dredging maintenance, and illicit discharges from commercial activities in the subbasin are an ongoing concern. Despite historic presence of salmon and trout, Meydenbauer Creek fish habitat has been severely degraded by development and no longer supports the historic diversity of fish species.

The Beaux Arts Area is located mainly within the City of Bellevue, but also includes the town of Beaux Arts Village. This area is predominantly single family residential (91 percent) and does not have an open stream channel. This area is not discussed in detail in this report.



The Clyde Beach Area has a small stream channel that was formerly piped and recently opened as a stream channel by the City of Bellevue Parks Department. Because flow to the entire upper drainage area is comprised of stormwater, there is an intentional fish passage barrier to keep fish out of the storm drainage system. This small enhancement project at the mouth of the stream was completed to support the Lake Washington/Cedar/Sammamish Watershed Chinook Salmon Conservation Plan (also referred to as the “WRIA 8 Plan” for Water Resource Inventory Area number 8). Recovery



goals include opening piped stream mouths around Lake Washington to improve access into small tributary streams and improve shallow water lakeshore areas for juvenile salmonids. This project may also benefit lake-spawning Sockeye Salmon. Outside this area, there is no open channel in the Clyde Beach Area, and it is minimally discussed in this report.

The Yarrow Creek Subbasin includes one mainstem channel with several significant tributaries, including Tributaries 0254 and 0256. Approximately half of the subbasin is located inside the City of Bellevue, with the remaining portions in the City of Kirkland and unincorporated King County. Yarrow Creek is unique compared to other subbasins in the Small Lake Washington Tributaries Watershed because there is an extensive wetland complex (Yarrow Bay Wetlands) at the stream outlet to Lake Washington, providing valuable lakeshore habitat. However, the Yarrow Creek riparian corridor is also severely impaired by two highways (I-405 and SR 520), multiple stream crossings, suspected failing septic systems, and high-intensity land use (commercial/office and industrial). Yarrow Creek is subject to flashy flows and exhibits a severe percentage of streambank erosion and the highest percentage of undercut banks across all City watersheds. Despite these challenges,

all surveyed stream reaches in the Yarrow Creek Subbasin are fish-bearing or potentially fish-bearing. The Washington State Department of Transportation (WSDOT) and the City have undertaken fish barrier removal, mitigation, and restoration actions that have benefitted portions of the mainstem and Tributary 0254. Beaver activity is also significant in this subbasin; beaver dams are extensive in lower Yarrow Creek and a large beaver-impounded wetland has formed in the WSDOT restoration area south of SR 520.

The Point Cities Area is very small (only 9 acres), residential, and does not have an open stream channel. This area is acknowledged as a portion of the Small Lake Washington Tributaries Watershed but is not discussed in detail in this report.

Factors that Limit the Health of the Small Lake Washington Tributaries Watershed

The following were identified as limiting factors for the Small Lake Washington Tributaries Watershed per the Conceptual Model, in general order of importance across all six subbasins and areas within the watershed:

- 1. Stormwater Runoff from Effective Impervious Surfaces:** Increased stormwater runoff flow rates and volumes during storm events from impervious surfaces in the watershed, in combination with historic channel alterations for flood risk reduction purposes or land development, are contributing to negative effects on water quality and instream habitat quality, including fish and wildlife habitat. Lakehurst Creek, Meydenbauer Creek, and Yarrow Creek all exhibit flashy flows and have some of the highest percentages of streambank erosion and undercut banks across all City watersheds.
- 2. Pollutant Loading:** Stormwater runoff from impervious surfaces transports pollutants (metals, nutrients, fecal coliform, and others) associated with urban development that are detrimental to the health of aquatic organisms and people. There are several high-intensity pollutant sources in the Small Lake Washington Tributaries Watershed. For example, the Meydenbauer Creek Subbasin drains the CBD, and Yarrow Creek Subbasin has substantial commercial/industrial development with two highways (I-405, SR 520), in addition to other pollutant sources throughout the watershed, such as residential landscaping in riparian areas.

3. Road Culverts and Other Physical Barriers:

Several physical barriers to fish passage have been identified in all the streams of the Small Lake Washington Tributaries Watershed. In addition, there are undocumented barriers on private properties throughout the watershed. For these streams, water quality and poor habitat conditions are the primary concern, while addressing fish passage is secondary. For example, Lakehurst Creek is piped from the stream mouth to I-405, but the stream also flows through a steep ravine and runs dry seasonally, reducing the potential benefit of restoring fish access.

4. Loss of Floodplain and Riparian Function:

Urban development has largely confined many of the stream reaches in the watershed. Much of the historic open channel of Meydenbauer Creek is now piped. While Yarrow Creek still has an extensive wetland at the stream mouth, channel alterations and multiple highway crossings have significantly impaired the riparian corridor. Canopy loss is also a concern in all of these areas, but some well-vegetated areas remain.

Past and Present Investments in the Small Lake Washington Tributaries Watershed

Compared to other watersheds across Bellevue, investments in the Small Lake Washington Tributaries Watershed have been limited. However, several large projects have occurred including WSDOT and City restoration activities in the Yarrow Creek Subbasin and construction of the high flow bypass in the Meydenbauer Creek Subbasin. Other maintenance actions, such as dredging activities and beaver management, are ongoing in these areas to address system capacity constraints.

Future Opportunities

Potential future investments in the Small Lake Washington Tributaries Watershed will address the limiting factors identified herein and include both in-stream investments and investments in the contributing drainage areas to reducing stormwater runoff and pollutant loading.