CHAPTER 13  EMERGING ISSUES AND PLAN RECOMMENDATIONS

This chapter summarizes storm and surface water emerging issues and major plan recommendations. These recommendations are the result of evaluating the drainage basins using the criteria described in Chapter 7 Summary of Basin Issues and Needs and acknowledging that regional, state, and federal initiatives affect how local jurisdictions implement their stormwater management programs. The approaches to responding and implementing these recommendations are separated into two organizational categories: 1) emerging issues, including regulatory drivers, and 2) the Capital Investment Program (CIP) Plan.

Plan Recommendations

In general, the programs, policies, and practices implemented since the last systematic review of the Storm and Surface Water Utility, such as new detention regulations or asset management strategies, were aligned with the needs of the system. Recommendations in this chapter represent these higher level recommendations. Recommendations affecting technical projects or programs are included within individual chapters where they are discussed.

Capital Investment Program

The Utilities Department’s Storm and Surface Water CIP Plan is a 7-year spending plan, representing a significant investment of the Utilities’ resources to further its mission regarding storm and surface water. The CIP Plan recommendations are organized into four distinct categories for flood control, water quality, fish and wildlife habitat, and asset management.

Flood Control

Bellevue does not have widespread flooding problems, although a few areas of flooding concern remain. Established level of service goals are intended to prevent flooding of structures, flooding that restricts access to residences or businesses, or street flooding, particularly on primary emergency routes. Such flooding events affect public safety and cause property damage. Proposed flood control projects are prioritized based on risk (frequency and consequence of flooding) and are completed as resources are available.

The King County Flood Control District (District) is a special governmental body created to provide funding and policy oversight for flood protection projects and programs in King County. The District is funded by an assessed value tax (11 cent per $1,000) on each parcel in King County. It is charged with providing comprehensive flood protection and provides funding to improve the County’s aging and inadequate flood protection facilities. The District has on its CIP list a project to replace five culverts and increase conveyance capacity of Coal Creek in the Newport Shores neighborhood. That project is scheduled to receive District funding beginning in 2014. In addition to its CIP program, the District redirects 1 percent of its funding back to local jurisdictions for sub-regional flood control capital projects. Bellevue uses this funding to supplement local rates to fund its Flood Control Capital Program.

Flood Control Program Recommendations

1. Continue investing in the Flood Control Capital Program (D-94). This ongoing program constructs improvements to reduce or eliminate local flooding caused by insufficient public drainage system capacity. Projects involve enlarging pipes or culverts to convey more stormwater, re-routing drainage to pipes with more capacity, adding detention or infiltration facilities, or implementing other runoff control strategies. Areas where levels of service for flood protection are not met are considered candidate sites. Appropriate annual
funding levels should be re-evaluated during each budget update, based on known flooding problems and needs and acceptable risk.

2. Continue to use King County Flood Control Zone District Sub-Regional Opportunity funds to supplement local rates that partially fund projects in the City’s Flood Control Capital Program.

**Water Quality**

Water quality concerns identified in the Washington State Department of Ecology (Ecology) list of impaired water bodies (see Chapter 6 Current Conditions - State of the Storm and Surface Water System) are common non-point source pollution issues that are better addressed through programs, such as source control investigations or focused outreach, rather than capital projects. However, capital investments have been made at existing stormwater facilities to improve water quality. For example, at the Valley Creek regional detention facility, a stream diversion was installed to increase the travel time of stream flow through the regional detention facility. Because the facility is also a wetland, the increased travel time allows plants to uptake nutrients and for sediment to be deposited in the detention pond. Another project is a pilot project to determine whether converting a standard detention pond to one with a sand filter bottom would reduce the temperature of water leaving the pond, which flows to Lewis Creek. New technologies are being developed and evaluated at the state and regional levels that may provide additional opportunities for site-specific projects that could improve water quality in areas of concern.

**Water Quality CIP Recommendations**

1. Invest in cost-effective water quality projects, where appropriate.

2. Consider emerging technologies and techniques that improve water quality for pilot projects.

**Fish and Wildlife Habitat**

Aquatic habitat and biological data indicate that streams in Bellevue, like most urban streams in the Puget Sound, are impaired and lack quality habitat (see Chapter 7 Basin Issues and Needs). There is insufficient wood in the streams and there are not enough deep, in-channel pools where fish forage and seek refuge. Macroinvertebrate data also showed impacts of urban impairment.

Barriers to fish migration also exist. The City is required by state law to maintain fish passage at all road crossings (Revised Code of Washington [RCW] 77.57.030). Culverts that are perched high above the stream channel or culverts where the water is too shallow or too fast are examples of fish passage barriers. Removing fish barriers supports the community’s vision for fishable waters, and regional efforts to protect and enhance salmon populations.

New urban residential neighborhoods planned for the Bel-Red Corridor require investments in stream restoration and open spaces that support high quality, livable places. Public investment in these improvements will pave the way for pioneer housing development in the transitioning area. Most streams in this historically industrial part of Bellevue flow through pipes under parking lots, roads, and even buildings. Stormwater support from the City’s Mobility and Infrastructure Initiative provides funds for restoration of the West Tributary and Goff Creeks (property acquisition by others) and replacement of the fish-blocking culverts on those creeks under Bel-Red Road. The City Council-endorsed Mobility and Infrastructure Initiative provides CIP funds to improve transportation mobility while meeting City goals for a healthy and sustainable environment. The replaced culverts will allow fish access to the newly opened habitat upstream.

The following CIP Plan recommendations are meant to address these issues.
**Fish and Wildlife Habitat CIP Recommendations**

1. Continue to invest in D-81 Fish Passage Improvement Program to remove fish passage barriers created by impassable culverts, debris jams, or accumulated sediment, which opens spawning and rearing habitat for salmon populations. Typical projects include culvert replacement or modification, debris removal, or installation of logs and boulders to channelize low stream flows.

2. Continue to invest in D-86 Stream Channel Modification Program to construct habitat improvements on stream channels. The program increases opportunities for citizens to enjoy fish and other riparian species and reduces the likelihood of localized erosion that can jeopardize structures, cause flooding, and block fish access.

3. Invest in D-104 Stream Restoration for Mobility and Infrastructure Initiative to implement the stormwater improvements associated with this initiative (a city-wide initiative that seeks to address high priority mobility and infrastructure needs in downtown Bellevue and the Bel-Red corridor). Storm funds will be used to open and restore streams for passive recreation and environmental health through the Bel-Red corridor and to encourage redevelopment of the area.

**Asset Management**

Much of the constructed drainage system in Bellevue was built before standards for storm pipe material and construction were in place, so the City has only limited information about when pipes were installed, their size, and composition. The City owns almost 400 miles of stormwater conveyance pipe. Because the attribute data for the conveyance pipeline are so limited, predicting its remaining life is particularly challenging. It is a fundamental assumption of the stormwater asset management program that significant investments will be needed to maintain the system and replace components that are reaching the end of their useful life. In its assessment program, Bellevue uses video technology to assess the condition of the pipeline and to evaluate the constructed elements of the stormwater system; in addition, the City prioritizes where renewal and replacement funds are spent.

The CIP Plan includes several investments identified as necessary to meet critical system infrastructure renewal requirements. It focuses on critical pipes where the consequences of failure would be significant.

The following CIP program recommendations are meant to address aging infrastructure:

**Asset Management Program Recommendations**

1. **Critical Facility Failure.** Continue to invest in capital programs and projects so that critical facilities (e.g., large diameter pipes and culverts) are repaired or replaced prior to failure.

2. **D-64 Stormwater System Conveyance Infrastructure Rehabilitation.** This ongoing program rehabilitates or replaces defective storm drainage pipelines and ditches identified in the condition assessment program or by other means. Projects are prioritized based on the severity of deterioration, the risk and consequence of failure, and coordination with planned street improvement projects. This program provides for repair or replacement of defective stormwater conveyance pipes, culverts, and ditches. It proactively repairs pipes under arterials in advance of street resurfacing, thereby saving costs and minimizing disruption.

3. **D-103 Replace Coal Creek Parkway Culvert at Coal Creek.** Recent inspections revealed the pipe is heavily corroded, with limited remaining structural integrity. Holes in the bottom of the culvert allow water to leak through, threatening the integrity of Coal Creek Parkway and two high-pressure fuel pipelines that are located near the pipe. Engineers estimate the
remaining culvert life at less than 5 years. This project will pre-empt eventual culvert collapse, which would have catastrophic consequences to Coal Creek Parkway and Coal Creek, as well as having a ripple effect throughout the region due to disruption of the fuel pipelines.

4. D-59 Minor (Small) Storm and Surface Water Capital Improvement Projects. This ongoing program is for conducting small improvements to Bellevue’s surface water system to resolve deficiencies, improve efficiencies, or resolve maintenance problems, often in conjunction with other Bellevue programs such as the transportation overlay program. Projects are prioritized based on criteria including public safety, property damage, maintenance frequency, flooding history, operator safety, environmental risk, coordination with other City or development activity, and level of service impact. The program allows the City to efficiently maintain and upgrade its storm system by coordinating minor improvements with other City projects and maintenance activities.

Storm and Surface Water Emerging Issues

Management of Stormwater

As discussed in Chapter 2 Stormwater Management Challenges and Opportunities, Bellevue’s management of the storm and surface water system must balance the demand for economic sustainability along with environmental protection. A number of emerging stormwater issues will continue to shape how the resource is managed. As an example, Ecology is proposing to use updates to its Stormwater Management Manual and reissuance of the National Pollutant Discharge Elimination System (NPDES) Permit to require rather than promote, where feasible, on-site stormwater management practices that infiltrate stormwater at its source. Infiltration of stormwater is not a new approach to stormwater management; however, applying the technique at a regional scale (via the NPDES Permit) is, so monitoring its effectiveness and being prepared to make necessary adjustments is the basis of the this Plan’s recommendations.

Ongoing stormwater education and outreach informs citizens about stormwater issues and encourages behaviors that protect water quality and reduce runoff. Because most of the land in Bellevue is private property, citizens play a pivotal role in stormwater protection. Education and outreach is needed for common behaviors, such as car washing, yard care, and disposing of pet waste, which can affect water quality as well as natural drainage practices that help control stormwater flow. A variety of outreach methods is needed to reach the general community as well as target audiences depending on the messages and goals.

The following recommendations are in response to the emerging issues related to the management of stormwater.

Recommendations for Emerging Stormwater Management Issues

1. Continue to encourage use of emerging low impact development (LID) technologies and collect data on their effectiveness.
2. Continue to educate the public on how to optimize on-site stormwater runoff management.
3. Monitor the effectiveness of structural and outreach programs over time.
Puget Sound Partnership

The Puget Sound Partnership is a community effort of citizens, governments, tribes, scientists, and businesses working together to restore and protect Puget Sound. Governor Gregoire and the Legislature tasked the Partnership with creating an Action Agenda to clean up Puget Sound by 2020. The Legislature intends that all government entities within Puget Sound will exercise their existing authority to implement the applicable provisions of the Action Agenda (RCW 90.71.350). The major focal areas for the Action Agenda are land development, shoreline alteration, runoff from the built environment, wastewater, and loss of floodplain function. The applicable draft Action Agenda items for stormwater management are as follows:

- **Sustain freshwater availability for instream and human uses.**
- **Protect and recover salmon.** Implement the regional salmon recovery plan.
- **Prevent and reduce toxic loadings into Puget Sound.** Work with local governments and others to implement toxic chemical and pollution policy and programs to reduce release of chemicals, provide education and technical assistance, and strengthen authorities and policies to deal with toxic chemicals.
- **Control and manage stormwater.** Use a comprehensive approach to manage urban stormwater runoff at the site and landscape scales; control sources of pollutants; provide focused stormwater-related education and training; and assess the effectiveness of actions and effects on the environment.
- **Issue awareness and understanding.** Implement a regional communications effort to increase public understanding of Puget Sound for local communications efforts; and implement a locally based communications effort to increase public understanding of Puget Sound for local recovery efforts and other social media and school-based awareness campaigns.
- **Changing practices and behaviors.** Provide a science-based foundation for targeted communications and behavior change approaches. Sustain and expand proven and effective local volunteer and stewardship programs that target Action Agenda priorities. Stimulate broad-scale individual stewardship behaviors by integrating messages and technical assistance into existing programs, youth education, adult education, volunteer opportunities, and other programs.
- **Build and use a performance management system.**

Recommendation for Support of Regional Planning Efforts

Continue to support regional planning efforts and activities related to water quality, quantity, and habitat consistent with community values and resources.

Regulatory Drivers

The NPDES Permit, issued by Ecology, is the basis for regulatory compliance for operating the City’s municipal storm and surface water system (MS-4). Ecology will implement the conditions of the permit using a phased approach, which involves using 5-year permit cycles to slowly ramp-up the permit requirements. The City received its first NPDES Permit in 2007; in 2012, Ecology is scheduled to reissue the next 5-year Municipal Stormwater General permit. These permits are anticipated to continue to increase in complexity, cost, and responsibilities.

Regulatory Driver Recommendation

Continue to implement the planned NPDES activities described in the City’s annual Stormwater Management Program report.
**Water Quality Improvement Project Process**

Ecology may require projects and programs to improve surface water quality for water bodies identified on the state’s list of impaired water bodies (the 303(d) list). The Total Maximum Daily Load (TMDL) or Water Quality Improvement Project process establishes limits on pollutants that can be discharged to a listed water body and still allow state standards to be met. The state’s 303(d) list identifies the impaired water bodies located in Bellevue.

**Water Quality Improvement Project Process Recommendation**

Verify the state’s list of water quality impairments in Bellevue (303(d) listed water bodies) to determine if existing programs will address identified water quality impairments.

**Regional Water Quality Monitoring**

The City’s first NPDES municipal stormwater permit (issued in 2007) requires Bellevue to prepare a comprehensive long-term monitoring program (NPDES Stormwater Management Program, 2011). The permit requirements focus on the characterization of outfall water quality and effectiveness of best management practices required by the permit in improving water quality; however, these requirements will likely be replaced in the second NPDES municipal stormwater permit (anticipated 2013 issuance date) by a regional stormwater monitoring program being developed by the Stormwater Work Group (SWG).

The SWG is a coalition of federal, tribal, state, and local governments, as well as business, environmental, agriculture, and research interests, that was convened at the request of the Puget Sound Partnership and Ecology to develop a Stormwater Monitoring and Assessment Strategy for the Puget Sound Region (including Bellevue). The coalition strategy is to provide a coordinated, integrated approach to quantifying the stormwater problem in Puget Sound and to help stakeholders efficiently and effectively manage stormwater to reduce harm to the ecosystem. The strategy is focused on pollutant source identification, effectiveness of municipal activities and practices, and monitoring the status and trends of receiving water conditions and biota. This regional monitoring program recommended by the SWG would meet individual permit requirements while establishing a comprehensive long-term monitoring program.

**Regional Water Quality Monitoring Recommendation**

Continue to participate in and support the recommendations of the SWG, which provide more meaningful and useful results, are less expensive to implement, and meet multiple objectives, such as Chinook salmon recovery or Growth Management Act directives.