

## Acronyms and Abbreviations

APWA	American Public Works Association
Ballard Locks	Hiram M. Chittenden Locks
B-IBI	Benthic Index of Biotic Integrity
BMP	best management practice
BURP	Bellevue Urban Runoff Program
CAO	Critical Areas Ordinance
CCTV	closed-circuit television
CDP	Comprehensive Drainage Plan
CFR	Code of Federal Regulations
cfs	cubic feet per second
CIP	Capital Investment Program
City	City of Bellevue
CPI	Consumer Price Index
CRS	Community Rating System
Ecology	Washington State Department of Ecology
EOP	Emergency Operations Plan
ESA	Endangered Species Act
ESC	City of Bellevue’s Environmental Services Commission
ET	evapotranspiration
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
GIS	geographic information system
GMA	Growth Management Act
HPA	Hydraulic Project Approval
ICS	Incident Command System
IDDE	illicit discharge detection and elimination
I&I	inflow and infiltration
KCM-WRE/YTO	Kramer Chin & Mayo – Water Resources Engineers/Yoder, Trotter, Orlob & Associates
LID	low impact development
LMD	Lake Management District

LOS	Level of Service
LWD	large woody debris
µg/L	micrograms per liter
NAFSMA	National Association of Flood and Stormwater Management Agencies
NAS	National Academy of Sciences
NFIP	National Flood Insurance Program
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
O&M	Operations and Maintenance
PCP	pentachlorophenol
PDI	Private Drainage Inspection
Plan	Storm and Surface Water System Plan
PSM	pre-spawn mortality
RCW	Revised Code of Washington
RMCS	Resource Management and Customer Service
R&R	Renewal and Replacement
SCADA	Supervisory Control and Data Acquisition
SCS	Soil Conservation Service
SEPA	State Environmental Policy Act
Ship Canal	Lake Washington Ship Canal
SWG	Stormwater Work Group
SWPPP	Stormwater Pollution Prevention Plan
TAPE	Technology Assessment Protocol – Ecology
TMDL	Total Maximum Daily Load
TSS	total suspended solids
UGA	urban growth area
USACOE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
Utility	Storm and Surface Water Utility
WDFW	Washington Department of Fish and Wildlife
WRIA	Watershed Resource Inventory Area
WSDOT	Washington State Department of Transportation

## List of Definitions

The terms below are used in this Storm and Surface Water System Plan as follows:

**Acre-foot:** The amount of water it would take to cover an acre to 1 foot deep (equivalent to 43,560 cubic feet).

**Basin:** An area drained by a single stream or river system or the drainage areas that drain directly to a particular water body or Puget Sound.

**Beneficial Uses:** Uses of waters of the state which include, but are not limited to, use of domestic, stock watering, industrial, commercial, agricultural, irrigation, mining, fish and wildlife maintenance and enhancement, recreation, generation of electric power and preservation of environmental and aesthetic values, and all other uses compatible with the enjoyment of the public waters of the state.

**Best Management Practices (BMPs):** Schedules of activities, prohibitions of practices, capital improvements, maintenance procedures and other management practices that, when used singly or in combination, prevent or reduce the release of pollutants and other adverse impacts to the waters of Washington State. BMPs also include, but are not limited to, treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or wastewater disposal, or drainage from raw material sludge.

**Capital Improvement Project:** A funded project intended to improve the drainage system, the performance of that system, and/or reduce site-specific or cumulative adverse stormwater impacts.

**Clearing:** The act of destroying or removing vegetation by any means, including chemical, mechanical, or by hand.

**Conveyance Capacity:** A term generally referring to the maximum capability of the physical drainage system to safely transport water (from a hydraulic perspective).

**Critical Areas:** Areas required to be protected under the state Growth Management Act, Chapter 37.70A, RCW. These areas (e.g., riparian corridors, wetlands, floodplains, coal mines, and steep slopes) are designated by the City as ecologically sensitive or hazard areas and regulated to protect the functions and values of these areas and the public health, safety, and welfare, and to allow the reasonable use of private property.

**Detention or Flow Control:** The act of temporarily detaining stormwater runoff, in a pond, tank, or vault, collected from developed surfaces and releasing it back into the stormwater system at a pre-determined rate that is slower than what would otherwise be expected.

**Development:** 1. (Land Use Code [LUC]) All structures and modifications of the natural landscape above and below ground or water, on a particular site. 2. (NOAA) Any land altering activity creating impervious surfaces or otherwise modifying site hydrologic response, generally requiring a permit or approval. Such permits or approvals may include, but are not limited to, a building permit, clearing and grading permit, shoreline substantial development permit, conditional use permit, special use permit, zoning variance or reclassification, subdivision, short subdivision, Urban Planned Development, binding site plan, site development, or right-of-way use permit.

**Direct Discharge:** Undetained discharge from a proposed project to a “major receiving water.”

**Drainage System:** A combination of facilities (e.g., ditches, pipes, conduits, storage facilities, trenches, etc.) and natural features (e.g., open streams, ponds, etc.) which operate together to convey surface water from the point of origin to an ultimate discharge point.

**Dredging:** The process of removing sediment from canals, rivers, streams, ponds, and harbors.

**Drought:** Prolonged period of dry weather.

**Duration Control Standard:** A design standard applied to stormwater facilities that provide flow control. The standard seeks to match both flow duration and peak flow rates from the post-development site to the pre-developed site for a certain time period.

**Effective Impervious Surface:** Any impervious surface that is connected or has the effect of being connected directly to the downstream drainage system.

**Erosion:** The group of natural processes, including weathering, dissolution, abrasion, corrosion, and transportation, by which material is worn away from the earth's surface.

**Flooding or Erosion Impacts:** Includes impacts such as flooding of septic systems, crawl spaces, living areas, outbuildings, etc; earth movement/settlement; increased landslide potential; and erosion and other potential damage.

**Flow Control Facility:** A drainage facility (e.g. detention ponds, tanks, vaults, etc.) designed to temporarily store stormwater runoff from developed surfaces and release it at a slower rate than it is collected or to store the runoff for a considerable length of time and release it by evaporation, plant transpiration, and/or infiltration into the ground (e.g., retention or infiltration ponds, rain gardens, pervious pavement, tanks, vaults, trenches, etc.).

**Flow Duration:** The aggregate time that peak flows are at or above a particular flow rate of interest. For example, the amount of time that peak flow rates are at or above 50 percent of the 2-year rate for a period of record.

**Forest Canopy or Tree Canopy:** The area of land covered by tree canopy when looking from directly above, regardless of the land cover beneath the trees. For this document, tree canopy was measured using satellite images.

**Forested or Forest Cover:** A natural land condition comprising native trees and understory vegetation, and a relatively non-compacted surface layer of soil typical of Puget Sound forests.

**Grading:** Any excavating or filling or combination thereof.

**Habitat:** The location where a particular species (or identified subspecies) of plant or animal lives and its surroundings, both living and non-living. Habitat includes the presence of a group of particular environmental conditions surrounding an organism including air, water, soil, mineral elements, moisture, temperature, and topography.

**Hydrologic balance:** 1) An accounting of the inflow to, outflow from, and water storage in a hydrologic unit such as a drainage basin, aquifer, soil zone, lake or reservoir. The relationship between evaporation, precipitation, runoff, and the change in water storage.

2) A statement of the conservation of matter as applied to a ground water basin. All water entering an area during any given period of time must either go into storage within its boundaries, be consumed, exported or flow out, either on the surface or underground during that time period (Hydrology Handbook—American Society of Civil Engineers).

3) A general water balance equation is:  $P = Q + E + \Delta S$ , where

$P$  is precipitation

$Q$  is runoff

$E$  is evapotranspiration

$\Delta S$  is the change in storage (in soil)

**Impervious Surface:** A hard surface area, which either prevents or retards the entry of water into the soil mantle at a rate lower than that present under natural conditions prior to development; and/or a hard surface area that causes water to run off the surface in greater quantities and at an increased rate of flow from the flow present under natural conditions prior to development. Common impervious surfaces include, but are not limited to, roof tops, walkways, patios, driveways, parking lots, or storage areas, concrete or asphalt paving, gravel roads, and packed earthen materials, or other surfaces which similarly impede the natural infiltration of surface and stormwater runoff.

**Low Impact Development (LID):** A stormwater management and land development strategy applied at the parcel and subdivision scale that emphasizes conservation and use of on-site natural features integrated with engineered, small-scale hydrologic controls to more closely mimic pre-developed hydrologic functions.

**Low Impact Development BMPs:** A category of BMPs designed to incorporate open space preservation techniques, such as rain gardens, pervious pavements, cluster residential developments or rooftop runoff management, foundation design, vegetation enhancement, etc., that reduce hydrological impacts of development as compared to more traditional practices.

**Mitigation:** Methods used to compensate for impacts on critical areas. Options include:

- a) Avoiding the impact altogether by not taking a certain action or parts of an action.
- b) Minimizing impacts by limiting the degree of magnitude of the action and its implementation.
- 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 during the life of the action.
- e) Compensating for the impact by replacing or providing substitute resources or environments.

**Native Vegetation:** Vegetation consisting of plant species that are indigenous to the Puget Sound region and which reasonably could have been expected to naturally occur on the site. Examples include trees such as Douglas fir, western hemlock, western red cedar, alder, big-leaf maple, and vine maple; shrubs such as willow, elderberry, salmonberry, and salal; and herbaceous plants such as sword fern, foam flower, and fireweed.

**Natural Drainage Practices** (synonymous with LID BMPs): BMPs used to manage stormwater on developed sites to more closely mimic natural hydrologic conditions. Those approved for use in Bellevue include bioretention (rain gardens, etc.), pervious pavement, amended soils, rain recycling, vegetated roofs, reverse-slope sidewalks, and minimal excavation foundations.

**Nutrient:** Nourishing substances necessary to life and growth, such as nitrogen and phosphorus.

**Phytoplankton:** Microscopic plants that live drifting in water. They are the base of almost all aquatic food chains.

**Practicable:** Available and capable of being done, after taking into consideration cost, existing technology, and logistics in light of overall project and/or program purposes.

**Public Stormwater Facility:** Any stormwater system or portion thereof that is owned or operated by a public entity.

**Public storm and surface water system or public drainage system:** Those elements of the storm and surface water system maintained and operated by the City of Bellevue Utilities Department, which includes elements located on property owned by the department or in public right-of-way except to the extent that private ownership is indicated as a matter of record or by law and elements located on property on which the City has an easement, license, or other right of use for utility purposes. (Storm and Surface Water Utility Code, 24.06.040 Definitions)

**Recharge:** Water that seeps through the soil to replenish an aquifer.

**Recovery:** The process by which the decline of an endangered or threatened species is arrested or reversed, and threats neutralized so that its survival in the wild can be ensured. The goal of the Endangered Species Act (ESA) is for the recovery of listed species to levels where protection under the ESA is no longer necessary [50 CFR 402.02].

**Redevelopment:** Any land altering activity (except routine maintenance) or change in use on an already developed site which requires a permit or approval and which creates new impervious surface/cleared area or replaces existing impervious surface (i.e., replaced impervious surface) or modifies existing cleared area (also known as modified cleared area or modified pervious surface) or has a potential to increase runoff or release new pollutants from the site. New pollutants means a pollutant that was not discharged from the site immediately prior to a change in use, as well as a pollutant that was discharged in less quantities prior to a change in use.

**Revenue:** All the income produced by a particular source.

**Right-of-way:** All public streets and property granted or reserved for, or dedicated to, public use for street purposes, together with public property granted or reserved for, or dedicated to, public use for walkways, sidewalks, bikeways, and horse trails, whether improved or unimproved, including the air rights, sub-surface rights, and easements related thereto.

**Riparian Corridor:** A perennial or intermittent water body, its lower banks and upper banks, and the vegetation that stabilizes the slopes, protects the waterway from erosion and sedimentation, provides cover and shade, and maintains the fish and wildlife habitat.

**Runoff:** Water that travels across the land surface and discharges to water bodies either directly or through a collection and conveyance system. Also see "Stormwater."

**Salmonid:** Any member of the taxonomic family Salmonidae, which includes all species of salmon, trout, and char [Salmon and Steelhead Stock Inventory].

**Storm and Surface Water System:** Also referred to as the drainage system, means the entire system within the city, both public and private, naturally existing and manmade, for the drainage, conveyance, detention, treatment, or storage of storm and surface waters. However, facilities directly associated with buildings or structures such as foundation drains, rockery/retaining wall drains, gutters, and downspouts or groundwater under-drains are not considered parts of the storm and surface water system.

**Stormwater:** Runoff during and following precipitation and snowmelt events, including surface runoff and drainage.

**Stream:** Any aquatic area where surface water produces a channel, not including a wholly artificial channel, unless the artificial channel is: 1) used by salmonids; or 2) used to convey a stream that

occurred naturally before construction of the artificial channel. The definition of “stream” and designation thereof is set forth in Part [20.25H](#) LUC.

**Study (or basin study):** An analysis or assessment that focuses on one or more science-based issue(s) of scope less than a full basin plan. The study is consistent with, but can modify a basin plan. The study is approved by the legislative body.

**Subbasin:** A drainage area that drains to a watercourse or water body named and noted on common maps and which is contained within a basin. A basin or area that is part of a larger drainage basin or area. Also see “Basin.”

**Total Impervious Area (TIA):** The total amount of actual impervious surface on a site or within a drainage area, basin, or sub-basin (see “Impervious Surface”).

**Total Maximum Daily Load (TMDL):** A water quality planning and implementation tool required under Section 303(d) of the Clean Water Act. This measure specifies, through the use of a scientifically based process, the amount of a pollutant that can be discharged to a water body without affecting beneficial uses and mechanisms for ensuring discharges do not exceed that amount. TMDLs can focus on both point and nonpoint sources of pollution, and one watershed may have a TMDL developed for both simultaneously.

**Undeveloped:** A property in a state generally approaching being native or natural covered with living, mature vegetation.

**Water Quality Treatment Facility:** A drainage facility designed to reduce pollutants once they are already contained in surface and stormwater runoff. Water quality treatment facilities are the structural component of best management practices (BMPs); when used singly or in combination, water quality treatment facilities reduce the potential for contamination of surface and/or ground waters.

**Watershed:** A geographic region within which water drains into a particular river, stream, or body of water as identified and numbered by the State of Washington Water Resource Inventory Areas (WRIAs) as defined in Chapter 173-500 Washington Administrative Code (WAC).

**Water Resource Inventory Area (WRIA):** A geographic area, defined by hydrologic boundaries on the basin and sub-basin scale, designated by the state as a way to describe administrative units for resource management; the state comprises 63 WRIAs, with those adjacent to bodies of saltwater customarily including a major river drainage and nearby smaller drainages.

**Wetland:** A habitat that is characterized by soils that are saturated with water, or has shallow standing water, for part of the growing season.