

Chapter 1. Requirements and Policies

This chapter establishes the City of Portland’s stormwater management requirements. It includes the following sections:

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1.1 Purpose of the *Stormwater Management Manual*

As the City of Portland is developed, impervious surfaces create increased amounts of stormwater runoff during rainfall events, modifying drainage patterns and flows and disrupting the natural hydrologic cycle. Without stormwater management, these conditions erode stream channels and prevent groundwater recharge. Parking lots, roadways, rooftops, and other impervious surfaces increase the pollution levels and temperature of stormwater transported to streams, rivers, and groundwater resources. Implementing the requirements in this manual helps protect Portland's water resources, which in turn will provide great benefit to human health, fish and wildlife habitat, recreational resources, and drinking water.

Stormwater management is also critical in terms of protecting Portland's sanitary and stormwater infrastructure. Increased runoff contributes to combined sewer overflows (CSOs), basement sewer backups, and localized flooding. Implementing onsite infiltration and flow control measures will conserve the existing and future conveyance capacity of storm sewers, drainageways, and combined sewers.

Strategies for meeting the requirements in this manual depend on a number of site factors, including infiltration and system capacity, available infrastructure, proposed development plans, and the storm system or drainage basin the proposed development is in. The standards addressed in this manual are intended to make site-specific improvements across the City and to comprehensively manage stormwater by watershed.

Stormwater management is critical to maintaining and enhancing the City's livability and improving watershed health. The *Stormwater Management Manual (SWMM)* allows the City of Portland to protect both watershed resources and infrastructure investments with every development or improvement. As each project meets the requirements of this manual, it will contribute to achieving these important citywide goals.

1.1.1 Regulatory Mandates

In response to the impacts of urbanization on water quality, Congress passed the Clean Water Act of 1972 (amended in 1987), which prohibits the discharge of pollutants into waters of the United States unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. Portland has two types of NPDES permits under the Clean Water Act: a stormwater permit and wastewater treatment plant permit that includes the combined sewer collection

system. The NPDES stormwater permit requirements, published in 1990, require large (Phase I) cities such as Portland to obtain an NPDES stormwater permit for their municipal separate storm sewer system (MS4) discharges. Portland's MS4 system includes conveyance or systems of conveyances such as municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm sewers owned by the City of Portland designed or used for collection or conveyance of stormwater. The Oregon Department of Environmental Quality (DEQ) issued Portland's first MS4 permit in 1995. Portland City Council directed the Bureau of Environmental Services (BES) to lead the citywide response for stormwater requirements and implementing key program elements.

Compliance with the NPDES MS4 permit requires cities to establish a comprehensive stormwater management program, including establishing controls on post-development stormwater runoff. Portland adopted its first citywide *Stormwater Management Manual (SWMM)* in 1999, which includes water quality and flow control design standards for onsite stormwater management facilities. The SWMM focuses on low-impact development practices, stormwater management facilities and conveyance features, and maintenance and operational best management practices (BMPs) designed to improve stormwater quality. This SWMM is part of Portland's NPDES MS4 stormwater management program to improve the quality of Portland's waters.

With the completion of the City's Combined Sewer Overflow Program in 2011, the management of the combined sewer system is primarily guided by two requirements: the City's NPDES discharge permit for the Columbia Boulevard Wastewater Treatment Plant and the EPA's CSO Policy. The City's NPDES wastewater discharge permit includes requirements for Capacity, Management, Operation and Maintenance (CMOM). The EPA's CSO Policy includes Nine Minimum Controls for treatment of wet weather overflow events. Both CMOM and the Nine Minimum Controls rely on reducing stormwater discharges to the combined sewer. The SWMM requirements help reduce the need for storage in the combined sewer collection system through stormwater volume reduction and flow control requirements. This SWMM is part of Portland's combined sewer program by reducing and controlling the amount of stormwater that discharges to the combined sewer.

In addition, the federal Safe Drinking Water Act (SDWA) of 1974 provides a comprehensive framework to ensure the quality and safety of drinking water supplies. Within the state of Oregon, the Department of Environmental Quality regulates stormwater discharges to underground injection control (UIC) systems

under the SDWA. UICs, such as drywells, sumps, or soakage trenches, are used to infiltrate stormwater runoff from structures, streets and other impervious surfaces. DEQ issued a water pollution control facility (WPCF) permit to the City in 2005 for approximately 9,000 public UICs used to manage stormwater runoff from the public right-of-way. As part of permit compliance, the City was required to establish a comprehensive UIC management plan that includes structural, nonstructural, and institutional controls to ensure the protection of groundwater as a drinking water resource. This SWMM assists with the implementation of Portland's UIC management plan. BES is the lead agency responding to the citywide WPCF permit.

The purpose of this manual is to respond to these regulatory mandates by providing stormwater management principles and techniques that help preserve or mimic the natural hydrologic cycle, minimize sewer system problems, and improve water quality. The manual provides developers and design professionals with specific requirements for reducing the impacts of stormwater from new development and redevelopment.

1.1.2 City Authority

The SWMM is part of BES's Administrative Rules, authorized by [Portland City Code Chapter 17.38](#). The SWMM is adopted by the Director of BES following a public review process, and filed with the City Auditor as required [by Portland City Code Chapter 1.07](#). In 1999, City Council adopted code changes to Portland City Code 17.38 to authorize the Director of Environmental Services to adopt rules, procedures, and forms and to maintain a SWMM ([Ordinance #173330](#)). In 2000, in conjunction with a City Code update, City Council confirmed the authority of the Director of BES to update the SWMM ([Ordinance #174745](#)).

1.1.3 Relationship to Other Requirements and Standards

A number of other City technical standards, design guidelines, and policies may impact the selection, placement, and design of stormwater facilities, conveyance features, and related infrastructure. The location and scope of the proposed development or improvement or the status of existing infrastructure may also trigger additional requirements. Before finalizing any design, it is the responsibility of the project designer to resolve potential conflicts. A number of state or federal requirements may also apply depending on size, scope, and impacts to waterways.

Sewer and Drainage Facilities Design Manual

Both the SWMM and the [Sewer and Drainage Facilities Design Manual](#) (SDFDM) are under the authority of the Bureau of Environmental Services (BES) and have been

adopted by City Council as administrative rules. They are complimentary documents that share standards related to the hydrology and hydraulic design of public drainage facilities.

The SWMM is the primary reference for designing public and private stormwater management facilities. Private development, redevelopment, or stormwater retrofits, public works projects, and capital improvement projects that trigger stormwater management requirements must use the SWMM to design stormwater management facilities and stormwater conveyance facilities.

The SDFDM is the primary reference for designing public sewers and drainage facilities. The SDFDM applies to all public sanitary, stormwater/drainage and combined sewers owned by the City and privately owned facilities located in public rights-of-way or in public easements.

Table 1-1 provides some common examples of when one or both manuals may be required. Both manuals provide design requirements for culverts, outfalls, ditches/road shoulder improvements and drainageways or open channels.

Table 1-1. Relationship between the SWMM and the SDFDM

| Design Requirements by Project Scope | SWMM | SDFDM |
|---|------|-------|
| Public sanitary, combined, or storm-only sewers | | X |
| Public stormwater management facilities with no overflow conveyance to public combined or storm-only sewers (e.g., sumps) | X | |
| Public stormwater management facilities with overflow conveyance to public combined or storm-only sewers or drainage facilities | X | X |
| Private stormwater management facilities with no conveyance to an offsite storm system | X | |
| Private stormwater management facilities with offsite conveyance to a public combined or storm-only sewer | X | X |

The content of the two manuals may overlap while addressing different aspects of stormwater system design. Designers must reference both manuals when working in the City of Portland to determine the appropriate standards that apply to a project.

Source Control Manual

Both the SWMM and the [Source Control Manual](#) are under the authority of the Bureau of Environmental Services. The *Source Control Manual*, previously Chapter 4

of the 2014 SWMM, is a separate manual and is authorized by Portland City Code 17.38.035 B.2, 17.38.035 D, and 17.38.035 F and will be adopted as an administrative rule concurrently with the adoption of the 2016 SWMM.

Some site characteristics, activities, and uses on property (either publicly or privately owned) may generate or mobilize specific pollutants of concern or levels of pollution that are not addressed solely through implementation of the SWMM. The *Source Control Manual* defines these site characteristics, activities and uses and identifies best management practices and structural source controls that must be implemented to manage pollutants at their source. Any project of any size that exhibits, has or introduces these site characteristics, activities and uses must comply with the *Source Control Manual*. This includes new development, redevelopment, tenant improvements, changes to site uses or activities, and changes to specific site or activity areas, even if no impervious area is added or replaced.

The content of the two manuals may overlap while addressing different aspects of stormwater management. A project may be required to meet the requirements of both manuals. For example, a site with known contamination of soil or groundwater may be limited to certain stormwater facility configurations in order to reduce risk of mobilization. Before finalizing any design, it is the responsibility of the project designer to contact the City to resolve potential conflicts between the two manuals.

Public Works Improvements

The Portland Bureau of Transportation (PBOT) has broad code authority over public improvements in the public right-of-way under Title 17 and Title 33 of Portland City Code. Street improvements required as a condition of development will often trigger SWMM requirements. Street and stormwater improvements in the public right-of-way required as a condition of approval are most often constructed under a Public Works Permit. Work in the public right-of-way has applicable design standards and construction requirements. Projects going through the Public Works Permit process will have opportunities during concept design review to identify and resolve any conflicting requirements with City staff.

Title 10 (Erosion and Sediment Control Regulations)

Erosion of soils and sediments has negative impacts on public health, private property, waterways and stormwater systems, and public infrastructure. Title 10 of Portland City Code requires development and construction activities to reduce erosion and control sediment during and following construction, including all ground-disturbing activities. Erosion control is a requirement of the City's MS4 permit as a mechanism to reduce pollutants in stormwater runoff. The Bureau of Development Services (BDS) enforces temporary and permanent erosion control

measures for development and construction projects on private property during the development review and construction inspection processes. Individual infrastructure bureaus manage their own erosion control activities for construction in the public right-of-way, in a public easement, or under a Public Works Permit or contract. Technical guidance for meeting the erosion control requirements of Title 10 is found in the [Erosion Control Manual](#).

Additionally, implementing erosion control practices can help protect constructed or existing stormwater management facilities and conveyance features from sedimentation, thereby reducing the amount of annual maintenance needed to preserve required functionality.

Title 11 (Trees)

Tree preservation and planting requirements are found in Title 11 of Portland City Code. Title 11 is implemented by the Bureau of Development Services for trees in development situations and by the Portland Parks and Recreation and the City Forester for trees on private property, City trees, and street trees not in development situations. Title 11 may apply to existing and new trees on private property, street trees (in landscape or parking strips), and other trees in the public right-of-way.

Vegetated facilities integrated into project landscape areas may be able to meet many Title 11 tree requirements. Trees required by Title 11 may be counted towards meeting the facility-specific landscape requirements of the SWMM. Similarly, trees that meet the requirements of this SWMM may also meet Title 11 requirements.

Title 21 (Water)

To protect groundwater as a source of drinking water for the region, the Portland Water Bureau regulates the storage, handling, use, and transportation of hazardous materials in the Columbia South Shore Well Field Wellhead Protection Area (see Figure 1-1). Requirements focus on spill control measures and preventing pollutants from entering into groundwater. The full regulations are contained in the [Columbia South Shore Well Field Wellhead Protection Manual](#) and apply to indoor and outdoor storage areas; loading and unloading areas; fuel dispensing facilities; storage maintenance and repair of vehicles and equipment; and transportation routes on private property and in public rights-of-way. Portland Water Bureau review is required to verify compliance with the wellhead protection regulations.

Public and private stormwater facilities in the Columbia South Shore Well Field Wellhead Protection Area that receive runoff from commercial areas or highly

travelled residential roadways must be equipped with impervious spill control features. Specifications and requirements are found in the [Wellhead Protection Area Reference Manual](#) and the [City of Portland Standard Construction Specifications](#).

Figure 1-1. Columbia South Shore Well Field Wellhead Protection Area



Current as of 2016; official boundaries maintained by the Portland Water Bureau.

Titles 24 and 25 (Building and Plumbing Regulations)

State building and plumbing code requirements are implemented through the Bureau of Development Services during the development review process for private property. BDS approves private parking and driveway surfaces (see Portland City Code 24.45), flood hazard areas (see Portland City Code 24.50), and installation of private downspouts, pipes and sewers, including those that lead to or from stormwater management facilities.

Title 33 (Planning and Zoning)

Planning and Zoning requirements are implemented by the Bureau of Development Services during the development review process. Zoning codes may require a specific type of stormwater management facility, specify landscape requirements or protection of environmental features, or provide incentives or options for incorporating stormwater management facilities to meet Title 33 requirements of Portland City Code. The below sections describe only some of the relevant Planning

and Zoning requirements that may impact stormwater management facility and conveyance feature selection, siting, and design. Code requirements such as minimum density, minimum lot coverage, and required zero-lot-line setbacks for urban districts may exempt the use of onsite infiltration facilities. Even if space constraints prohibit the construction of onsite infiltration facilities, stormwater management requirements for the site must still be met. Project designers should coordinate with BDS and research the specific zoning codes, overlays, and other Planning and Zoning requirements that would apply to their site.

Ecoroof Requirements and Floor Area Ratio Bonuses.

Where provisions in Title 33 require a new development or redevelopment project to include an ecoroof or award bonus floor area or height due to the inclusion of an ecoroof, the ecoroof must meet all of the technical design and maintenance standards detailed in Chapters 2 and 3 of the SWMM, as approved by BES. Title 33 will specify when these provisions are triggered and the specific percent ecoroof coverage standards that must be met.

Landscaping.

When vegetated stormwater management facilities are integrated into landscape areas, they can meet many, if not all, of the Title 33 landscape requirements. The benefits of integrated design include construction cost savings, combined maintenance, aesthetic benefits, and the greater likelihood of maintaining long-term functionality. Well-designed and established landscaping will also prevent post-construction soil erosion. Where the requirements of the SWMM and Title 33 differ, both requirements must be met. For example, when plant material requirements vary, the larger quantities and sizes must be used (fractions should be rounded to the highest whole number). Landscaping required by Title 33 may be counted toward meeting the facility-specific landscape requirements of Chapter 2 of the SWMM if the plantings are located within the facility area. Similarly, plantings that meet the requirements of Chapter 2 of the SWMM may also meet Title 33 landscape requirements.

Non-Conforming Parking Lots.

Development and redevelopment projects must meet Title 33 parking requirements and development standards for parking and loading (see Portland City Code 33.266). Chapter 258 (Nonconforming Situations) of Title 33 requires nonconforming parking, drive, and maneuvering areas to be brought into compliance with current landscaping requirements under certain conditions (see Portland City Code

33.258.070). Many nonconforming parking lots lack stormwater facilities or vegetation. As parking lots are redesigned to be in conformance with current requirements, stormwater management must be incorporated if feasible. Feasibility is determined by a number of factors, including, but not limited to:

- Existing grades must allow stormwater to flow towards the newly vegetated areas and vegetated facilities.
- Soil conditions must be evaluated to determine if infiltration is feasible at the proposed location. Infiltration feasibility may include infiltration rate or presence of soil or groundwater contamination.
- Infiltration setbacks must be considered in relationship to property lines and adjacent structures. If perimeter landscaping abuts the property line, standard setback requirements and the location of existing development on abutting or downhill parcels may determine feasibility of infiltration.

City of Portland Green Building Policy

Construction of new City buildings must meet the City's Green Building Policy requirements for stormwater management. Complete criteria and applicability for Portland's green building policy are described in [Policy Document ENB-9.01](#).

Port of Portland Stormwater Design Standards Manual

As of January 1, 2014, the Port of Portland adopted a Stormwater Design Standards Manual (DSM) in accordance with the requirements of Municipal Separate Storm Sewer System (MS4) permit number 101314 issued by the Oregon Department of Environmental Quality. Within the City of Portland, the SWMM and the DSM may both apply. Projects on Port-owned property within the City of Portland require coordination with both Port and City staff to determine what stormwater standards may be applicable (see [Section 1.2.4](#) for DSM-specific exemptions to the SWMM). In addition, the Port of Portland has requirements that are specific to airport operations, such as wildlife management related to aviation safety requirements. For example, a vegetated stormwater management facility may be required to meet stormwater management requirements of the SWMM, but plant selection within the facility may need to meet Port of Portland requirements.

The DSM does not incorporate all of the regulatory requirements that are potentially applicable to a project and thus does not eliminate the need to comply with other applicable local, state, and federal regulatory requirements, including City codes, plan districts (such as Portland City Code 33.565.560 Portland International Airport Plan District) and ordinances that are outside the scope of the DSM or the SWMM.

Projects will still need City permits for land use, public works, building or other development-related permit approval.

Projects subject to the DSM are required to obtain Port approval of the stormwater management design prior to BES approval of building plans and building permit issuance. Projects required to use the DSM to meet stormwater management requirements will be issued a Service Agreement Letter from the Port of Portland that confirms DSM applicability.

1.1.4 Revision and Amendment Process

The SWMM is reviewed and updated as necessary. The review process includes:

- Consideration of new or pending regulatory requirements.
- Consideration of updated and new technologies.
- Review of appeals made during the preceding interval.
- Review of approved performance-based approaches.
- Review of community comments and concerns, including those of advisory bodies and professional organizations.
- Review of other City design or review processes and permit submittal requirements for consistency with City Code and Administrative Rules.

The amendment process will also include a public comment period to review amendments as identified in Portland City Code 3.13 and will produce documentation and explanation of any changes made.

Suggestions for changes and improvements can be made at any time and should be emailed to BESStormManual@portlandoregon.gov or sent to:

City of Portland, BES
1120 SW 5th Ave., Room 1000
Portland, OR 97204
Attention: SWMM Manager

1.2 Applicability

All proposals related to development, redevelopment, new connections or new offsite stormwater disposal locations are subject to the requirements of the SWMM, unless specifically exempt ([Section 1.2.4](#)). Modifying connections, conveyance, route of conveyance (such as disposal location), or alterations and encroachments near drainageways may also initiate stormwater management requirements. Stormwater management requirements apply to projects on both private and public property or right-of-way with existing or new impervious area, including, but not limited to, all roofs, patios, walkways, parking lots, streets, alleys, driveways, and sidewalks. Stormwater management requirements include drainage and conveyance of stormwater in a manner that protects and improves water quality.

The City implements stormwater management requirements during a number of project design, review and/or permit processes. The permit processes generally include land use reviews and other reviews under Planning and Zoning code, site improvements (zoning, site development, or development review), building permits, and Public Works Permits. Each development proposal has a unique set of reviews and permits, based on what is proposed and the site conditions (e.g., location, topography, zoning, infiltration rates). Internal design and review processes may happen during design of system improvements, interagency review of public improvements, or other capital projects or public improvements.

Stormwater that is generated from impervious area on property must be managed on the same property in facilities maintained by the property owner, whether publicly or privately owned. Stormwater that is generated within the public right-of-way must be managed in the public right-of-way in publicly maintained facilities.

Stormwater facilities required as a condition of development or redevelopment in the right-of-way must be sized to manage stormwater from the contributing impervious area within the right-of-way, including sidewalks and driveway aprons. Stormwater facilities in the right-of-way are not sized to treat stormwater from private driveways, which must be managed on private property. Site-specific stormwater management requirements are identified in [Section 1.3](#) and stormwater facility design and configuration is discussed in [Chapter 2](#).

The Bureau of Development Services administers the development review process, including land use reviews as well as building and trade permits for private improvements. BES reviews, approves, and inspects stormwater facilities on private property within the development permitting process. Public Works Permits are

required for public infrastructure improvements, which are generally located in the public right-of-way and are administered by the City's service bureaus, including Transportation, Environmental Services, and Water.

Development-initiated stormwater improvements

For more information about the City of Portland's development review and permit processes, refer to <http://www.portlandoregon.gov/bds>.

For more information about the City of Portland's Public Works Permit process, refer to <http://www.portlandoregon.gov/publicworks>.

1.2.1 Development and Redevelopment

Projects that develop or redevelop over 500 square feet of impervious surface are required to comply with stormwater management requirements for the new or redeveloped impervious area at the site, unless specifically exempt (see [Section 1.2.4](#)).

Development is defined as any human-induced change to improved or unimproved real estate, whether public or private, including, but not limited to, construction, installation, or expansion of a building or other structure; land division; street construction; drilling; and site alteration such as dredging, grading, paving, excavation, filling or clearing. Development includes both new development and redevelopment.

Development includes creation of new impervious area, expanding the footprint of existing structures or impervious area, or expansion of existing or new structures within the existing development footprint. This would include modifications, alterations, or additions to an existing structure that add 500 or more square feet of impervious area within the existing development footprint even if the development proposal does not affect the ground floor footprint. This includes, but is not limited to, dormers, accessory dwelling units, enclosing existing impervious area, or adding additional floors. Examples that would trigger the SWMM would include adding a 600 square foot second floor to an existing house or commercial space.

Redevelopment is defined as any development that includes demolition or removal of existing structures or impervious surfaces at a site and replacement with new impervious surfaces. This would include partial demolitions or alterations that rebuild within the same development footprint. This would also include repaving paved or other impervious surfaces that exposes gravels, aggregates or soils (see [Figure 1-2. Paved Impervious Surface Cross Section](#)).

Figure 1-2. Paved Impervious Surface Cross Section



Photo: City of Portland.

1.2.2 New Connections or Routes of Conveyance

Projects that propose new offsite discharges or new connections to the public system are required to comply with stormwater requirements for the impervious area draining to the offsite discharge location, unless specifically exempt (see [Section 1.2.4](#)). This includes, but is not limited to:

- New connections or new drainage areas routed into the City’s sewer or drainage system under a City permit or from a public improvement.
- Changing the disposal location of an existing drainage area to a different disposal location or storm system. A different disposal location would include directing stormwater to a different drainage or waterbody.

The following are examples of new discharge locations or new connections:

- Decommissioning private drainage or infiltration systems and discharging offsite to a storm sewer or other storm system.
- Disconnecting from one public sewer system and connecting to a different type of sewer system, such as changing from a City storm sewer to a City combined sewer.
- Changing the disposal point of stormwater runoff in the right-of-way, such as decommissioning an existing sump and routing that stormwater to a storm-only sewer.

1.2.3 Stormwater Retrofits

A stormwater retrofit is the installation of a new stormwater facility to treat stormwater from existing impervious area.

Stormwater retrofits may not be required by the development ([Section 1.2.1](#)) or new connection requirements ([Section 1.2.2](#)). Stormwater retrofits may be triggered by other development proposal requirements or improvements projects and are installed for a variety of reasons, including:

- Land use, building, zoning, public works or other City development proposals that may trigger compliance with SWMM requirements.
- DEQ requirements for meeting discharge limits or other compliance requirements.
- Property owners motivated to increase their private stormwater management to provide multiple watershed health benefits, including reducing stormwater flow to combined sewer systems, resolving private drainage issues, providing groundwater recharge and reducing ecological footprints.
- Ratepayers wanting to reduce stormwater utility charges.
- Targeted public system improvements that provide sewer capacity, water quality or other environmental benefits as per adopted City system or facilities plans.

Each retrofit project has specific conditions unique to that site. These conditions include location of existing structures and other impervious areas, zoning considerations, soils, slopes, current and historic site use, source controls, potential contamination, required uses (e.g., number of parking spaces, accessibility), desired uses (e.g., play or other common areas, gardens, visual amenities), and the existing stormwater discharge location.

There are two types of stormwater management retrofits: City-required stormwater retrofits and owner-initiated stormwater retrofits. Both types of retrofits may be triggered by a regulatory requirement, but the difference in SWMM applicability is due to who initiated the decision or obligation to retrofit. City-required stormwater retrofits are those required by the City of Portland. Owner-initiated retrofits are those initiated by a property owner or public agency to meet other regulatory or system needs. Regardless of type of retrofit, type and sequencing of any required permits or reviews are determined by site use and stormwater facility characteristics.

City-Required Stormwater Retrofits

City-required stormwater retrofits result from a City review against City approval criteria, City code or rules; from a City enforcement action; or system plan requirement. City-required stormwater retrofits help the City control stormwater discharges by requiring the site to comply with the SWMM as a condition of development or as a result from an enforcement action. City-required stormwater retrofits, such as those required by a land use, zoning, building permit, public improvement, other conditions of development, or enforcement action must meet the SWMM requirements in full.

Owner-Initiated Stormwater Retrofits

Owner-initiated stormwater retrofits result from property owners or public agencies increasing stormwater management. This may also include retrofits required by non-City imposed water quality requirements (e.g. DEQ Tier 2 requirements), such as individual discharge permits, source controls, or clean up actions.

Owner-initiated stormwater retrofits must meet the following SWMM requirements:

- Facility design and landscaping, facility sizing methodology, and any appropriate permit submittals for appropriately selected and sized stormwater facilities as required in [Chapter 2](#).
- Operations and maintenance requirements, as established in [Section 1.4](#) and [Chapter 3](#).

For owner-initiated stormwater retrofits, there is flexibility in the facility sizing and in meeting the stormwater infiltration and discharge hierarchy. The City would rather encourage stormwater retrofits where the facilities meet some portion of the required SWMM sizing requirements than disallow facilities that do not meet full sizing criteria. These smaller facilities can still collectively add up to significant management of runoff from existing impervious surfaces. The following facility sizing and discharge criteria apply:

- Owner-initiated retrofits on property (privately or publicly owned) are encouraged to size facilities through the Simplified Approach for project areas of less than 10,000 square feet. If site characteristics make Simplified Approach sizing difficult to achieve, stormwater retrofits may use the Presumptive Approach to size smaller facilities to meet the water quality design storm.
- Owner-initiated stormwater retrofits are encouraged to meet the stormwater hierarchy by fully infiltrating whenever feasible. Infiltration testing (as specified in [Section 2.3.6](#)) is required for certain sizing approaches or stormwater facility options. If total infiltration is not feasible, stormwater retrofits are allowed to use existing discharge systems and do not need to meet the stormwater hierarchy for discharge criteria. At sites where the Simplified sizing approach is appropriate and possible and total infiltration is not expected to be feasible, infiltration testing is not required, and the site can use the existing discharge location. Examples of existing discharge locations include, but are not limited to, catch basins connected to offsite public systems or existing infiltration facilities.
- Applicants submitting stormwater retrofits as part of a development proposal should clearly note on project submittals and any permit applications that the project is an owner-initiated stormwater retrofit, what design storm sizing was used to size facilities, what existing discharge location is used, and how and where the proposed stormwater management facility will connect to the existing discharge location.
- Owner-initiated stormwater retrofits in the public right-of-way must, at minimum, use the Presumptive Approach, unless the Performance Approach is more appropriate. A stormwater retrofit in the public right-of-way may trigger other public works requirements, such as Portland City Code Title 11 requirements or sidewalk improvements.

City capital, operating or non-operating projects provide local or regional system-specific improvements as identified in an approved and adopted system or facilities plans. These projects include, but are not limited to, improved sewer capacity, improved water quality, habitat improvements for Endangered Species Act compliance, or other environmental requirements. The project's adopted goals to meet specific regulatory requirements may differ from SWMM requirements. In the absence of system or project specific goals, retrofits should meet the system-specific SWMM requirements for pollution reduction and flow control, as appropriate.

1.2.4 Exemptions

Certain development or project conditions are exempt from meeting stormwater management requirements. All exemptions are subject to BES review and must still identify a discharge location; exemptions may not be allowed in circumstances where regulatory permits or other municipal regulations may be violated if the exemption is allowed. The following circumstances are exempt from meeting stormwater management requirements:

- Temporary structures as defined by Portland City Code 17.38.
- Residential structures being re-built following fire damage, flooding, earthquake, or other natural disaster, as long as the structure is re-built at the same scale and discharging to the same disposal point. Expansions to the original footprint, such as an addition or alteration to the original structure, trigger stormwater management requirements for the new impervious area.
- Interior remodeling projects and tenant improvements.
- Maintenance activities, such as top-layer grinding (grind and overlay), repaving when aggregates or gravels are not exposed, or reroofing when the structure or existing plumbing is not altered. However, when an ecoroof or other stormwater management facility is added as part of a maintenance activity, the requirements for owner-initiated stormwater retrofits apply.
- Maintenance of existing culverts or water crossing structures in drainageways are exempt from drainage reserve requirements. Replacement of culverts or water crossing structures would trigger conveyance requirements through review of the proposed channel encroachment.
- Standalone projects that consist solely of safety improvements or to meet Americans with Disability Act standards for stairs, ramps, curbs, corners, or medians that install accessibility and pedestrian safety features. Examples include rapid flash beacons or concrete curb extensions for pedestrian accessibility or safety.
- Standalone projects that consist solely of linear utility trenching in paved public rights-of-way or on private property.
- Base repair of public streets where less than or equal to 50% of the street width is removed and repaved. If the 50% threshold is exceeded during the design phase, stormwater management requirements apply.

- Replacing catch basins or inlets that discharge to the same storm or drainage system are not considered a new connection or a new offsite discharge as long as the cumulative impact to the receiving system remains the same following project completion.
- Building soft surface trails within the drainage reserve encroachment area are exempt from drainage reserve requirements as long as they meet the [Portland Parks and Recreation Trail Design Guidelines](#).

Sidewalks and Driveways

Where it is not feasible for sidewalks and driveway aprons in the public right-of-way to drain into or sheet flow to a stormwater facility, tree well, or landscape strip in the public right-of-way, project designers are encouraged to use street trees for tree credit or to install pervious pavement with pre-approval from the Bureau of Transportation. Tree species and locations in the public right-of-way must be approved by Urban Forestry and Portland Bureau of Transportation through the Public Works Permit process. It is not expected that a separate stormwater management facility be constructed in the public right-of-way to serve only sidewalk or driveway apron areas in the public right-of-way.

Projects on private property that are otherwise subject to the requirements of the SWMM may be exempt from providing a separate stormwater facility for drainage basins that, in total, include less than or equal to 500 square feet of pedestrian-only impervious surface or residential driveway. Applicants must demonstrate that runoff from those basins cannot be routed to other proposed stormwater management facilities. Runoff from those basins must shed to adjacent vegetation or other pervious areas on property where feasible. This exception is still subject to BES review, the specific needs of the stormwater system proposed to receive the runoff, and other regulatory requirements.

Port of Portland Stormwater Design Standards Manual

Any development or redevelopment project at the Portland International Airport (PDX) that meets all of the following applicability requirements is required to meet the Port's Stormwater Design Standards Manual and is exempt from the SWMM:

- The project is located at PDX within the airfield security fence or is on Port-owned and operated property outside the fence (see Figure 1-4); and
- Stormwater is discharged entirely to the Port's storm sewer system.

The Port of Portland will issue a Service Agreement Letter for projects required to use the DSM. The Service Agreement Letter will confirm that the scope of the

project falls under DSM applicability and acknowledges the Port’s responsibility to ensure that the design, operations, and maintenance of the stormwater management facilities, source controls, and systems will meet DSM and MS4 permit requirements.

Figure 1-3. Potential Port of Portland Areas Exempt from the SWMM



Current as of 2016; official boundaries maintained by the Port of Portland; visit www.portlandmaps.com or contact Port of Portland staff to determine applicability of this exemption.

1.3 Stormwater Management Requirements

Portland has three primary types of systems for conveying and managing stormwater: infiltration, stormwater systems, and combined sewers. Portland's stormwater management requirements are system-specific and are used in order of preference via a stormwater infiltration and discharge hierarchy. [Section 1.3.1](#) establishes the City's stormwater hierarchy of how stormwater must be managed. The following sections correspond to the specific hierarchy categories and provide system-specific pollution reduction and flow or volume requirements:

- [Section 1.3.2](#) discusses impervious area reduction techniques, such as ecoroofs, pervious pavement, and tree credit.
- [Section 1.3.3](#) establishes the stormwater requirements for surface and subsurface infiltration (stormwater hierarchy categories 1 and 2), including Underground Injection Control requirements.
- [Section 1.3.4](#) establishes the stormwater management requirements for discharge to surface water, stormwater or drainage networks, and stormwater systems (stormwater hierarchy category 3).
- [Section 1.3.5](#) establishes the stormwater management requirements prior to discharge to the combined sewer system (stormwater hierarchy category 4).

[Section 1.3.6](#) discusses stormwater master planning and [Section 1.3.7](#) summarizes the stormwater management requirements for all three types of systems (infiltration, stormwater system, and combined sewer).

The City's stormwater management approach relies on the use of vegetated infiltration facilities to comprehensively meet multiple requirements. Vegetated facilities meet infiltration, pollution reduction, and flow and volume control requirements for system-specific stormwater requirements. Vegetated facilities, included in [Chapter 2](#) under the Simplified Approach or Presumptive Approach, are assumed to meet Portland's pollution reduction requirements.

Vegetated facilities filter and infiltrate stormwater, removing pollutants as the water flows through the vegetation and soil. Vegetation may be one of the most cost-effective and ecologically efficient means available to improve water quality. It shades watercourses, which lowers water temperature; captures and absorbs water in leaves and roots, which reduces peak flows; and stabilizes soil by providing cover for disturbed soils. Vegetation also provides wildlife habitat and scenic and aesthetic benefits.

As stormwater enters a vegetated facility, the vegetation slows the water down, allowing sediments to be trapped on the surface of the facility. Typically, the surface area of the facility is designed to allow stormwater to pond and evaporate while sediments settle into a layer of mulch and then soil. The mulch prevents soil erosion and retains moisture for plant roots. It also provides a medium for biological growth and the decomposition or decay of organic matter. The soil stores water and nutrients to support plant life. Bacteria, nematodes, and other soil organisms degrade organic pollutants such as petroleum-based compounds. They also help mix organic material, increase aeration, and improve water infiltration and water-holding capacity. Bacteria and other beneficial soil microbes process the majority of pollutants.

1.3.1 Infiltration and Discharge Hierarchy

Prior to development, most native soils have a sufficient duff layer and permeability to absorb and infiltrate rainwater. This is because of a combination of factors, including the structure of the soil, the connected pores and channels created by plant roots, and the presence of leaf litter and other organic matter. Because most rainstorms are not large enough to exceed the soil permeability and completely saturate the native and undisturbed soil, only a small percentage of water collects on the surface. Under these conditions, water that accumulates at the surface typically collects in rivulets that combine to form creeks, streams, and rivers.

Urbanization results in the loss of native soil conditions as a result of soil compaction and the creation of impervious surfaces, which disrupts the hydrologic cycle. Impacts include increased stormwater flow rates and volumes as well as decreased groundwater recharge and, consequently, low base flows into streams. Urbanization also has serious impacts on the quality of surface water and groundwater. As land is developed, impervious areas interfere with the natural biological processes of soil that remove impurities from the water and also increase stormwater runoff. The increased flows pick up pollutants from impervious areas and transport them downstream to receiving waters and the City sewer system.

Portland's infiltration and discharge requirements are designed to:

- Protect groundwater resources by preventing and removing pollutants from stormwater before discharging it into an underground injection control or other water pollution control facility.
- Protect watershed health by requiring infiltration wherever feasible in order to mimic pre-development hydrologic conditions.

- Minimize long-term costs to the City of treating stormwater flowing through a public wastewater treatment plants.
- Protect the capacity of downstream infrastructure.
- Minimize CSOs and basement sewer backups within the combined sewer system.

Feasibility

Stormwater must be infiltrated onsite to the maximum extent feasible, before any flows are discharged offsite. The term “onsite” refers to the limits of the project site, and is not a distinction between property and the right-of-way. For example, a residential development proposal could manage the runoff from the building onsite (on private property) via drywells and the runoff from the frontage improvements onsite (in the public-right-of-way) through a vegetated planter. While development proposals on property may be bound by the parcel or taxlot geometry, the term “onsite” can be used to describe meeting the stormwater infiltration discharge hierarchy for any type of project.

The appropriate use of infiltration depends on a number of factors, including soil type, soil conditions or contamination, slopes, and depth to groundwater. The discharge location is also site-specific and dependent on the availability and condition of public and private infrastructure. The feasibility of infiltration and the discharge location have a direct impact on the system-specific pollution reduction and flow control requirements for a site. Therefore, it is critical to determine the feasibility of infiltration and the discharge location before designing a stormwater management plan. Infiltration testing is required to determine the feasibility of onsite infiltration and the existing infiltration rate.

While many of the stormwater management facilities presented in [Chapter 2](#) aim to maximize infiltration, not every site can infiltrate all of the stormwater from large, intense rainfall events, as determined by a standard design storm. A design storm is a theoretical rainfall event at a specified recurrence interval with given rainfall depth over a given time period. Unless complete infiltration of Portland’s 10-year design storm (3.4 inches of rainfall over 24 hours) can be accomplished, an offsite discharge location must be identified.

Vegetated facilities are required to the maximum extent feasible. If a project proposes to use facilities other than those presented in [Chapter 2](#) for pollution reduction, the project designer must demonstrate through the Performance Approach that the proposal meets or exceeds the pollution reduction requirements.

BES has the authority to determine if infiltration is feasible, including approving or denying requests to infiltrate onsite or to discharge offsite from private and public properties or the public right-of-way.

Stormwater Hierarchy

Decisions regarding the degree of onsite infiltration and the discharge location (when complete onsite infiltration is not feasible) are based on the stormwater hierarchy, as shown in Figure 1-4 and Figure 1-5. Following any use of impervious area reduction techniques, the highest technically feasible category must be used (1 = highest, 4 = lowest), unless otherwise directed by BES. Project designers must provide the appropriate technical analysis and evaluation to demonstrate the need to move from Category 1 through each consecutive category.

It is the responsibility of the project designer to justify moving from one category to the next, based on technical issues or competing requirements. These circumstances are evaluated on a site-by-site basis. All circumstances are subject to BES review and approval. Even if full onsite infiltration is not feasible, partial infiltration via unlined facilities may still be safe and appropriate prior to offsite discharge. If onsite infiltration is not feasible, onsite stormwater management that overflows to an offsite discharge location is required.

Figure 1-4. Stormwater Hierarchy Illustration

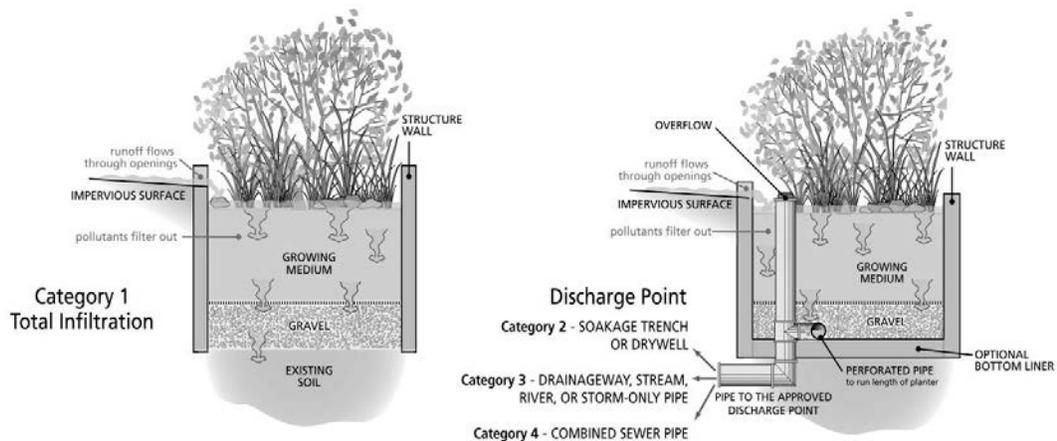
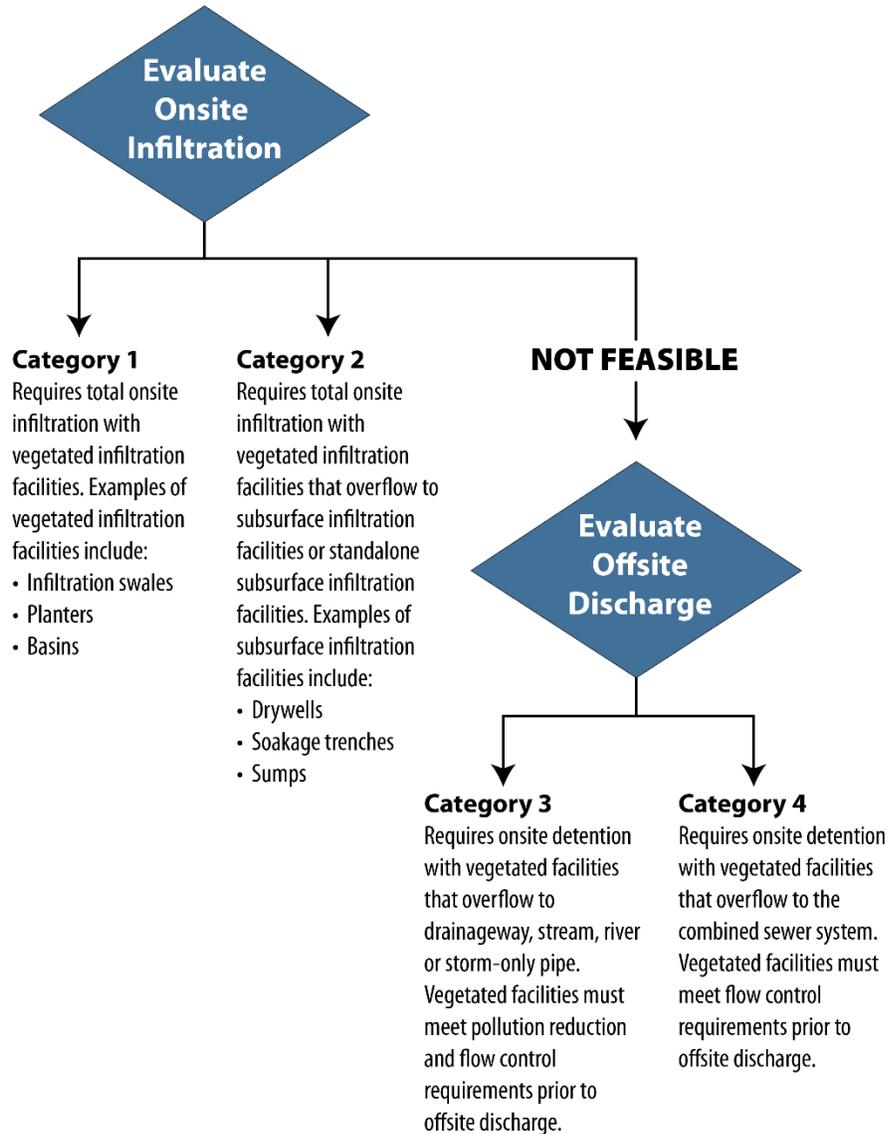


Figure 1-5. Stormwater Infiltration and Discharge Hierarchy

Impervious Area Reduction Techniques

Using impervious area reduction techniques can reduce the amount of impervious area that requires stormwater management. Examples of impervious area reduction techniques include ecoroofs, trees, and pervious pavement.



City of Portland Environmental Services ES1604

1.3.2 Impervious Area Reduction Techniques

Impervious area reduction techniques can help mitigate the impacts of development by reducing the amount of stormwater runoff generated. Impervious area reduction techniques can mimic the passive treatment of pre-development conditions and can reduce the amount of impervious area that requires stormwater management by intercepting rainfall directly.

Ecoroofs, trees, and pervious pavement are considered impervious area reduction techniques and should be considered first as site conditions allow. Use of impervious area reduction techniques are not required to meet system-specific stormwater requirements, but other site requirements or constraints may require their use in order to meet system-specific stormwater requirements. Ecoroofs and trees can be used without consideration of onsite infiltrate rates, while pervious pavement does require infiltration testing to determine feasibility. Impervious area mitigated by ecoroofs is allowed to overflow to an approvable offsite discharge location.

1.3.3 Infiltration Requirements (Categories 1 and 2)

Stormwater Infiltration and Discharge Hierarchy Categories 1 and 2 include the infiltration of stormwater onsite.

Onsite infiltration is required. The City may require a certified geotechnical engineer, engineering geologist, or other qualified individual to demonstrate that infiltration is not technically feasible. Infiltration may not be required under the following circumstances:

- The site is located within a wellhead protection area and must meet the Water Bureau's requirements for protection of groundwater resources (see [Section 1.1.3](#) for an overview of the Title 21 (Water) requirements). If infiltration is feasible, structural spill control may be required prior to infiltration facilities.
- The site has seasonally high groundwater of less than five feet below the lowest elevation of the infiltration facility.
- The site has low infiltration rates of less than 2.0 inches per hour as proven by infiltration testing.
- The placement of an infiltration facility does not meet site and slope setbacks as per [Chapter 2](#). All setback requirements are minimums and can be increased, based on the discretion of City of Portland staff.

- The site has suspected or known soil or groundwater contamination. See the [BES Source Control Manual](#) for more information. Full site assessment may be required to determine feasibility of onsite infiltration.

If infiltration is not feasible, onsite stormwater management that overflows to an offsite discharge location is required (see [Section 1.3.4](#) Stormwater System Requirements (Category 3) and [Section 1.3.5](#) Combined Sewer System Requirements (Category 4) for requirements for discharging to either of these offsite discharge locations). Where complete onsite infiltration is feasible, the following standards apply:

Surface infiltration facilities. Surface infiltration facilities must infiltrate Portland’s 10-year design storm (3.4 inches over 24 hours). When full, the facility drawdown time must not exceed 30 hours. [Chapter 2](#) provides detailed facility sizing and design procedures.

Infiltration sump systems. The peak flow rate from a 10-year storm must be managed with a safety factor of 2 applied. The intensity must correspond to the calculated time of concentration (5-minute minimum). See the *Sewer and Drainage Facilities Design Manual* for rainfall intensity charts. For 5-minute time of concentration, Intensity = 2.86 in./hr.

Drywells and soakage trenches. Drywell or soakage trench sizing requirements found in [Section 2.3.4](#) must be used. When full, the facility drawdown time must not exceed 30 hours. Drywells and soakage trenches must be able to meet boundary, site, slope, building, and structure setbacks.

Rooftop or pedestrian-only plaza runoff. Projects that infiltrate stormwater runoff directly from rooftops or pedestrian-only plazas using underground or subsurface infiltration (e.g., private soakage trenches or drywells) are not required to provide additional pollution reduction prior to subsurface infiltration.

Underground Injection Control (UICs)

UIC Regulations

This section provides general UIC information only. Complete UIC regulations, requirements, current exclusions or exemptions, and contact information are available on the [DEQ UIC Program](#) website. DEQ Water Quality Division UIC Program must provide authorization before constructing, operating, modifying, or decommissioning any UIC.

Additional information on protection of groundwater resources through Wellhead Protection Program Areas (WPA's) can be found at the [Portland Water Bureau Groundwater Protection Program](#) website.

Underground Injection Control (UIC) systems are regulated under the federal Safe Drinking Water Act (administered by DEQ) and the State Plumbing Code. DEQ regulates UICs under Oregon Administrative Rules 340-40 and 340-44.

DEQ defines a UIC as any system, structure, or activity that is intended to discharge fluids below the ground surface. UICs can pollute soil and groundwater if not properly designed, sited, and operated. Stormwater systems such as, but not limited to, sumps, drywells, and soakage trenches are examples of UICs subject to DEQ regulation. DEQ can also classify other systems as UICs, depending on the design. Additional information about UIC determination is available on the DEQ website noted above. Examples of systems that DEQ can classify as UICs are provided below, along with criteria to help determine when the system is or is not a UIC:

- DEQ generally does not currently classify surface infiltration facilities such as pervious pavements, swales, planters, and basins as UICs.
- An assemblage of perforated pipes, drain tiles, or other similar mechanisms, including French drains, designed and intended to collect and convey infiltrated stormwater to another disposal or discharge location, is not classified as a UIC. However, the final discharge location receiving stormwater from the collection or conveyance system may be classified as a UIC. If the final discharge location is below the ground surface, the system is generally classified as a UIC.
- Infiltration facilities whose depth is greater than its largest surface dimension are generally classified as a UIC.
- When pervious pavement is designed with perforated pipe(s) to convey the stormwater to another point of discharge, DEQ does not currently classify the system itself as a UIC; however, the point of discharge may be classified as a UIC.

When pervious pavement is designed with a trench that is deeper than it is wide or with perforated pipe(s) under the pervious pavement, DEQ may classify the pervious pavement as a UIC. Utility trenches such as water, sewer, and gas lines are exempt from this classification.

If it is difficult to determine whether the proposed stormwater system design is or is not a UIC, it is best to consult with DEQ.

DEQ UIC Registration

Owners or operators of new and existing public or private UICs are required to register and provide site inventory data to DEQ. UICs collecting runoff only from single-family or small multi-family (up to two attached units) residential roofs and footing drains are excluded from UIC authorization requirements.

This section of the manual focuses on proposed public or private UICs for new construction and redevelopment, including UIC closures. The difference between a public and private UIC is as follows:

- **Public UIC:** A public UIC collects stormwater from City-owned or managed facilities, including roofs, parking lots, and other impervious surfaces; and public rights-of-way owned or managed by the City of Portland.
- **Private UIC:** A private UIC collects stormwater from private property, including roofs, parking lots, and other impervious surfaces, and discharges it to an onsite UIC. The onsite UIC is managed by the private property owner.

DEQ UIC Rule Authorization

Private UICs are required to be rule authorized as described on the DEQ website. If the private system cannot be rule authorized, then a permit would be required. DEQ has issued a WPCF permit to the City to construct and operate public UICs as specified within the permit. The permit requires the City to develop and implement a comprehensive management plan that details how the City will construct, operate, and evaluate UICs to ensure compliance with permit requirements. Because of the City's permit, the registration and permitting process for proposed City-owned UICs is different than for rule authorization or permitting of private UICs.

Constructing new City-owned UICs. The City of Portland manages the registration and permitting for City-owned UICs proposed for construction, redevelopment, or decommissioning. To ensure a timely rule authorization process, it is critical for public works permit applicants to notify the City immediately once they have determined that UICs may be used for stormwater discharge from the public right-of-way. The City will complete the process in accordance with the requirements of

the City's WPCF permit. Notice to proceed will be given when the City determines that the proposed UIC meets permit requirements.

Constructing new private UICs. For private development or redevelopment using UICs for stormwater discharge, applicants must apply directly to DEQ for rule authorization or permitting before constructing the UIC. A City building or plumbing permit does not authorize the construction of a UIC on private property; only DEQ can authorize a UIC. DEQ processes UIC registration and rule authorization applications for UICs serving private property within two weeks of a completed application and receipt for payment. For questions regarding registration, application requirements, or payment, please refer to the [DEQ UIC website](#) for information, applications, and staff contacts.

Depth to groundwater investigations. Part of the rule authorization and permitting process requires both public and private UICs to have a minimum separation distance of 5 feet between the bottom of the UIC and the seasonal high groundwater level. Several areas within the City are known to have shallow groundwater. Within areas of known or suspected shallow groundwater, additional information about depth to groundwater (DTW) must be collected to ensure the bottom of the proposed UIC meets separation distance requirements.

If additional depth to groundwater information is requested, refer to [Section 2.3.6](#), Depth to Groundwater Investigation for requirements.

For public or private UICs proposed within the 50-foot groundwater contour of the estimated depth to seasonal high groundwater, the project designer must provide the site-specific DTW investigation. One of the following methods must be used to obtain the DTW measurement:

- Install a temporary piezometer.
- Use existing onsite or nearby high-quality shallow groundwater level data.

For DTW investigation installation, DTW measurement, and reporting requirements and criteria for using existing data, see [Section 2.3.6](#).

DEQ UIC Decommissioning Process. The decommissioning, or closure, of a UIC system requires submittal of a completed pre-closure notification application to DEQ prior to closure. The difference between decommissioning public or private UICs is as follows:

- Public UICs: BES manages the pre-closure application submittal process for City-owned UICs proposed to be decommissioned. The City will complete the

decommissioning process in accordance with the City's [UIC Management Plan, Appendix D: Decommissioning Procedure for UIC Systems](#).

- Private UICs: DEQ requirement for UIC decommissioning may be found on the DEQ website. A City building or plumbing permit does not authorize the decommissioning of a UIC on private property. If stormwater is redirected from a private UIC to a City stormwater or drainage system, that stormwater must meet the requirements of the SWMM, as per [Section 1.2, Applicability](#).

Discharge to UICs

BES will allow new or redeveloped impervious areas in the public right-of-way, private streets, driveways, or small parking lots to discharge to existing or new UICs without the installation of new or additional vegetated stormwater management facilities only if the UIC meets all of the following:

- New UICs must meet all current DEQ requirements and current standard design and capacity requirements as given in the current SWMM or the *Sewer and Drainage Facilities Design Manual*. New UICs do not need to be rule authorized prior to plan review.
- Existing public UICs must be compliant with all DEQ requirements as given in the City's WPCF Permit and must meet current design standards and capacity requirements as given in the current SWMM or the *Sewer and Drainage Facilities Design Manual*.
- The UIC must accept runoff only from areas draining from paved private streets or paved rights-of-way on residential streets that receive less than 1,000 trips per day; residential driveways; or from small parking lots that have less than 50 uncovered parking lot spaces and receive less than 1,000 trips per day.
- The UIC must meet current depth-to-groundwater requirements.
- Existing UICs must have available capacity to receive additional runoff. If existing facility records cannot determine capacity, BES may require testing of the UIC to determine available capacity.
- The UIC must include pollution reduction and spill control prior to underground injection. For UICs in the public right-of-way or on private streets, the UIC must have a sedimentation manhole built to current standards. For UICs in driveways or small parking lots, the UIC must have a lynch-style catch basin as approved by BDS. The project designer will be required to upgrade existing UICs to meet this condition.

If the UIC does not meet the characteristics above, a vegetated stormwater management facility will be required for pollution reduction prior to discharge to a UIC.

1.3.4 Stormwater System Requirements (Category 3)

Stormwater Infiltration and Discharge Hierarchy Category 3 includes managing stormwater onsite with discharge to a stormwater drainage or conveyance system. Stormwater drainage or conveyance systems include public or private ditches, constructed or natural drainageways, manmade channels, creeks, streams, seeps, springs, storm-only sewers, or rivers. Discharge to stormwater systems requires consideration of conveyance and capacity, flow control, and pollution reduction requirements, all of which may vary depending on the type and location of the receiving stormwater system. Stormwater management requirements protect local waterways from the cumulative impacts of development by limiting site and offsite impacts, controlling runoff and erosion, and maintaining capacity. Managing stormwater impacts through vegetated stormwater facilities and conveyance features also help meet additional City goals of protecting and enhancing biological diversity and habitat.

Conveyance Requirements

Stormwater systems have conveyance requirements that vary by the location and type of stormwater system. Project designers proposing to discharge stormwater to a stormwater system must evaluate the conveyance capacity of the receiving system (storm sewer, ditch, drainageway, etc.). BES staff may determine that additional requirements are necessary (such as infrastructure upgrades, flow control or drainage reserve width) if the receiving system does not have sufficient capacity to accept the proposed flows.

Discharge to or Modification of Onsite Drainageways

A drainageway is a constructed or natural channel or depression which may collect and convey water at any time. Drainageways convey flow and minimize scouring, erosion and water quality degradation in local stream systems. Drainageways must be carefully considered when properties are developed, regardless of whether the drainageways are naturally occurring or have resulted after water has been moved, shifted, or modified as part of earlier site disturbance, developments or actions.

BES will determine if a drainageway exists by using the following tools: satellite imagery; existing development plans; aerial photos; LiDAR maps; hydrologic, hydraulic and flow models; existing infrastructure; topography; physical site

characteristics including vegetation, soils, and habitat; information gathered from site visits; and other information. During site visits, BES will look for indicators of stormwater or natural conveyance (see factors listed in [Section 2.1.2](#)). Indicators may be present in wet or dry seasons or both. The determination of an onsite drainageway does not depend on water being present, only on factors that demonstrate the presence of water and flow at some point in time.

DRAINAGE RESERVES

A drainage reserve is the regulated area adjacent to and including a drainageway that must be preserved in a natural state to protect the hydrology and water quality of the drainageway. A drainage reserve is a key element in maintaining conveyance between properties; protecting public and private stormwater infrastructure, property and structures; and protecting and maintaining the quality of surface waters.

BES will place a 30-foot wide drainage reserve over any portion of a property with flow conveyance features that meet the drainageway definition and that are not adequately protected by environmental protection zoning or land use requirements. If the environmental protection overlay zones or tracts are insufficiently sized to cover the drainageway width, drainage reserves may be placed in conjunction with these other protection methods to ensure adequate protection of the full desired width for flow conveyance. In making a determination to place a drainage reserve over a drainageway, BES will evaluate the factors listed in [Section 2.1.2](#). Placement of a drainage reserve may be based on any combination of indicators; not all of the indicators must be present.

A drainage reserve is a no-disturbance area for the purposes of the proposed site development, unless approved by BES. A drainage reserve acts as a no-disturbance area, not an easement, providing a buffer that protects the drainageway from development impacts. Similar to a setback, no structures are allowed in drainage reserves, unless the disturbance is approved by BES.

BES retains the authority to modify or remove drainage reserves if the drainageway poses or may pose a risk to public health, safety or the environment. In those instances, BES may allow drainageways to be modified to protect public health and safety, in compliance with Portland City Code Title 24 and 33 regulations.

Drainage reserves run with the land, meaning that the benefits and responsibilities of the drainage reserve are bound to the property and are passed on to any

subsequent owners of the property. Drainage reserves must be protected during the course of any currently proposed or future development to ensure the continuation of flow conveyance and other benefits. Drainage reserves must be protected and maintained to meet the following standards:

- The limits of the drainage reserve must remain in natural topographic conditions to the maximum extent feasible, as determined by BES.
- Vegetation within the drainage reserve limits must not be on Portland’s list of nuisance plants or prohibited plants. Any proposed vegetation must be native vegetation, especially for erosion control and water quality purposes.

Applicants are required to meet the standards for drainage reserves (see [Chapter 2](#)) or request an encroachment to review site-specific conditions (see [Section 2.4.7](#) Drainage Reserve Submittal Guide for encroachment submittal requirements). If any encroachments into the drainageway channel or drainage reserve are proposed, identification of the upstream tributary drainage and a downstream analysis must be provided to the City to determine whether there will be any impacts to the drainageway conveyance, water quality, or any public infrastructure within the drainage. The analysis required will depend on the cumulative impact of problems identified within the basin and the size of the planned project. Because drainageways serve important hydrologic, hydraulic, and water quality functions for small waterways, BES may require that applicants demonstrate that the proposed encroachments do not affect storage or conveyance volumes or the water quality of the drainageway.

Offsite Discharge to Surface Flow

Where stormwater is discharged to an offsite surface flow conveyance facility, such as a ditch, drainageway, stream, or river, the following standard applies:

- Beginning at the point of discharge from the site, the surface conveyance facility must have the capacity to convey flows from the 25-year design storm from all contributing upstream drainage areas. If the offsite surface flow conveyance facility is in the public right-of-way or owned or maintained by the City of Portland, the Sewer and Drainage Facilities Design Manual requirements for freeboard also apply.

Offsite Discharge to Piped Flow

Where stormwater is discharged to an offsite piped conveyance facility, such as a storm sewer, the following standards apply:

- For new development or redevelopment with an increase in net impervious area, beginning at the point of discharge from the site, the piped conveyance facility must have the capacity to convey flows from the 10-year storm from all contributing upstream drainage areas without surcharge. The piped conveyance facility may surcharge during the 25-year storm, but the hydraulic grade line must remain below ground surface level.
- Sewers in the Cascade Station/Portland International Center and Columbia South Shore Plan Districts must have the capacity to convey flows from the 25-year storm without surcharge.
- For redevelopment with no net increase in impervious area, existing downstream pipe conveyance facilities may be allowed to surcharge under certain circumstances.

Flow Control Requirements

Stormwater systems have flow control requirements which vary by location and type of stormwater system. The basic concept for flow control (detention and retention) is that water from developed areas is managed with a variety of techniques and released to downstream conveyance systems at a slower rate and lower volume. Managing flows in this way attempts to mimic the natural rainfall runoff response of the site in an undeveloped state, protecting downstream properties, infrastructure, and natural resources from the increases in stormwater runoff peak flow rates and volumes that result from development.

DETENTION AND RETENTION

Detention facilities store stormwater and release the water slowly. In the case of surface vegetated detention facilities, stormwater is evapotranspired, reducing the total volume of water released by the facility.

Retention facilities also store stormwater. Rather than storing and releasing the entire runoff volume, however, the facility permanently retains a portion of the water onsite. The water infiltrates and recharges the groundwater aquifer and, in the case of surface retention facilities, evaporates or is absorbed and used by vegetation. In this way, retention facilities reduce the total volume of water released by the facility.

Systems such as pervious pavement, ecoroofs, planters, swales, and other surface vegetated facilities are particularly effective in lowering the overall runoff volume and reducing the amount of time (duration) and frequency of the peak flow rate. In

addition, by infiltrating stormwater, vegetated retention systems recharge groundwater that serves as the base flow for streams during the dry season. Stream systems that require erosion protection, including streams with salmonid habitat, warrant the use of retention systems. Where retention systems cannot be used, detention systems that control the duration of the geomorphically significant flow (i.e., flow capable of moving sediment) must be used. Such detention systems lower release rates and must be designed to protect the stream channel.

Time of concentration (the time it takes rainfall to accumulate and run off a site) is another important factor in determining hydraulic impacts created by development on the receiving system. Flow rates and volume from individual sites may be controlled, but when they are combined quickly in fast-flowing conveyance pipes, the effect will still be increased in-stream flow rates and volumes in the receiving system. Breaking flow patterns up into retention systems helps increase a site's time of concentration and lessens impacts on the receiving system.

The City's flow control requirements aim to ensure that post-development storm flows leaving the site:

- to the maximum extent possible, mimic the storm flows of the site prior to development
- do not exceed the capacity of the receiving system or water body
- do not increase the potential for stream bank and stream channel erosion
- do not add significant volume to an existing closed depression
- do not create or increase any upstream or downstream flooding problems

Flow control standards vary, depending on the point of discharge. The base standard must be sufficient to maintain peak flow rates at their predevelopment levels for the 2-year, 5-year, and 10-year, 24-hour design storms.

Flow control requirements when discharging to a stream or drainageway.

Most tributary streams in Portland show evidence of excessive stream bank and channel erosion. Any development that discharges stormwater offsite that eventually flows to a tributary stream must be designed to a more restrictive requirement to reduce the potential to further exacerbate in-stream erosion problems. This applies to all tributaries and storm sewers that drain to streams or overland storm drainage systems within the Portland area except the Columbia Slough, which is regulated by Multnomah County Drainage District.

Flow control in these areas should avoid discharging flows that will cause channel erosion. Channel-eroding flow varies from stream to stream. Unless more specific data are available, the City assumes that channel-eroding flow is one-half of the 2-year, 24-hour pre-development design storm peak flow. The 2-year, 24-hour post-development peak flow rate must be restricted to one-half of the 2-year, 24-hour pre-development design storm peak flow. The facilities must also control the post-development flows from the 5-, 10-, and 25-year, 24-hour design storm peak flows to the predevelopment 5-, 10-, and 25-year design storm at 24-hour levels.

Flow Control Exemptions. New development and redevelopment projects may be exempt from flow control requirements if they discharge stormwater runoff directly into the Willamette River, Columbia River, or Columbia Slough through a private storm sewer, separated public storm sewer, or Multnomah County Drainage District system with available capacity.

When flow control is not required, facilities may be downsized, but they still must be designed to meet pollution reduction requirements. (Facilities sized with the Simplified Approach are presumed to meet both flow control and pollution reduction requirements.) When facilities are downsized through the Presumptive or Performance Approach to meet pollution reduction requirements only, flows above the pollution reduction design flow must be routed around the facility with an approved diversion structure, unless otherwise approved by BES.

Pollution Reduction Requirements

The City of Portland has the following pollution reduction requirements:

- Seventy percent removal of total suspended solids (TSS) is required from 90 percent of the average annual runoff. (See [Appendix A.3](#) for more detailed information about the formulation of Portland’s pollution reduction standards.)
- In watersheds that have established total maximum daily loads (TMDLs) or that are on DEQ’s 303(d) list of impaired waters, stormwater management facilities must be capable of reducing the pollutant(s) of concern, as approved by BES.

Total Suspended Solids (TSS) Requirements

TSS comprises particles that are too small or light to settle out from stormwater under high flow conditions. In many ways, TSS is a surrogate measure for water quality; therefore, the percentage of TSS removal from stormwater is an accepted standard to measure pollution reduction.

- Projects may use facilities from the Simplified or Presumptive Approach (as specified in [Chapter 2](#)) to meet the 70 percent removal of TSS from 90 percent of the average annual runoff, without submitting additional data on TSS removal.
- If a project does not use facilities from the Simplified or Presumptive Approach, the project designer must demonstrate through the Performance Approach (as specified in [Chapter 2](#)) that the development proposal meets the specific TSS removal requirements.

Total Maximum Daily Load (TMDL) and 303(d) List Requirements

Development projects in watersheds with established TMDLs or on DEQ's 303(d) list (see Figure 1-7. TMDL and 303(d)-Listed Parameters by Watershed) may use vegetated facilities from the Simplified Approach or Presumptive Approach (as specified in [Chapter 2](#)) without submitting additional data on pollutant removal.

- If a project in a watershed with established TMDLs or on the 303(d) list does not use facilities from the Simplified or Presumptive Approach, the project designer must demonstrate through the Performance Approach (as specified in [Chapter 2](#)) that the development proposal is consistent with specific TMDL or 303(d) requirements. The base requirement is to select and use a stormwater management facility that is capable of reducing the pollutants of concern, as approved by BES. TSS may be used as a surrogate for aldrin, chlordane, DDE, DDT, dieldrin, dioxin, and PCBs.

Rate and Volume Pollution Reduction Standards

Facilities sized by routing a hydrograph through the facility (rate-based facilities with a storage volume component) may use a continuous simulation program (using a minimum of 20 years of Portland rainfall data) or a single-storm hydrograph-based analysis method, such as the Santa Barbara Urban Hydrograph (with 0.83 inches of rainfall over 24 hours and NRCS Type 1A rainfall distribution), to demonstrate treatment of 90 percent of the average annual runoff volume. (See [Appendix A.3](#) for more detailed information about the formulation of Portland’s pollution reduction standards.)

Volume Pollution Reduction Standards

Volume-based facilities are designed to treat runoff generated by 0.83 inches of rainfall over 24 hours (with NRCS Type 1A rainfall distribution) with a volume of basin/volume of runoff ratio of 2 and will treat roughly 90 percent of the average annual runoff.

Flow-Rate Pollution Reduction Standards

Flow rate-based pollution reduction facilities, such as grassy swales or sand filters, must be designed to treat runoff generated by a rainfall intensity of 0.19 inches per hour at a 5-minute Time of Concentration. Table 1-2 provides the rainfall intensities for a longer Time of Concentration.

Table 1-2. Rainfall Intensity to Calculate Treatment of 90% of Portland’s Average Annual Runoff

| Site’s Time of Concentration (Minutes) | Rainfall Intensity (inches per hour) |
|--|--------------------------------------|
| 5 | 0.19 |
| 10 | 0.16 |
| 20 | 0.13 |

The rainfall intensities must be to calculate pollution reduction runoff rates for rate-based pollution reduction facilities.

Manufactured Stormwater Treatment Technologies

There may be sites where it is not technically feasible to use stormwater facilities under the Simplified or Presumptive Approach to meet all stormwater management requirements. Subject to BES approval, manufactured stormwater treatment technologies may be considered for sites in separated storm sewer areas where

slope and infiltration limitations prevent the use of any reasonably located vegetated facilities (lined or unlined). Manufactured stormwater treatment technologies may also be considered where site constraints limit or prevent facility sizing for the water quality storm (0.83 inches in 24 hours). In those instances, approved manufactured stormwater treatment technologies may be proposed for pollution reduction.

BES maintains a list of approved manufactured stormwater treatment technologies (see [Chapter 2](#)). Project designers may select manufactured stormwater treatment technologies that are on the approved list and use the Performance Approach. Manufactured stormwater treatment technologies not on the approved list must be designed under the Performance Approach and require site-specific review and approval.

Approved MSTTs

The list of approved manufactured stormwater treatment technologies is available on the BES website at <http://www.portlandoregon.gov/bes/swmm>.

1.3.5 Combined Sewer System Requirements (Category 4)

Stormwater Infiltration and Discharge Hierarchy Category 4 includes managing stormwater onsite with offsite discharge to a combined sewer system. Substantial stormwater volumes in the combined sewer system may result in sewer releases to surface water, streets, and basements. Stormwater that enters the combined sewer system during low-flow periods is treated at the City's wastewater treatment plants using energy and other resources. For these reasons, it is important to limit the quantity of stormwater entering the combined sewer system. Projects in combined sewer areas are required to infiltrate stormwater onsite to the maximum extent feasible. Vegetated stormwater facilities must be used to the maximum extent feasible.

Project designers proposing to discharge stormwater offsite to a combined sewer system must evaluate the capacity of the offsite receiving system. BES staff may determine that additional onsite flow or volume control is required if the combined sewer system does not have sufficient capacity to accept the proposed flows.

For developments that are served by combined sewers but are unable to achieve more preferred stormwater hierarchy categories, the following requirements apply:

- BES will review development and redevelopment plans to ensure that discharge to a combined sewer system will not increase the risk of an overflow event, basement sewer backups, or diversion to a surface water body, except as intended by the municipal system’s design. Additional requirements may apply depending on the scope and location of the project.
- Detention facilities must be designed to control post-development flows from the 25-year peak flow to the pre-development 10-year peak flow rate.
- For new development or redevelopment with an increase in net impervious area: Beginning at the point of discharge from the site, the piped conveyance facility must have the capacity to convey flows from the 10-year storm from all contributing upstream drainage areas without surcharge. The piped conveyance facility may surcharge during the 25-year storm, but the hydraulic grade line must remain below ground surface level. Combined sewers must have the capacity to convey flows from the 25-year storm without surcharge.
- For redevelopment with no net increase in impervious area: Existing downstream pipe conveyance facilities may be allowed to surcharge under certain circumstances.

In the combined sewer system where flow control is critical to protecting sewer capacity and preventing sewer backups and street flooding, both infiltration and lined systems are very useful tools in reducing risk. For projects in the public right-of-way where full onsite infiltration is not feasible and that propose to discharge to the combined sewer system:

- Facilities that provide infiltration (unlined or otherwise open-bottom) are preferred.
- Lined stormwater facilities and/or piped overflows should only be used where there are local or regional capacity problems and where flow control and other benefits of lined systems have been identified. Stormwater facilities are not allowed to have overflow pipes that connect directly to a combined sewer main without the use of a manhole or other structure unless the project designer can demonstrate that odors will not be conveyed to the surface.
- If there are no local or regional capacity problems, impervious area reduction techniques, such as street trees or pervious pavement, should be prioritized over lined stormwater facilities. If impervious area reduction techniques are not feasible, then a request to pay an Offsite Stormwater Management Fee should be made through the Special Circumstances process ([Section 1.5](#)).

1.3.6 Stormwater Master Planning

Large campus or district-type developments may develop a stormwater master plan to guide phased development over a long period of time. This may include educational, medical, or religious institutions, ecodistricts, large site master plans, planned developments, or other master plans for large development areas. Stormwater master plans may be a required condition of a development agreement or conditional use approval. A stormwater master plan should lay out current and proposed conditions and identify a phased approach to bridge the two conditions. This may include building stormwater facilities in advance of development, discharge to existing stormwater management facilities, incorporating shared facilities, or planned upgrades to existing or proposed facilities to account for managing additional stormwater runoff.

A stormwater master plan may have larger design flexibility within the geographic extent of the master plan boundaries (e.g. the entire master plan area would be considered “onsite”), but would still need to meet the SWMM system-specific requirements at the point of discharge leaving the master planned area during each phase. The master plan may include other land other than is currently controlled by the property owner, but those sections of the master plan would not be able to be implemented until so controlled. Otherwise, if multiple property owners are involved, the stormwater master plan would need to include development agreements; easements; code, covenants and restrictions (CC&Rs); or other binding agreements that would indicate future commitments to implement the stormwater master plan prior to conditional use or other land use approval.

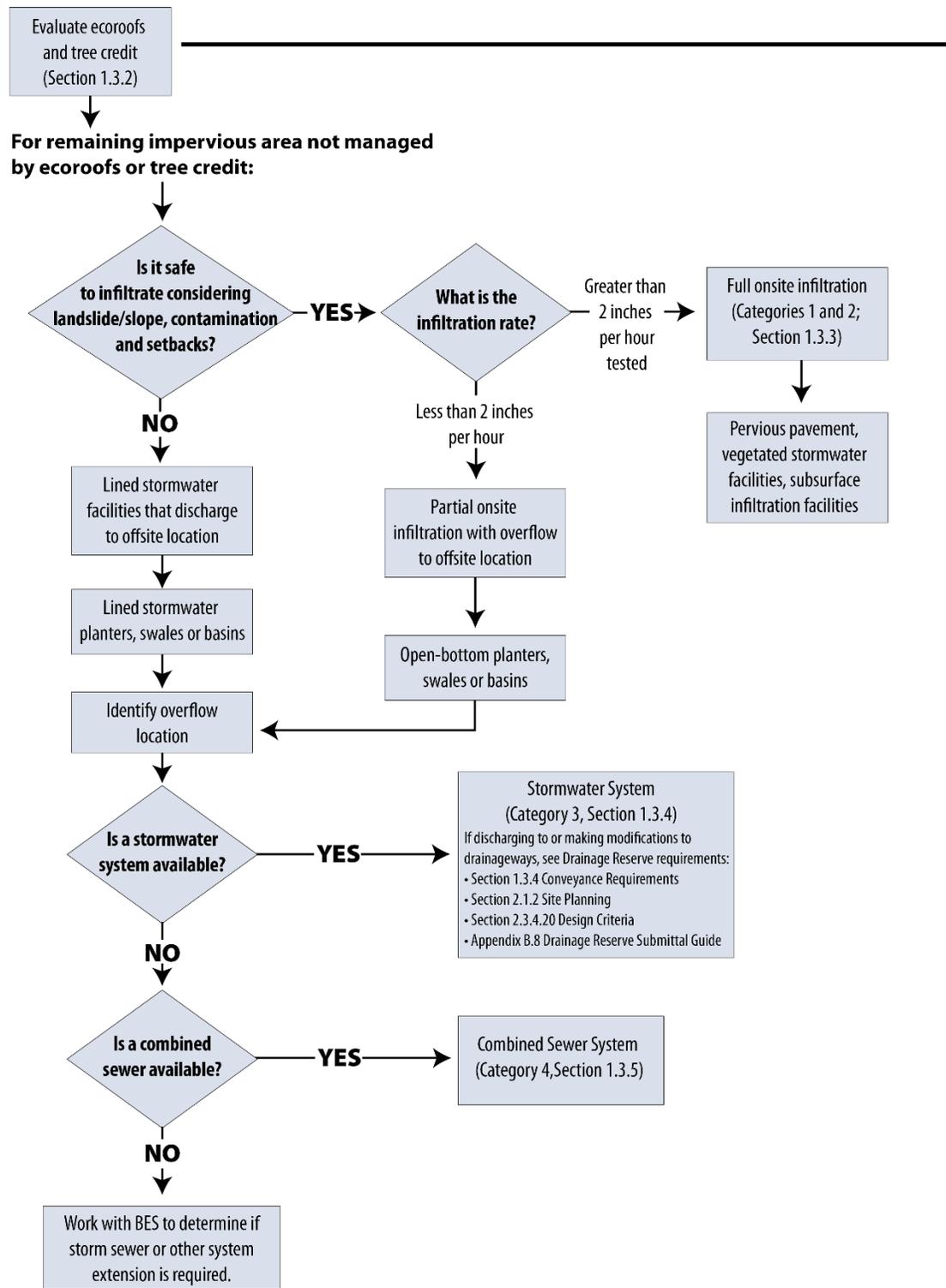
1.3.7 Summary of Stormwater Management Requirements

Projects that meet the applicability thresholds must meet the infiltration and discharge requirements for the impervious area draining to the discharge location, as specified in the stormwater hierarchy. Stormwater management requirements are specific to the receiving stormwater system to which the stormwater will discharge (see Table 1-3 and Figure 1-7). Vegetated facilities must be used to the maximum extent feasible. All projects must comply with Operations and Maintenance requirements.

Table 1-3. Summary of Stormwater Management Requirements

| Stormwater Hierarchy Category | Stormwater Management Requirement (unless otherwise exempt) |
|--|--|
| Impervious Area Reduction Technique | No additional requirements for areas managed by ecoroofs, pervious pavement, or tree credit. |
| Category 1: Vegetated infiltration facility with no overflow | Infiltrate the 10-year design storm. |
| Category 2: Vegetated facility or pervious pavement with overflow to subsurface infiltration facility (sump, drywell, soakage trench) | Infiltrate the 10-year design storm and meet underground injection control requirements. |
| Category 3: Vegetated facility with overflow to drainageway, stream, river, or storm-only pipe | <p>Pollution reduction required:</p> <ul style="list-style-type: none"> • Must achieve 70 percent TSS removal from 90 percent of the average annual runoff. • In watersheds with a TMDL or on DEQ’s 303(d) list of impaired waters, must use a pollution reduction facility that will reduce pollutants of concern. <p>Flow control required for discharge to surface water bodies directly or via stormwater systems, such as ditches or drainageways:</p> <ul style="list-style-type: none"> • 2-year post-development peak runoff rate to one-half of the 2-year pre-development peak rate • 5-year post-development peak runoff rate to 5-year pre-development peak rate • 10-year post-development peak runoff rate to 10-year pre-development peak rate • 25-year post-development peak runoff rate to 25-year pre-development peak rate <p>Flow control required for discharge to storm-only sewers:</p> <ul style="list-style-type: none"> • Maintain peak flow rates at their pre-development levels for the 2-year, 5-year, and 10-year, 24-hour runoff events. |
| Category 4: Vegetated facility with overflow to combined sewer | <p>Flow control required:</p> <ul style="list-style-type: none"> • Limit the 25-year post-development peak runoff rate to the 10-year predevelopment peak rate |

Figure 1-7. Navigating the Stormwater Infiltration and Discharge Hierarchy to meet Stormwater Management Requirements



City of Portland Environmental Services ES1604

1.4 Operations and Maintenance Requirements

All stormwater management facilities, conveyance features and related components implemented or protected as per the SWMM must be operated and maintained in a way that preserves intended functionality. Chapter 3 contains the Operations and Maintenance (O&M) standards and specifications that meet these requirements. Chapter 3 also contains the submittal guides that establishes the information and documentation that must be submitted to demonstrate compliance with the standards and specifications of Chapter 3. The O&M submittal requirements vary by design approach and whether the facility or conveyance feature is located on private or public property or in the public right-of-way. An O&M Plan is required for conveyance features on properties undergoing development proposal review, regardless of whether or not it is directly associated with a stormwater management facility. An O&M submittal may consist of forms, standard O&M plans, stormwater facility and conveyance feature site plans, inspection schedules, maintenance triggers and methods, and other information that specifies operations and maintenance activities.

Stormwater facilities and conveyance features on property (parcels or tax lots either privately or publicly owned) are the responsibility of the property owner(s). The property owner(s) must submit O&M information to the City for approval and record it with the appropriate County for all required stormwater management facilities, conveyance features and impervious area reduction techniques.

- If multiple properties share one onsite private stormwater system, property owner(s) for each property must record and file the O&M submittal. All properties and property owners that are served by the onsite stormwater system jointly own it and are equally responsible for its O&M.
- If a property served by an onsite private stormwater system is subsequently divided, a new O&M submittal must be approved at the time of BES review and recorded for each newly created parcel and/or tax lot that was previously part of the original parcel or tax lot.

Stormwater facilities in the public right-of-way or in public easements are the responsibility of the permittee until accepted by the City following completion of a 2-year warranty period at the conclusion of the public improvement process or Public Works Permit. The two-year warranty period begins at the time of signing the certificate of completion for the public works project and provides proper establishment before the City assumes ownership and/or maintenance of the

stormwater facility. During the warranty period, regular maintenance tasks must be performed; deferred maintenance may result in extension of the warranty period if City inspection determines that the facilities are not established as per the requirements in [Chapter 3](#).

For public easements or stormwater tracts, BES maintains the public stormwater facility following acceptance, and the property owners continue to maintain the tract itself and any associated features, such as access ways, additional landscaping, or fencing. Designation of maintenance responsibility will be determined in a maintenance agreement recorded at plat approval as per the approval of both BES and BDS.

A Public Works Permit Permittee may enter into an agreement with the Watershed Revegetation Program to maintain the vegetation in the future public stormwater facility during the warranty period, but this does not exempt the permittee from other O&M requirements. See [Section 3.2](#) for more information about establishment of public stormwater facilities.

O&M of a stormwater facility or conveyance feature is documented through an inspection and maintenance log. In general, the log must note all inspection dates, the components inspected, and any maintenance or repairs made. The logs must document deficiencies and corrective actions taken to keep structural and vegetative components in good working order. The City may accept work orders, invoices, or receipts in lieu of an inspection and maintenance log.

1.4.1 Exemptions from O&M Submittal Requirements

Single- or dual-family unattached residences are not required to provide an O&M submittal if a drywell or soakage trench is the only stormwater facility on the building or development permit.

For City of Portland or Port of Portland projects that involve building or other development permits, an O&M submittal will be reviewed by the City prior to permit issuance. The City and the Port are not required to record O&M submittals with the County for stormwater management facilities required by the City's SWMM.

1.4.2 Operations and Maintenance Enforcement

The City has the right to ensure site compliance with the recorded O&M submittal filed with the City. City Code sections 17.38.040 D, 17.38.043 and 17.38.045 authorize BES right of entry for inspections, the ability to issue a code violation, and the ability to take enforcement actions and levy civil penalties.

The [Maintenance Inspection Program](#) provides post-construction inspections of stormwater facilities on private property. The administrative rules governing inspections and enforcement are the Maintenance Inspection Program Administrative Rules ([ENB-4.31](#)) and the BES Enforcement Program Rules ([ENB-4.15](#)). In general, BES inspectors will strive to work with site owners and operators to ensure proper facility O&M. If technical assistance does not yield tangible O&M improvements, BES may take enforcement action. BES staff inspects sites to verify that the property owner is properly operating and maintaining stormwater management facilities. Upon completion of an inspection, the inspector will provide a report addressed to the property owner or designated responsible party that outlines any required corrective action, deadline to correct, and City notification (if needed).

Unauthorized encroachments into drainage reserves or failure to maintain drainageways, drainage reserves, or encroachments into drainage reserves as per the recorded operations and maintenance plan is a violation of Portland City Code 17.38. BES will respond to, investigate, and resolve complaints about drainageways, drainage reserves, or encroachment to drainage reserves.

1.4.3 Revisions to Recorded O&M Submittals

Property owners must consult with the [BES Maintenance Inspection Program](#) to determine if a permit and/or a new O&M submittal is required prior to making onsite stormwater system or stormwater management facility modifications. Stormwater system or individual stormwater facility modifications subject to City review and approval include changes to the discharge location, source of runoff, or structural or vegetated components.

The City may require property owners to record a new O&M submittal if the O&M submittal on file with BES is inaccurate or otherwise insufficient. The property owner must submit a draft O&M submittal to the City and receive approval prior to recording it with the County. A final recorded O&M submittal must be filed with BES.

Additionally, when applicable, updates to O&M submittals must meet City approval and approved submittals must be filed with BES. The City may require property owners to record updated O&M submittals, site maps, or facility details with the County and submit a recorded copy to BES.

Facility owners are encouraged to follow O&M maintenance activities in the current version of the SWMM.

1.5 Special Circumstances

Special circumstances on a proposed site may make it impractical to meet the stormwater management requirements to the standards specified in this chapter. BES manages a Special Circumstances process to review requests either to meet stormwater management requirements in alternative ways or to pay an Offsite Stormwater Management Fee in lieu of building a stormwater facility as part of the project.

BES uses collected Offsite Stormwater Management Fees to construct stormwater management facilities to meet system-specific needs. The Offsite Stormwater Management Fee is calculated based on the average construction costs for the City to install a stormwater management facility through retrofitting existing development. The methodology and the rate are published and adopted through BES's annual budget process and are listed with the current fiscal year's [Sewer and Drainage Rates and Charges](#). Requests submitted following permit issuance will be charged the Post-Permit Issuance Offsite Stormwater Management Fee.

The Special Circumstances request must demonstrate why a stormwater facility is not technically feasible. The Special Circumstances request must account for all of the development and stormwater runoff from the site, including any partial stormwater management or impervious area reduction techniques. Project designers should consider impervious area reduction techniques, such as ecoroofs, tree credit, and pervious pavement, before submitting a Special Circumstances request. If site conditions are appropriate, the use of impervious area reduction techniques can reduce the required size of or eliminate the need for a stormwater management facility.

Stormwater management within the site must be achieved to the maximum extent feasible, as approved by BES, before any facilities outside of the proposed site or payment of the Offsite Stormwater Management Fee will be allowed. The project designer may propose alternatives to meeting all or a portion of the stormwater management obligations in other ways, such as in the public-right-of-way or outside the geographic limits of the development proposal, improvement, or site (e.g. stormwater credit trading). A project designer can request to pay an Offsite Stormwater Management Fee instead of building a stormwater management facility for some or all of the stormwater management requirements for the project.

If BES approves a Special Circumstances request, the project designer must construct an appropriately sized facility outside of the proposed site or pay an Offsite

Stormwater Management Fee prior to BES review and approval of the proposed development proposal. The Offsite Stormwater Management Fee may be prorated to account for portions of the stormwater management requirements that were met. Tree credit or other impervious area mitigation measures can still be utilized even if use of the Offsite Stormwater Management Fee is approved. Tree credit will be subtracted from the unmanaged impervious area prior to calculation of the Offsite Stormwater Management Fee.

No exceptions to meeting the stormwater management requirements are allowed. Going through a land division, partition, or property line adjustment does not exempt a property from stormwater management requirements – small sites are still required to meet stormwater management requirements and the size of the lot itself is not an allowable reason to grant a Special Circumstances requested use of the Offsite Stormwater Management Fee. Similarly, not being able to fully infiltrate stormwater onsite does not exempt a site from meeting stormwater requirements for the entire site prior to offsite discharge.

The Special Circumstances decision is valid for two years but is nullified if the area of development or redevelopment or other project circumstances change.

If a Special Circumstances applicant disagrees with the issued Special Circumstances decision, the applicant has a right to request a modification to the decision via an Administrative Review as outlined in City Code 17.38. Following the decision of the Administrative Review Board, the applicant has the right to appeal to the Code Hearings Officer. See [Section 1.6](#) for more information about Administrative Reviews and Appeals.

1.5.1 Special Circumstances Submittal Requirements

The [Special Circumstances Form](#) is required to request consideration for special circumstances.

Special Circumstances are reviewed by the BES Systems Development supervisors and the BES Stormwater Management Manual Manager or designee. The BES Stormwater Management Manager or designee will issue a decision letter that outlines general findings, the decision, and any instructions or conditions that must be met prior to the next approval milestone. If the Offsite Stormwater Management Fee is approved, any tree credit, impervious area reduction measures, or other stormwater management credit will be pro-rated prior to calculation of the fee. The Offsite Stormwater Management Fee is calculated per square foot of unmanaged impervious area.

If BES approves a Special Circumstances request, the applicant must follow instructions in the decision letter. For example, construction of an offsite stormwater management facility or payment of the Offsite Stormwater Management Fee would need to be complete prior to permit issuance.

[How to prepare a Special Circumstances Application](#)

No application will be reviewed unless it is complete. A complete special circumstances application consists of the following elements:

- Completed [Special Circumstances Form](#).
- One set of plans (site plan and any necessary details).
- Special Circumstances Application Fee (if applicable).
- Supplemental information specific to the project request.

It is critical that information provided in the special circumstances application be clear, concise, accurate, and complete. Each special circumstances request must stand on its own merit and will be reviewed based on the specific conditions related to the project under consideration.

[Special Circumstances Form](#)

The [Special Circumstances Form](#) consists of the following sections:

- Project information, including development or improvement proposal number (permit, land use review, or project number), development proposal location, applicant information, owner information (if applicable).
- Special Circumstances request, including the request being made and the features of the project that make it a special circumstance. Indicate any existing approval criteria in the *Stormwater Management Manual* and if or how those approval criteria would be met.
- Stormwater management information, including explaining any proposed stormwater management facilities or other means of partially meeting the stormwater management requirements for the site. Summarize how stormwater will be managed and indicate the discharge location (infiltration, specific type stormwater system (storm sewer, specific water body, etc.), or combined sewer), and location of the proposed disposal point (street intersection, existing public infrastructure, etc.). The request must account for all of the impervious area and for the management of all stormwater runoff from the site. Stormwater management within the site must be

achieved to the maximum extent feasible, as approved by BES in all cases before any Special Circumstances requests will be considered.

Plans

One set of plans (in addition to any plans submitted for permit processing) must accompany the Special Circumstance application. Plans must show the total amount of impervious area being created and all existing and proposed stormwater management and conveyance facilities. They should provide sufficient information to detail the areas considered to be a special circumstance, as well as any areas that may be affected by or that may affect those circumstances. The plans submitted under the Special Circumstances application must match the plans submitted for the development proposal.

Application Fee

The fee for a Special Circumstances application associated with development proposals (land use or early assistance cases, Public Works Permit, or building permits) is \$100. The application fee can be submitted with the development proposal, paid in person on the first floor of the Development Services Center, 1900 SW 4th Ave., or mailed to the Bureau of Environmental Services, 1900 SW 4th Avenue, Suite 5000, Portland, Oregon, 97201, to the attention of the BES staff person assigned to reviewing the development proposal.

There is no fee for Special Circumstances requests made by public agencies through public improvement projects.

Supplemental Information

Submitting supplemental information (engineering analyses, infiltration test data, etc.) that will help clarify the request or make it easier to understand is encouraged. If relying on infiltration test results, geotechnical reports, or other technical information to support the Special Circumstances request, that information must be submitted along with the application.

How to submit a Special Circumstances Application

The Special Circumstances application must be submitted concurrently with the development proposal, building permit, land use and early assistance applications or public improvement for BES review. Applications will be screened for completeness within three business days of BES receipt or staff assignment. Inaccurate or incomplete applications will be returned and will cause a delay in considering the request.

For questions regarding the submittal process, call the BES Development Review Hotline at 503-823-7761.

Decisions

BES will issue Special Circumstances decisions within 21 calendar days of receiving a complete application (following a positive completeness check). Decisions will be recorded and emailed to the applicant. If the Offsite Management Fee is approved, the fee must be paid prior to the next BES review or approval milestone.

The Special Circumstances decision is valid for two years from the date of issuance. The decision is no longer valid if the area of development or redevelopment change, any changes to the site plan or offsite disposal location, or if any project circumstances change. The applicant would need to request a new Special Circumstances for review of the new circumstances.



**CITY OF PORTLAND
Stormwater
Management
Manual**

SPECIAL CIRCUMSTANCES APPLICATION FORM

Please fill this form out completely.

For assistance in completing it, consult with the Bureau of Environmental Services (BES) staff assigned to review your proposal or with BES staff in the Development Services Center. Refer to Section 1.5.1 of the 2016 Stormwater Management Manual for the complete Special Circumstances Submittal Requirements.

A complete Special Circumstances submittal consists of this form, the Special Circumstances Application Fee (if applicable), one (1) set of plans, and any supplemental information that support this Special Circumstances request. Plans should clearly indicated the new or redevelopment impervious area and proposed stormwater management.

(for staff use only)

Received by: _____

Date: _____

Deemed complete on: _____

I. PROJECT INFORMATION

SITE INFORMATION

Permit Number/LUR Case/Public Works Project Number: _____

Site ID (R number(s)): _____

Project Location/Site Street Address: _____

City/State/Zip: _____

Project Name *(if applicable)*: _____

Special Circumstances request location *(choose one)*: Private property Right of way

APPLICANT INFORMATION

Applicant Name: _____

Applicant Business Name: _____

Applicant Mailing Address: _____

City/State/Zip: _____

Applicant Phone Number: _____

Applicant Email Address: _____

OWNER INFORMATION *(if applicable)*

Owner Name: _____

Owner Mailing Address: _____

City/State/Zip: _____

Owner Email Address: _____

Describe development or improvement proposal *(one set of plans must be submitted that match this description)*:

SPECIAL CIRCUMSTANCES

APPLICATION FORM

2. SPECIAL CIRCUMSTANCES INFORMATION

Describe Special Circumstances request:

- Why are stormwater management facilities not technically feasible?
- Why should this proposal be considered given the stormwater management requirements of Chapter 1?

3. STORMWATER MANAGEMENT INFORMATION

Describe any existing and any proposed onsite stormwater management, including any impervious area mitigation measures (tree credit, pervious pavement, ecoroof) or stormwater management facilities that would provide partial onsite management.

Where will stormwater be conveyed and discharge to if this Special Circumstances is approved:

- Onsite Infiltration
- Storm-only system: Watershed or waterbody: _____
Location of storm-only sewer: _____
- Combined Sewer: Location of combined sewer: _____

Signature: _____ **Date:** _____

Print Name: _____ **I am the** Applicant Owner

1.6 Administrative Reviews and Appeals

The administrative review process allows applicants to request a review of staff interpretations of the City Code and of adopted policies and procedures that guide the review of development proposals. Applicants may request administrative review of a BES decision related to the SWMM as described in this section.

A person may request administrative review relating to interpretation of the stormwater management and conveyance requirements in Chapter 1 of this SWMM (e.g., applicability of stormwater management requirements, staff assessment of a site's stormwater management hierarchy level, flow conveyance requirements, or a permit denial), including decisions made under the special circumstances process.

Technical standards of stormwater management as established in Chapters 2 and 3 are not subject to administrative reviews or appeals (e.g. not appealable). Items such as plans, reports, test results, forms, records, or other submittal documents are required for BES staff to review for technical standards and, as such, are not subject to administrative reviews or appeals. Stormwater management and flow conveyance is a public infrastructure and public safety technical review item and is separate from more traditional land use review items. Public infrastructure and public safety technical reviews are not subject to appeal to the Oregon Land Use Board of Appeals.

Administrative reviews are conducted by bureau personnel. A person must submit a written request for administrative review within 20 business days of the date that BES mailed the letter, notice, or decision. The requestor must provide all information relevant to any requested administrative review. BES will hold an administrative review meeting within 10 business days of receipt of the written request unless all parties agree otherwise. The requestor may provide detailed information in lieu of attending the administrative review meeting. There is no fee charged for an administrative review. BES will use Portland City Code 17.38 and the list of reviewable items in this section to make a final determination on an administrative review. BES will mail the requestor a written final determination within 10 business days of the administrative review meeting unless an extension of the BES evaluation period is agreed to by all parties. The written final determination will provide information about the process for filing an appeal to the Code Hearings Officer.

Enforcement actions relating to the SWMM are governed by Portland City Code 17.38 and are implemented through the BES Maintenance Inspection Program (ENB-

4.31) and the BES Enforcement Program (ENB-4.15). Administrative reviews of enforcement actions resulting from these programs are implemented through those programs and administrative rules.

An administrative review is a required precursor to an appeal. Appeals are made to the Code Hearings Officer as per Portland City Code 22.10.

Administrative Reviews and Appeals

Information about BES Administrative Reviews and Appeals, including timelines, submittal requirements, fees and forms, is found online at <http://www.portlandoregon.gov/bes/68285>.