ENVIRONMENTAL SERVICES
CITY OF PORTLAND

The City uses the Stormwater Management Manual (SWMM) to protect both watershed resources and infrastructure investments. As each development or improvement project meets the requirements of the manual, it contributes to these important citywide goals:

- Protect watershed health by requiring infiltration wherever feasible, to mimic pre-development hydrologic conditions.
- Protect groundwater resources by removing pollutants from stormwater before discharging it into the ground.
- Protect streams and rivers by providing water quality treatment and flow control for stormwater before discharging it to surface water.
- Minimize long-term costs to the City for treating stormwater through public wastewater treatment plants.
- Protect the capacity of downstream infrastructure.
- Minimize sewer overflows and basement sewer backups.

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Stormwater Management Manual 2020 Facility Sizes—Proposed

Spring 2020

Storm system and location make a difference for engineered facilities.

This document summarizes typical stormwater facility sizes designed using the Presumptive or Performance Approach by geographic area of Portland based on the proposed requirements in the 2020 SWMM. It combines requirements that are changing and those that are staying the same. This fact sheet does not cover most single family sites that will continue to use the Simplified Approach.

Stormwater management is required

Stormwater management supports the City of Portland's (the City) livability and improves watershed health by mitigating the impacts of urbanization and protecting our storm systems, drainageways, and combined sewers.

The City requires stormwater management for projects involving 500 square feet or more of impervious area. ***This includes:***

- Some paving projects in the public right-of-way.
- Parcel-based development on properties.

The Stormwater Management Manual (SWMM) is one of the ways the City addresses state and federal regulations related to stormwater.

Updates to SWMM requirements

The City's Bureau of Environmental Services (BES) updates the SWMM to keep stormwater policy in step with changing conditions and technology advancements. ***Goals of the 2020 update:***

- Improve clarity.
- Continue to comply with regulations.
- Increase technical rigor and facility performance.

Facility size/design changes required by the SWMM 2020

Stormwater management requirements and solutions depend on multiple factors, including:

- Site location.
- Geologic characteristics.
- Available storm system infrastructure.

The proposed 2020 SWMM contains technical changes affecting facility size requirements:

- Increase the water-quality storm size.
- Increase the infiltration rate of the imported growing media.
- Requirements for more orifice control for facilities that discharge offsite.

The following information describes typical facility sizes designed under the proposed 2020 SWMM requirements by facility type. Different requirements may apply based on individual site characteristics or storm-system availability.

Infiltration to groundwater to manage stormwater and reduce combined sewer overflows

REQUIREMENT (NO CHANGE):

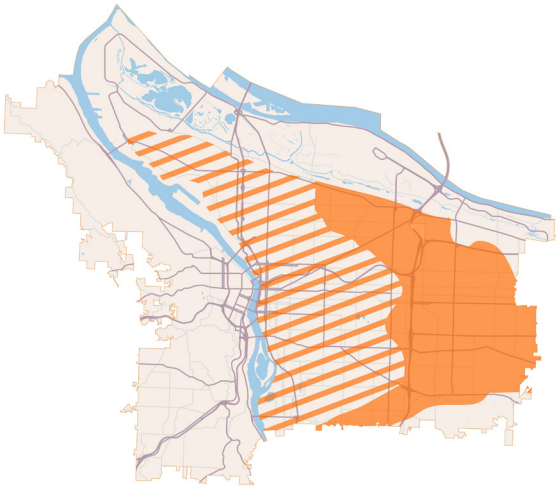
Fully infiltrate the 10-year storm event on sites with infiltration rates greater than 2 inches per hour.

FACILITY DESIGN CHANGES:

Surface vegetated:

- **Surface infiltration facilities will get smaller—**facilities will be sized based on an infiltration rate of 6 inches per hour for the imported growing media. This will decrease the footprint and increase feasibility of these facility types.
- **No setback will be required from the right-of-way property line**—This will increase opportunities for infiltration facilities and better align with zoning code landscape requirements.
- **Install surface infiltration facilities w/o rock to improve plant health—**Recommendation will be to install facilities without rock underneath, to improve plant health.

UICs: Additional guidance provided for deep infiltration testing and post-construction testing of drywells.



Infiltration

East of the Willamette River, infiltration is often the best option. The soils in parts of outer east Portland, and areas around I-205 (see map), include layers of coarse, fast-draining sediments deposited by the Missoula Floods. The geology is more mixed on the inner east side and in the northern neighborhoods, with good conditions for infiltration in some areas (see map).

Flow control—to maintain pipe capacity in the combined system

In the combined system, sites that discharge offsite must provide flow control to maintain pipe capacity.

REQUIREMENT (NO CHANGE):

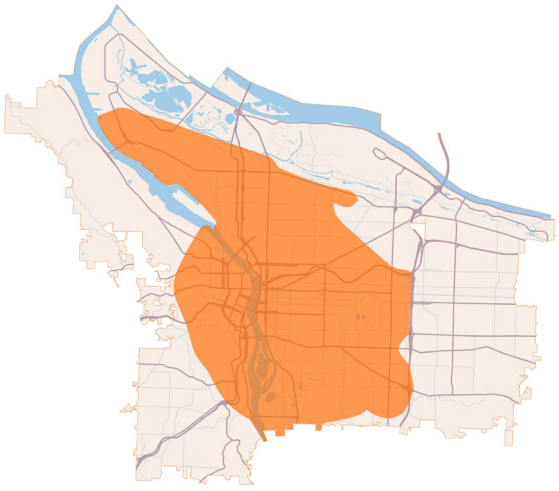
Control the post-development 25-year, 24-hour storm peak flow to the predevelopment 10-year, 24-hour peak flow.

FACILITY DESIGN CHANGES:

Surface vegetated with offsite discharge (with an underdrain):

- **Add orifice control to underdrained facilities—**Environmental Services will require orifices on more facilities for reliable flow control.
- Facility size will decrease to about 5% of the catchment area.
- Facilities with small catchment areas that cannot meet flow control requirements will be required to filter the 25-year, 24-hour event.
- **Change underdrain in lined facilities to improve plant health—** underdrain configuration requirements will change to reduce the amount of drain rock, improving plant health.

Structured detention: To be used in limited circumstances when approved by Environmental Services.



Flow control — CSO

Older parts of Portland have a combined sewer system (see map). It collects stormwater and sanitary flows in the same pipes and treats them at the same plant. When infiltration is not feasible, sites are required to provide flow control to preserve pipe capacity and to prevent sewer backups in large storm events.

Water quality treatment—to protect the Willamette River and Columbia Slough

Water quality treatment required for sites discharging into large water bodies.

REQUIREMENT:

Provide water quality treatment for the "water-quality storm," which represents 90% of the average annual runoff.

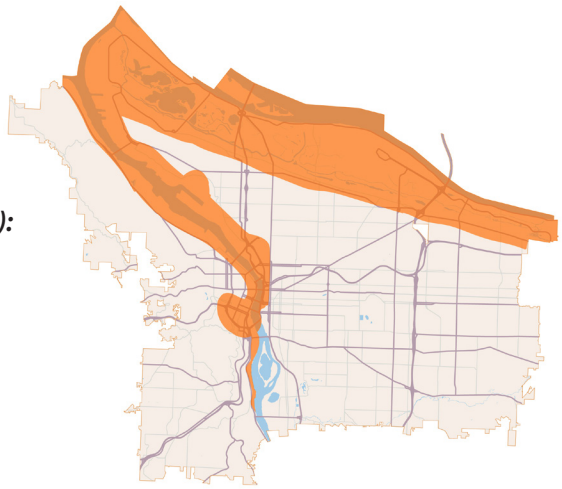
FACILITY DESIGN CHANGES:

Lined and unlined surface vegetated with offsite discharge (with underdrain):

- **Increase water quality storm—**the water-quality storm size will be 1.61 inches in 24 hours.
- Facilities will be sized based on an infiltration rate of 6 inches per hour for the imported growing media. This will balance the increase in the design storm size and result in a modest increase in facility size.
- Facility sizes will be less than 2% of the catchment area.
- Underdrain configuration requirements will change to reduce the amount of drain rock, improving plant health.

Rate-based facilities (manufactured stormwater treatment technologies):

- The intensity of the water-quality storm remains 0.19 inches per hour.
- Facilities on Environmental Services' approved list must be used.
- Allowed in limited circumstances if approved by Environmental Services.



Water Quality only

Along large water bodies, including the Willamette River and Columbia Slough, sites that cannot infiltrate must treat stormwater for water quality before discharging to surface waters (see map). These water bodies are large enough that flow control is not needed, however in some locations it is still required to preserve pipe capacity.

Water quality treatment and flow control to protect watershed heath

Environmental Services requires water-quality treatment and flow control at sites that discharge offsite to watersheds that flow into the Willamette River—such as Tryon, Fanno, and Johnson creeks.

REQUIREMENT (SOME CHANGES):

Provide treatment of water-quality storm (90% of average annual runoff)—and control post-development peak flows for a range of storm events.

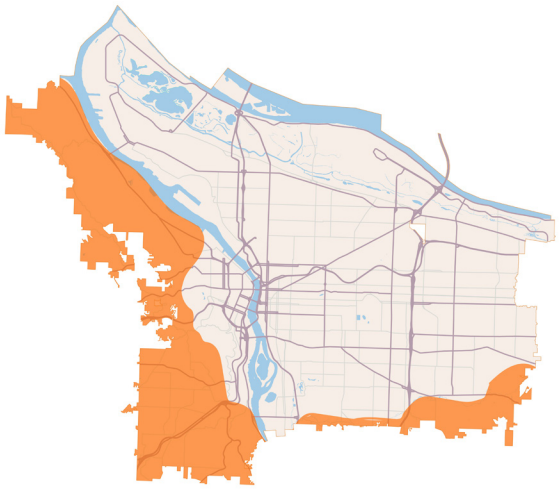
FACILITY DESIGN CHANGES:

Surface vegetated facilities with offsite discharge (with an underdrain):

- **Add orifice control to underdrained facilities—**Environmental Services will require orifices on more facilities, for reliable flow control.
- Facility sizes will increase to 8-9% of the catchment area.
- Facilities with small catchment areas that cannot meet flow control requirements will be required to filter the 25-year, 24-hour event.
- Underdrain configuration requirements will change to reduce the amount of drain rock, improving plant health.

Water quality treatment paired with detention:

- Configurations with a water-quality facility paired with additional detention can meet water quality and flow control requirements.
- This combination can be used in limited circumstances when approved by Environmental Services.



Flow control + Water Quality

Where stormwater discharges to creeks, streams, and other smaller surface water bodies, both water quality treatment and flow control are required. Infiltration is often infeasible because of clay soils and landslide concerns. Treatment protects in-stream habitat from sediment and other pollutants. Flow control reduces channel erosion and flooding (see map).