

## Heavy Rain and Flooding

Portland is subject to flooding from river overflow from the Columbia, Willamette, Tualatin, and Sandy Rivers, and creeks such as Johnson Creek and Fanno Creek, as well as flooding from local stormwater systems. In general, floods are caused by spring snowmelt and intense winter rainstorms. The flood season for Portland extends from late October through April. Historically, the majority of flooding has occurred in December, January, and February. Flooding results when heavy or prolonged rain or snowmelt creates water flows that exceed the capability of a creek, ditch, sump, or storm drain to remove the runoff. During periods of urban flooding, streets can become swift moving rivers, and basements can fill with water. Storm drains and catch basins can also back up with vegetative debris and cause localized flooding.

### Why heavy rains are a threat to Portland

During heavy rainfall and when the National Weather Service issues a flood watch for northwest Oregon, the Portland Bureau of Transportation (PBOT) prepares for a bureau-wide response. Crews keep a watchful eye on water levels in creeks and rivers, monitor road conditions, and perform routine maintenance operations to lessen street flooding. The primary conditions of concern are:

- ◆ Street flooding due to clogged catch basins (grated storm drains);
- ◆ Street flooding due to overloaded sumps in saturated ground;
- ◆ Street flooding due to blocked ditches, trash racks, and culverts;
- ◆ Flooding of Johnson Creek and Fanno Creek; and
- ◆ Landslides, mudslides, rockslides, and debris slides.

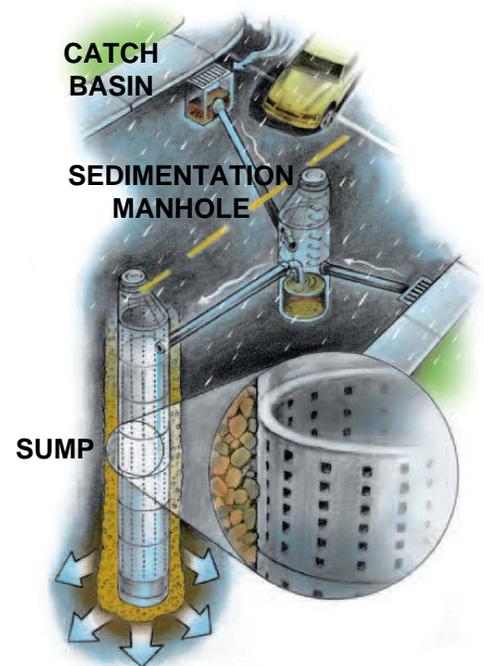
### Managing stormwater runoff

The federal Clean Water Act, Safe Drinking Water Act, and Endangered Species Act direct the City of Portland to improve stormwater quality and protect watersheds, rivers, streams and drinking water resources.<sup>1</sup>

PBOT is responsible for maintaining catch basins and responding to street flooding and other safety concerns. The infrastructure includes 456 miles of stormwater sewer pipe, 878 miles of combined sewer pipe (carries stormwater and sewage), 58,000 catch basins, 9,000 sumps, and 4,700 miles of streets. PBOT also maintains 351 trash racks, 141 miles of ditches, and 23 miles of culverts.

Catch basins are the grated storm drains that you see on almost every street corner. They are storm sewer inlets - typically located next to street curbs - that are the entryway from our streets to our sewer system or stormwater facilities and represent the first step in stormwater collection and disposal. On rainy days, rainwater and anything else on the streets enter catch basins.

Catch basins have grids to prevent large objects from falling into the sewer system. However, the bars are fairly widely spaced so that the flow of water is not blocked. Consequently, many objects fall through. When catch basins get clogged with recently fallen leaves and debris, water can no longer be drained from the street. Water ponds along streets and can flood intersections and homes.



<sup>1</sup> The Portland Bureau of Environmental Services coordinates the citywide response to the federal stormwater permit that requires the City to reduce stormwater pollution, and oversees programs that respond to water quality requirements.

For many areas east of the Willamette River, sumps are the only form of stormwater management available because there are no piped systems. The city's 9,000 sumps are like large holding tanks below ground that collect stormwater and discharge it into the soil. Measuring four feet in diameter and 30 feet deep, sumps keep stormwater out of sewers and reduce its discharge to rivers and streams. Street runoff flows into manholes that trap sediment and pollutants. The stormwater then flows into sumps and infiltrates into the ground. When sumps become overloaded, the water that drains to them has no other place to go, so the result can be localized street flooding. With steady rainfall that saturates the ground, it takes longer for them to drain.

### How you can help

During periods of heavy rainfall, transportation crews monitor and clean catch basins, culverts, trash racks, and ditches to help prevent street flooding, property damage, and road hazards. Given the size of the infrastructure, we rely heavily on citizen involvement to help keep streets safe and catch basins clean.

To lessen street flooding, please monitor and clean the catch basins near your house or business, especially before and after a rainfall or snow and ice event. Stand on the curb and use a rake or pitch fork to clear leaves, limbs, and debris from the catch basin. Do not attempt to remove the grate, only the debris on top of the grate.

Dispose of the debris properly; i.e. put leaves, branches, and yard debris in curbside yard debris containers and garbage in trash receptacles. Rake leaves about a foot from the curb, allowing water to flow to the catch basin without the leaves. Notify the City at **503-823-1700** if assistance is needed at a particular location to unclog a catch basin.



**Stand on the curb, rake debris off top of the storm grate, and dispose of debris properly.**

### Landslide prevention

Water is the most common cause of unstable slopes, landslides, and erosion. If you live on a hill, inspect your home drainage system and property for indicators of a possible landslide. Be alert to signs of earth movement and water below ground; i.e. a cracked foundation, new cracks or bulges in the ground or pavement, a leaning structure or tree, a broken water line, or a soggy or spongy patch of ground that doesn't dry out. Call a soils engineer (see the yellow pages) to evaluate the situation if you are concerned about a possible landslide.

### Sand and sandbags

To help residents and business owners prepare for a flood emergency, sand and sandbags are available at no charge to anyone who wants to use them to protect their property from flood damage. City crews keep the sites stocked with sand and sand bags; you must bring your own shovel. Locations are:

- ◆ SE 88th Ave just south of Holgate Blvd in the parking lot at Lents Park; enter at the bottom of the hill;
- ◆ SE 111th Ave and Harold St at the southeast corner of the intersection;
- ◆ SW 42nd Ave and Vermont St in the lower parking lot of Gabriel Park; enter park from Vermont.

### Safety measures during heavy rainfall

The City advises motorists to slow down when streets are wet, try to drive in the tire tracks left by the vehicles in front of you, and be on the lookout for pedestrians and bicyclists making their way into the street to get around standing water, especially in low light conditions. Do not drive through standing water; instead, turn around safely and use an alternate route. During a flood watch, crews prepare to close and barricade streets and set up detours. Motorists who ignore street closures and drive around barricades face a \$360 fine. Visit **[www.PublicAlerts.org](http://www.PublicAlerts.org)** for local street closures and other emergency information. As with any emergency situation, be prepared and have a plan if flooding is expected in your neighborhood. Do not come into contact with flood waters because of possible contamination and bacteria in the water.