



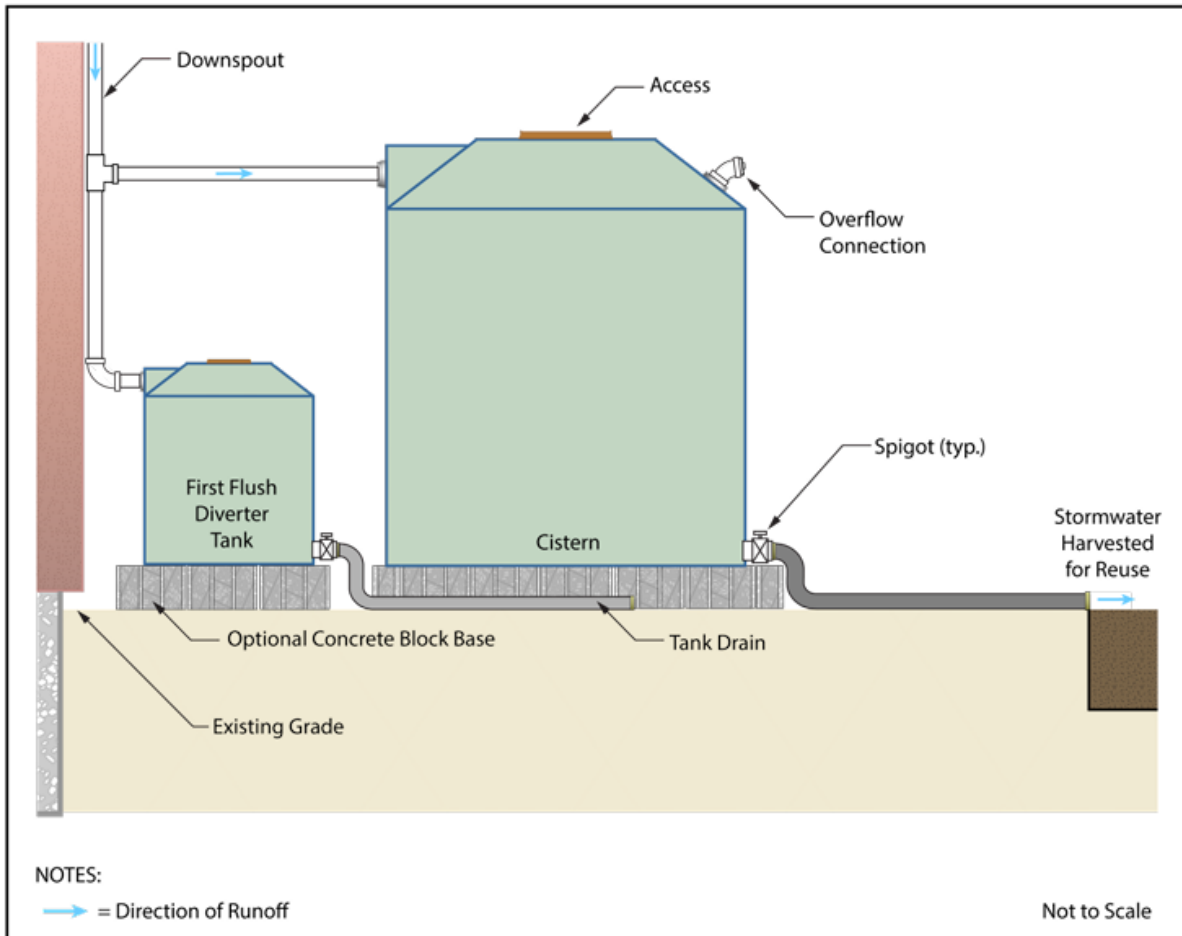
## First Flush

By Dr. Larry Sunn

Many believe rainwater to be clean water that is naturally safe for consumption. While this is mostly true, it may not always be the case once the rain lands upon a collection surface and picks up contaminants.

As rain falls, the initial rainwater in a storm sort of “washes your roof” of the sediments that have collected on your roof since the last rain. The idea is that diverting the first few gallons of this rainfall can help ensure cleaner water in your rainwater storage tanks. So, a first flush diverter is a simple device that is designed to protect a storage cistern from contamination. It leads to a higher quality of water captured, and less silt in the cistern, particularly in dusty areas.

### Surface Cistern with First Flush Diverter Tank



Source: [https://dep.nj.gov/wp-content/uploads/stormwater/bmp/nj\\_swbmp\\_9.1-cisterns.pdf](https://dep.nj.gov/wp-content/uploads/stormwater/bmp/nj_swbmp_9.1-cisterns.pdf)

In this graphic, the smaller tank is the first flush tank. Here water enters the first flush tank from the roof via the downspout. Sediments sink to the bottom of the first flush tank and when the first flush tank is completely filled, the water backs up the downspout pipe, and cleaner water spills over into your storage tank. Using a small pump the water that is set aside in the first flush tank can still be used for landscaping or gardening purposes.

The Texas Water Development Board (TWDB) recommends that if the water is intended for potable purposes, first flush tanks or diverters should set aside a minimum of 25 gallons per 1000 square feet of

roof area. Note that a first flush system is not needed when the collected water is used for landscaping or gardening purposes.

There are many non-tank first flush alternatives available and most of them involve a pipe instead of the tank as the diversion storage chamber. All are touted by the respective sellers as “the best.” However, most of these systems are fraught with problems. First, they do not usually meet the TWDB’s 25-gallons per 1,000 square feet recommendation. Therefore, they do not set aside sufficient “dirty water.” Secondly, they become a maintenance nightmare because each first flush pipe has to be manually cleaned. So, if your roof has many downspouts, installing and maintaining several first flush diverters—one on each downspout—can be a chore.

Third, some of these pipe style first flush systems will include a small filter designed to remove smaller particulates as well as a small dripping device that they tout “lets the water out” of the pipe. Although the water does tend to ooze out, these filters clog easily so they must be cleaned often and, because most homeowners don’t regularly clean them, they frequently clog and do not function at all.

First flush diverters, whether tank or pipe, need to be properly sized for optimal performance, and this can seem difficult because there are many variables that go into determining the optimal size for a first flush diverter. These variables include rainfall intensity and duration; length of time between rains; roof size, slope, roof material; and gutter size.

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