

Installing a Rain Barrel for Non-spray Irrigation

Rainwater harvesting is the age-old practice of collecting and using rainwater from your roof or other above-ground impervious surfaces. Rainwater harvesting is growing in popularity as our customers look for ways to conserve and use water resources more efficiently. By installing a rainwater harvesting system, you can reduce the volume of potable water you use for irrigation. In addition, you help to maintain the health and beauty of the San Francisco Bay by reducing the amount of stormwater entering the sewer system.

Permit Requirements

If your downspout is **connected** to the sewer system,

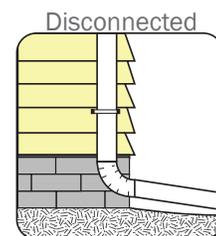
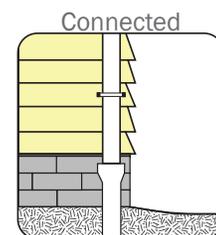
you will need a permit from the Department of Building Inspection (DBI), Plumbing Division. Permit requirements include a basic site map identifying the location of your rain barrel and the intended destination for overflow (a drain, garden, etc.). There is a permit fee, which covers the permit and site visit by a DBI Plumbing Inspector.

You may opt to install a diverter kit that attaches directly to your downspout and diverts water into your barrel. Once the barrel is full, water is diverted back into the downspout and sewer system. Using a diverter kit allows you to connect to the existing downspout while maintaining the connection to the sewer system. Diverter kits attach to metal or plastic downspouts only, not cast iron. For guidelines on installing a rainwater harvesting system with a diverter kit, please see reverse.

If your downspout is **disconnected** from the sewer system,

you do not need a permit from DBI, as long as your rain barrel meets the following requirements:

- Under 5,000 gallons
- Height to width ratio is less than 2-to-1
- Only used for non-spray irrigation
- Supported directly on grade
- Does not require power or makeup water supply connection



Rain Barrel Basics

- Rainwater should not be harvested from roofs covered with copper or treated with fungicides or herbicides.
- Rain barrels come in a variety of shapes, colors, and sizes, but must be opaque, watertight, and made of durable materials.
- The lid or screen on your rain barrel should be secured to prevent access to the stored water.
- Rain barrels must be equipped with an overflow.
- **Full code requirements can be found in Chapter 17 of the 2013 California Plumbing Code.**

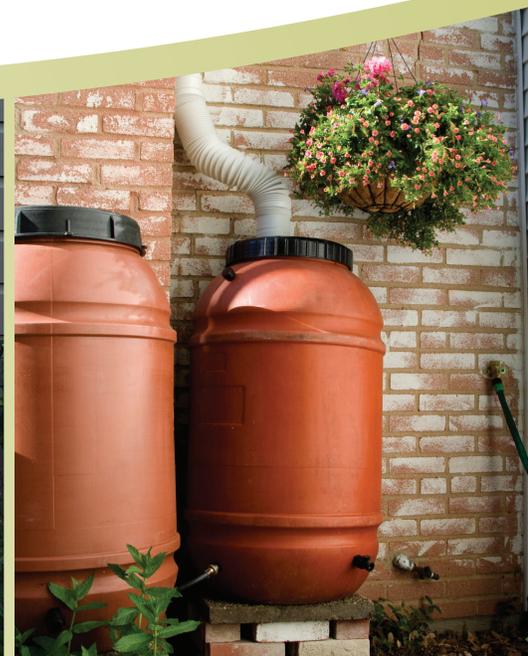
To find out more information about Rainwater Harvesting, please visit:

www.sfwater.org/rainwater

Questions? Contact us!

(415) 551-4730

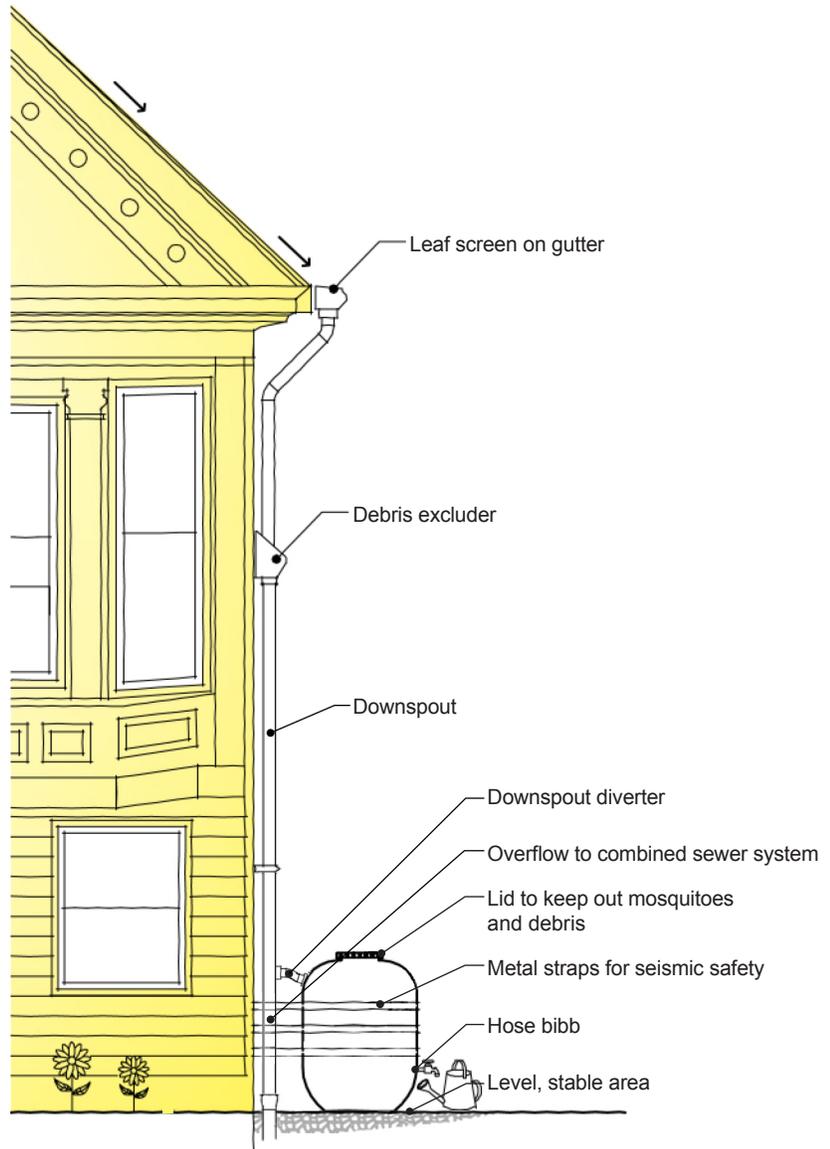
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Installing Your Rain Barrel With a Flexifit Diverter Kit

The installation of a rain barrel with a Flexifit diverter kit directs rainwater from the downspout into the barrel. When the barrel is full, excess water flows through the downspout to prevent overflow. Before installing your system, review the manufacturer's directions for specific installation requirements.

- Install leaf screens or debris excluders on your gutters, especially if you have overhanging trees.
- Locate barrel on a level and stable area within 3' of the downspout.
 - If elevating your barrel, place it on a stable brick, concrete or wood platform.
- Depending on manufacturer's suggested height, measure and mark the barrel to install the spigot hole and the barrel's drain hole. Drill 1-1/4 inch holes over the marked areas and insert threaded rubber seals. Attach spigot connection.
- Locate the water inlet mark on the rim of the barrel, measure 3 inches down and mark the barrel. Drill a 1-1/2 inch hole over the mark and insert the threaded rubber seal.
- Install the Flexifit diverter kit to your downspout:
 - Mark a line on your downspout that is level with the top of the rain barrel.
 - Measure 2-1/2 inches down from the line and indicate a mark on the center of the downspout.
 - Drill a 2-1/8 inch hole in the center of the marked downspout using a hole saw that is rated for the material, such as plastic or metal. Do not attempt to drill into a cast iron drain pipe.
 - Pinch and insert the Flexifit diverter valve into the downspout with the arrow facing UP and secure valve to the downspout with screws.
- Connect the corrugated hose to the diverter valve and to the barrel's water inlet.
- Adhere the warning label to your barrel:



Operation and Maintenance

There are simple steps you can take to ensure your rainwater harvesting system functions at its best:

- Ensure all inlets and overflow pipes have screens installed to prevent insects, birds, or rodents from entering.
- Equip your system with a first-flush diverter. After a dry spell, this device diverts the first, most polluted flow of rainwater roof away from your rain barrel. The recommended minimum rate of diversion is 1 gallon per 100 square feet of roof surface.
- Install a 100 micron filter if you are using rainwater for drip irrigation to ensure the drip system will not clog.
- Before and after the rainy season (typically Oct-Apr), ensure downspouts are clear, and clean roof gutters, screens, overflow outlets, and filters on your barrel to prevent clogging.
- Repair leaks or holes immediately.



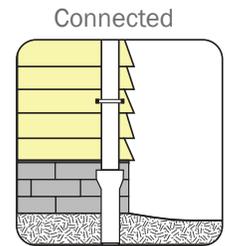
Installing a Rainwater Harvesting Cistern for Non-spray Irrigation

Rainwater harvesting is the age-old practice of collecting and using rainwater from your roof or other above-ground impervious surfaces. By installing a rainwater harvesting system, you can reduce the volume of potable drinking water used for irrigation. In addition, you help to maintain the health and beauty of the San Francisco Bay by reducing the amount of stormwater entering the sewer system. A rain barrel typically refers to a rainwater storage tank with a capacity between 50 and 200 gallons, while a cistern is a larger storage container that can store 200 to 10,000 gallons. Cisterns come in many shapes, sizes, and materials, and can be installed underground to save space.

Permit Requirements to Install a Cistern

If your downspout is **connected** to the sewer system,

you will need a permit from the Department of Building Inspection (DBI), Plumbing Division. Permit requirements include a basic site map identifying the location(s) of your cistern and intended destination for overflow (a drain or suitable garden area). There is a permit fee, which covers the permit and site visit by a DBI Plumbing Inspector. The SFPUC offers a rebate up to \$225 towards the cost of your permit.

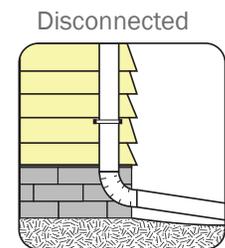


For installations where a downspout disconnection is not optimum, consider using a diverter kit that attaches directly to your downspout and diverts water into your cistern. Once the cistern is full, water is diverted back into the downspout. A diverter kit allows you to connect to the existing downspout while maintaining the connection to the sewer system.

If your downspout is **disconnected** from the sewer system,

you do not need a permit from DBI as long as your cistern meets the following requirements:

- Cistern capacity is less than 5,000 gallons
- Height to width ratio is less than 2-to-1
- Captured rainwater is only used for non-spray irrigation
- Cistern is supported directly on grade
- Rainwater system does not require power or a makeup water supply connection



If your cistern installation does not meet the above requirements, contact the DBI Plumbing Division for requirements regarding your site-specific rainwater harvesting system.

For further details on the design, installation, and maintenance of rainwater harvesting systems, please see the SFPUC **Rainwater Harvesting Manual**.

To learn more about rainwater harvesting and available incentives, please visit:

www.sfwater.org/rainwater

Questions? Contact us!

landscape@sfwater.org

(415) 551-4730



Guidelines For Your Rainwater Harvesting Cistern

Design and Installation

- Treated metal, clay, or concrete tile roofing generate the cleanest rainwater for capture and reuse. Rainwater should not be harvested from roofs with untreated metal (galvanized), copper, treated wood, lead flashing, or asbestos.
- As required by the California Plumbing Code, install a debris excluder or a first-flush diverter on your downspout.
- Create a firm and level foundation location near the downspout on which to place the cistern. For tanks over 500 gallons, a concrete pad or compacted gravel foundation is needed.
- Cisterns over 5,000 gallons in size require a licensed civil engineer to properly design the foundation and seismic support. Additional permits from DBI are required for cisterns of this size. When designing an overflow method, remember that in heavy storms cisterns could overflow. A 1,000 square foot roof will produce about 600 gallons of runoff during a storm that produces 1" of rain.
- **Overflow water should be directed to a drain or suitable rain garden that can absorb water onsite at an appropriate rate. Overflow must be directed away from your home, the cistern, or neighboring properties.**
- Ensure your cistern overflow pipe has a screen to prevent insects, birds, or rodents from entering the cistern.
- If you are using rainwater for drip irrigation, install a 100 micron filter downstream of the cistern to prevent clogging of the drip emitters.
- If irrigating edible landscapes, consider using irrigation piping that meet FDA food grade standards.
- For rainwater systems that are used indoors, have pumps, or require treatment please review the SFPUC Rainwater Harvesting Manual and **consult with DBI.**
- Adhere the required warning label to your cistern:



Maintenance

There are simple steps you can take to ensure your rainwater harvesting system functions at its best:

- Inspect catchment area every six months, before and after the rainy season, to remove debris, algae growth, or any other obstructions from the surface.
- Before and after the rainy season, ensure downspouts, gutters, screens, and filters are clean and clear to prevent debris from entering the system. Clean with warm water.
- Ensure first-flush diverters are functioning by checking to ensure they do not contain standing water after storm events.
- Once a year, flush out any debris or buildup that may have accumulated on the bottom of the cistern. For tough buildup, you may scrub the bottom using vinegar or another non-toxic cleaner.
- Maintain clear access to the cistern and outlets for regular maintenance.

