



## Typical Rainwater Catchment Operation & Maintenance Guidance

### Operation

When rain falls on the roof, it collects in the gutter and flows to the downspout. The leaf deflector is meant to keep any large leaves or debris out of the rainwater collection system. The rainwater initially flows into the first flush diversion system, designed to collect the dirtiest water, or “first flush” of each rain event. Once the first flush diversion system is full, rainwater spills over into the fill piping, which flows to the storage tanks. Fill piping can be buried below ground, which is called a “wet system”, or it can be suspended above ground, called a “dry system.”

The storage tanks are typically installed on gravel pads and have a gauge to show how much water is in the tanks and valving to isolate each tank for maintenance. Typically, the valves will be open and the tanks will act as one large storage system, filling and draining at the same rate. Flexible piping is used to connect the tanks to allow for minor settling of the tanks. When the tanks are full, any additional rainwater will flow into the tanks and out of an overflow pipe, set slightly lower than the inlet pipe, and outfall onto a rock riprap outfall pad. The rock is meant to disperse energy and prevent erosion from the overflow water.

The distribution system consists of a check valve, pump, pressure tank, filter, and pressure pipe commonly routed to a hose bibb near a garden. The filter is rated for 100 microns, which is required by the California Plumbing code for outdoor non potable water use for irrigation. The filter should prevent clogging in any drip irrigation system.

To ensure the pump is operational, check that the circuit breaker at the house and the pump are both turned on. Next turn on the pressure switch at the pump (grey box at front of pressure tank). To do this, hold pressure switch bar to “middle” position (in between on and off) to turn pump on and build up pressure. Once the minimum pressure is reached, the switch will pop into the on position and the pump will be operational. The pump is typically sized to provide water at a rate of 25 gallons per minute at a pressure of 30 psi. This is typically more than enough pressure for a garden irrigation system and pressure reducers may need to be installed.

Some distribution systems operate via gravity and do not have a pump because the tanks were located at a high enough elevation to provide adequate pressure. All systems were also outfitted with a fire hose connection for emergency water use. Sonoma County Fire Safe standards require a minimum of 2,500 gallons of dedicated water storage for fire protection on rural residential properties.

### Forbearance

Typical rainwater catchment systems are meant to capture and store water in the winter, for use during the summer. Most systems installed by Sonoma RCD come with a Forbearance Agreement, in which the landowner agrees to forbear the equivalent volume of water from their existing water source during the summer months, typically August through October. For example, if your rainwater system has 10,000

gallons of water storage, you would use that 10,000 gallons of rainwater for summer garden irrigation, instead of using 10,000 gallons from your well or creek diversion. Forbearance Agreements remain in effect for a period of 20 years from the date of construction. Some grants require annual reporting of how much water was collected and how much water was used. A staff member from Sonoma RCD will contact you at the beginning of November of every calendar year for 20 years to obtain your reporting form (due November 15<sup>th</sup>, annually). To fill out the form, note how much water was collected at the end of the rainy season by reading the gage on the tank. Then, at the end of the dry season (typically October), write down how much water is left in the tanks by reading the gauge again. Subtract that volume remaining in the tanks from the totally volume collected, and that is how much water you used during the summer.

### **Maintenance**

Regular maintenance is important to keep your system operational through the duration of the project and hopefully longer. On an annual basis, you should do the following:

- Inspect the entire system, look for any leaks, cracks, or other signs of disrepair
- Clean out gutters before the start of the rainy season. Houses with a lot of trees nearby should clean out the gutters more frequently.
- Clean the leaf deflector annually before the rainy season. Check the leaf deflector periodically during storms if you observe water spilling out of the downspout, as it may be clogged.
- Open the first flush diversion system and clean out any debris annually before the first rain event. Water should drip out of the diversion system via a valve following a rain event, so you should not have to drain this pipe manually.
- Inspect the conveyance piping, both “wet” and “dry” systems annually. If freezing is predicted, drain the “wet” pipe system using the drain valve.
- Check the hose bibb for leaks annually and replace the washer or other parts as needed.
- Inspect the overflow rock riprap pad annually, check that water is flowing when the tanks are full, and there is no erosion or clogging. If you see erosion, add some more rocks to the pad.
- Monitor the tanks to ensure that fine sediment is not building up, algae is not growing, and insects have not gained access. The tank should be cleaned at a time when minimal water is stored in it. For sediment build-up, a few inches of water in the bottom of the tank should be used to flush sediment through the tank outlet and drain. A hose may be used to run a small amount of additional water through the tank and drained to remove the last of the sediment. For algae, soap and water should be used to scrub the inside of the tank with a brush or sponge. Bleach should not be used. Tank cleaning water will be flushed through the system drain, and the drain is located to prevent contamination of nearby waterways and prevent erosion. Use the isolation valves to take one tank offline at a time. Make sure to tightly secure the lid after cleaning. **Warning: never enter a water tank or other confined space, injury or death may occur!**
- Inspect and clean the filter annually. If the filter looks clogged, turn off the pump with the main power switch, remove the red lock, turn the filter a quarter turn and allow water to flush out the bottom of the filter. If the filter needs additional cleaning, unscrew the plastic housing and manually wash the filter screen. Ensure the valve is placed back in the proper direction and all o-rings are replaced after cleaning. Remember to turn the pump back on.

- Inspect the pump for leaks at the beginning of the summer irrigation season. Ensure that the pump is protected during any winter freeze events. The pump should not run continuously, if it is, the pressure tank settings may need to be adjusted. The instructions for the pressure tanks are inside the lid of the pressure switch.
- Inspect all pipes and fittings around the pump annually and check for leaks or cracks. If a fitting is cracked, it needs to be replaced.

You can contact Sonoma RCD ([info@onomarc.org](mailto:info@onomarc.org)) with any questions that come up during the lifespan of your system. Regular maintenance of your rainwater catchment system will ensure its longevity. Thank you for participating in our program and leaving more water in the ground and creeks for fish!

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