



UNIVERSITY OF CENTRAL FLORIDA  
**Stormwater  
 Management  
 ACADEMY**

"Managed Stormwater is Good Water"

University of  
**Central  
 Florida**



# What is a Cistern?

## Cisterns

A Cistern is a receptacle for holding liquids, usually water like that collected from a roof or some other catchment area. A catchment is an area from which runoff is collected like with the green roof stormwater treatment system at Florida's Showcase Green Envirohome™ (FSGE™). This system assists FSGE in containing almost all of its stormwater on its lot, some of which is used to irrigate the five vegetated green roof areas. When FSGE's cistern overflows, the water discharges into a bioswales, a deep-troughed, meandering, vegetated area comprised of native, hydrophilic plants. This gives the overflow time to seep into the ground thus eliminating stormwater "runoff", a known pollutant to our water bodies.

Cisterns are usually located underground, they may be placed at ground level or on elevated stands either outdoors or within buildings. They should be watertight, have smooth interior surfaces, enclosed lids, and be large enough to provide adequate storage, especially in times of drought.

A cistern can be used for pollution control, volume reduction, and peak flow reduction. Cisterns placed on the roof using gravity for water flow use no electricity but are set up only for a one-time use of water. Cisterns on or below the ground require energy because they use a pump to push the irrigation water up to the roof. At FSGE, its special green roof stormwater treatment system, an underground cistern installed by Resource Recovery, Inc. allows the same rainwater to be used over and over again—the ultimate in stormwater reuse.

Two different types of cisterns are being used at FSGE, which include:

- **Graywater Reuse system** - FSGE installed Florida's first 'whole house' gray water reuse system with an 85-gallon cistern. Gray water refers to any household wastewater excluding toilet wastes, which can be used for irrigation and other water conservation applications. In FSGE's case, potable water used in showers, bathroom sinks and clothes washers is routed to the gray water cistern in the garage where it is treated according to Florida Building Code. This treated gray water is used to flush all of the toilets throughout the home. When the gray water exceeds the 85-gallon cistern capacity, it is diverted to the underground 5,178 gallon cistern outside the house.



- **Green Roof Stormwater Treatment System** – FSGE directs stormwater, treated gray water, solar air conditioning condensate, and 'back-only' artesian well water to an underground 5,178-gallon cistern solution comprised of three daisy-chained 1728 gallon cisterns. This collected water is then reused continually by irrigating four vegetated roofs on FSGE that return green roof filtrate back to the cistern. This water is also used by a fifth vegetated roof and a 100% native landscape on FSGE's 0.28 acre lot which is discharged into the ground to help recharge our aquifers.



UCF Stormwater Management Academy	<a href="http://www.stormwater.ucf.edu/">www.stormwater.ucf.edu/</a>	(407-823-4145)
Florida Showcase Green Envirohome	<a href="http://www.fsge.net/">www.fsge.net/</a>	
Department of Environmental Protection	<a href="http://www.dep.state.fl.us/water/waters/stormwater">www.dep.state.fl.us/water/waters/stormwater</a>	
Resource Recovery Inc.	(352-455-5800)	
Brevard County Building, Code & Permitting Department	<a href="http://www.brevardcounty.us/permits/">www.brevardcounty.us/permits/</a>	