Getting the Most Out of Every Inch of Rain

The underground cistern may be making a come back as a result of a looming water crisis.

By Frank Hill

As the country faces a water shortage which is progressively getting worse, underground storage tanks to capture and store rainwater from residential rooftops could play a major role to conserve what many take for granted.

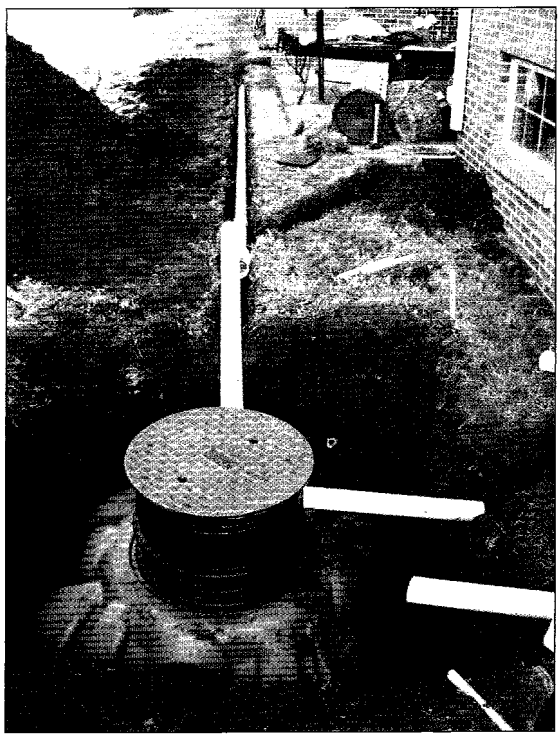
Historically, cisterns were built underground, on the ground and even on rooftops to capture rainfall. Their use as reservoirs of potable water stopped in the advent of clean water standards and centralized treatment plants. But as the nation's most expansive population growth continues to occur in the same regions that are experiencing its greatest water shortages, water recycling and conservation will increase in importance going forward.

Projections are that more than 35 of the 50 states will face water shortages in the next five years and half of the world's population will face the same by mid century.

Most people in this country appear to be unaware of the value of freshwater, according to Joseph Brown, vice president of sales and marketing for Roth Global Plastics Inc.

"Our expectation and philosophy toward water is that we like it to be cheap and almost limitless in supply. That's the difference between the U.S. and other countries throughout the world," he said. A severe drought continues to linger in regions from the southeast to the southwest and Southern California.

"In Atlanta for example, where there is continued development and strain on the water supply, they are in dire need of additional sources of water, not only for drinking, but also to irrigate expensive landscaping around homes," he said.



People that are affected question if they should be using the potable water they pay for to irrigate their lawns and wash their cars and many municipalities are legislating against the practice.

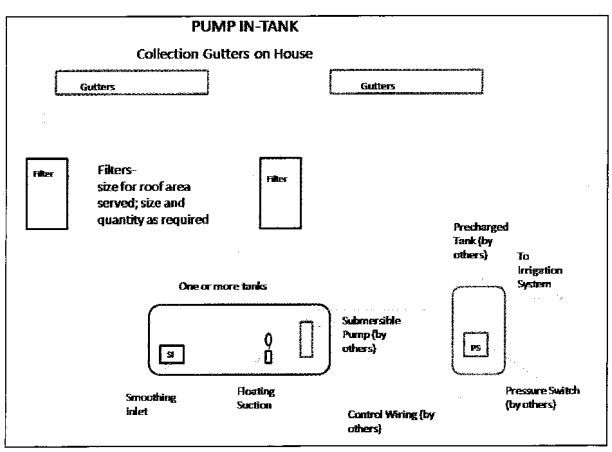
Septic tank to cistern

The Roth Group, based in Germany, acquired Fralo Plastech Manufacturing LLC of Syracuse, New York, which is the owner-operator of the world's largest blow-mold machine and manufactures products for the onsite, waste-treatment industry. The firm adapted one of its main-line products, high-molecular weight, high-density polyethylene septic tanks, for use as underground cisterns to collect rain water.

"We're looking at the most basic of systems. A tank for storage with some basic filtration to get rid of leaves and debris that might accumulate in the gutters," Brown said. The water is accessible when needed for irrigation, car washing, gardening or any other non-potable purposes to conserve potable water.

Most contractors who install turf and residential landscape irrigation systems understand the mechanics related to connecting to stored water supplies or direct well water. They know how to provide the necessary equipment to tie them into an existing or new irrigation system, according to Brown.

"All of the various wholesale supply houses that sell sprinkler heads, controls, pipes and that sort of thing are already providing pumps and pressure switches and other associated items for delivering the water to the sprinkler systems," he said. But they do not tend to carry the necessary accessories to filter the water prior to entering



or inside the tank, where turbulence should be kept at a minimum to avoid stirring up the water.

"Those are the things that we provide as a basic kit which would allow a contractor to install the tank for the irrigation requirements," he said.

The rain water can be filtered and diverted to the tank in a couple of different ways. All the downspouts could be routed to a single filter that is buried but accessible just below the surface of the ground or an individual filtering unit could be attached to each downspout

The system could be scalable to the residential site. The company's largest tank is 1700 gallons. Tanks could be coupled together to obtain the total volume of storage desired and to accommodate the size of the roof and how much rainfall is expected.

The system's use is not limited to the drought-ridden, heavily populated south. Even for areas of the north, such as in the Great Lakes region, the cisterns could be used to reduce stormwater impact on combined sewer systems and the effects of runoff as well as reduce homeowner's water bills by using the rain water. The depth of bury for such tanks would depend on the depth of the frost line.

"It can be implemented anywhere. There's no reason it shouldn't be," Brown said. There's also the potential for in-home, gray water applications.

"The rain water doesn't require that much treatment at all, just basic filtration, to make it suitable for any non-potable requirements, whether it's irrigation or toilet flushing, even car washing," he said. "There is no need to be using potable water that is chlorinated and fluoridated to wash your car when the water that comes off the roof of your house is more than acceptable."

A step at a time

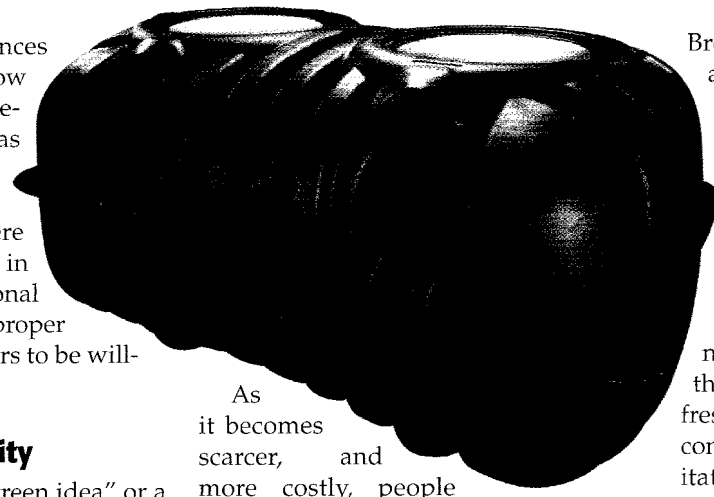
The company is keeping it simple when it comes to its cistern products, which could also be used to contain potable water. As public awareness grows over water issues, the company will adapt accordingly.

"That's one of the reasons we are not trying to get too terribly sophisticated right out of the box, but rather address what we see as the immediate need and requirement," Brown said, which is to provide people with an alternate supply of water.

Built for corrosive wastewater containment, the Roth Global tanks are made of high-molecular weight, high-density polyethylene, are durable, impervious to corrosion and flexible. As a vessel, they are more than acceptable for rainwater or potable water usage, Brown said. In the future, there may be potentials for other water-recycling applications.

The tanks are manufactured for the onsite, wastewater-treatment industry, which has seen significant improvements in processes that have resulted in effluent that is highly clarified and is of high enough quality to be used for subsurface, drip-irrigation systems. It would be another way to lessen the demand on the potable water service to the home.

"We see a lot of advances in European nations on how they handle their wastewater effluent as well as their rain water," he said. "Certainly it will be the same case here. But there has to be some things in place, probably on a national level before there are the proper incentives for homeowners to be willing to do that."



From nice to necessity

It's not just another "green idea" or a nice thing to do, he said. Water conservation is a necessity for people to live, especially in those regions that are experiencing drought. Whether it comes in the form of water restrictions, which may limit residential use to certain times of the day or certain days of the week, to the debate over water rights among states or building pipelines to transport water hundreds of miles, awareness of fresh water will only gather momentum.

As it becomes scarcer, and more costly, people will become increasingly aware of how we use fresh water. Ultimately, the issues of conservation and reuse will rank with green building, land conservation and global warming.

Any water that can be recovered and reused at a local level for irrigation or car washing, rather than having it sent down the drain or the storm sewer into a lake or river is good in terms of the balance for the environment, according to Brown. Economics will be a key factor as well.

"If you look at Europe where our parent company is located, they pay about eight to 12 times per unit what we pay for water here. There is an economic driver in Europe that is a big incentive for people to harvest and conserve water," he said.

That same cost-saving incentive is not yet the national issue in the U.S. that it is elsewhere. Those who manage fresh water supplies will be increasingly confronted with the true costs of rehabilitating or creating new infrastructure. Those costs will have to be passed along to consumers.

"That will slowly make water more expensive to where there is some economic incentive for people to think about harvesting rain water," he said. **SLDT**

Images provided by Roth Global Plastics, Inc.

About the author: Frank Hill is a freelance writer and contributor to *Sustainable Land Development Today.*