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Pooling Water

By Cathy Dausman



Contra Costa County Water District water conservation coordinator Chris Dundon, left, learns about the cistern project from landscape contractor Roxy Wolosenko. Photo Cathy Dausman

Then landscape contractor Roxy Wolosenko of Roxy Designs suggested converting their unused pool into a cistern.

"It's really a very simple system," she said. A cistern, dating back more than 4,000 years to ancient Greece, is an artificial reservoir or underground tank for storing liquids, especially rainwater. Unlike wells, cisterns have waterproof linings. Wolosenko pitched this project to three other clients, but the Johnsons were the first to take the plunge. Jeff Johnson was already familiar with the concept; his parents had a cistern in Texas, where he grew up.

The project is a first in Northern California, said Julie Lienert, special projects manager for Roxy Designs.

Mike Garcia, owner of Enviroscape LA, completed a similar project in Los Angeles about three years ago. "It's a pretty simple process but it's getting to be a big deal," he said. Closer to home, Walnut Creek's Ruth Bancroft Garden recently held an education program for its members, one of whom has built a 10,000-gallon rainwater collection system used to refill a large pond and irrigate garden and orchard flowers and edibles.

Work on the Johnson project began in mid-August, with a completion date set for early October. A portion of the existing hole was back-filled with pool debris so only the rebar had to be taken off site.

Cistern construction began with the assembly of Eco Rain Cubes. These plastic cubes were shipped flat and assembled into something resembling oversized milk crates measuring roughly 18 by 16 by 27 inches. The cubes were stacked horizontally, five layers high in the pool cavity. The cube collection was double wrapped, first with a felt filter fabric, and then with an impermeable plastic liner. When the project is complete, the cistern will be all but invisible beneath new water-wise landscaping and a bocce court.

Five downspouts with 4-inch PVC drainpipes will divert rainwater from the roof into the cistern. Each square foot of roof runoff yields about a half gallon of water. The water will feed a drip system and irrigate new backyard water-wise plantings.

Jeff and Kathleen Johnson seem to like holes in the ground filled with water. When they bought their house 15 years ago, the backyard featured a 30,000-gallon swimming pool, which served their family of four well for a number of years. Jeff Johnson said both daughters, now grown, "loved it."

"It had a slide, and a diving board," he said. But the home was built in 1974, and the pool became cracked, discolored and "in dire need of work." In fact the pool took up so much space, the backyard was under-landscaped - leaves are a pool owner's nemesis - and underused. Johnson said even the custom pool cover was ugly.

Keeping the pool filled, heated with solar panels and chemically balanced was expensive. Johnson estimates he spent \$100 to 200 per month on maintenance, including water replacement (evaporation accounts for tens of thousands of gallons per year). Eventually the Moraga family stopped swimming and considered pool removal, at a cost of \$6,000 to \$15,000.

Twelve hundred square feet of the Johnson's roof is being used to collect rainwater runoff. In a non-drought year the Johnsons could recycle as much as 28,000 to 32,000 gallons of water. This would provide at least three months of landscape irrigation water for their backyard. And rainwater, unlike graywater, does not have to be used within 24 hours. City water feeds the system when it does not rain.

Wolosenko said cistern installation costs are dependent upon size, but average \$2 to \$3 per gallon of water stored. Wolosenko has personal experience with pool upkeep, having lived in several houses with backyard pools. "I hated those pools," she said, emphasizing the expensive monthly upkeep she incurred with each one.

Water conservation representatives from both East Bay Municipal Utility District and Contra Costa Water District have viewed the Johnson project with interest. CCWD's water conservation coordinator Chris Dundon called the cistern project a unique opportunity. "Rainwater catchment is an intriguing concept," Dundon said, "one which people don't always do purely for the financial savings."

By installing the cistern, Dundon said the Johnsons took advantage of an opportunity which may allow them to save "pretty much 100 percent" of their rainfall. And Dundon is also interested in the long-term effectiveness of this project; he wants to know how it works out and what, if any, problems develop. Rep. Jared Huffman, D-San Rafael, recently introduced legislation to establish a new Environmental Protection Agency grant program. The program, called the Drought Relief and Resilience Act supports water recycling projects, and includes a range of long- and short-term solutions.

But EBMUD's water conservation representative Scott Sommerfeld says his water district wants to encourage water reharvesting whether it is cost effective or not. "Great job," he told the Johnsons, after viewing their project.

For more information online:

<http://www.ebmud.com/water-and-drought/drought/>

<http://www.ccwater.com/148/Conservation>

<http://huffman.house.gov/media-center/press-releases/after-unprecedented-public-input-rep-jared-huffman-introduces-final>

https://www.youtube.com/watch?v=xYIKG4IHT_o



A stack of Eco Rain Cubes prior to assembly Photo Cathy Dausman



Fully assembled Eco Rain Cube Photo Cathy Dausman



Swimming pool to rain tank conversion Photo provided

Reach the reporter at: cathy.d@lamorindaweekly.com

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