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ASCE Illinois Section News

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Rainwater Harvesting in Illinois

By Robert G. Walker, P.E., LEED AP BD+C

As we suffered through the drought of 2012 we were reminded of the importance of fresh water to our society. Our lawns became brown this summer as municipalities enacted watering bans to preserve their water works system operations. Our rivers and streams are low, stressing wildlife and even restricting barge traffic on the Mississippi. Even our food prices have gone up as commodity prices increase from the poor yields due to the drought. Luckily, our civil engineering forefathers designed and constructed facilities to produce, treat and distribute water from as far away as Lake Michigan or 1,000 feet

underground so that we can continue to have clean water for our drinking and sanitation needs without depending on rain.

It is our job as civil engineers to maintain and expand these facilities in a sustainable fashion for future generations. This puts us on the front lines of water conservation.

One old method of water conservation that is making a comeback is rainwater harvesting. Archeologists recently discovered an ancient rainwater cistern in Jerusalem from the time of King Solomon in the 10th century B.C. Because of the large number of pilgrims

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Ancient cistern found in Jerusalem (Vladimir Naykhin, IAA) (photo from Fox News.com)

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coming to the First Temple, it is likely that the local water supply would have been overwhelmed. The cistern, which could have held 66,000 gallons of water, would have been able to store rainwater for the pilgrim's drinking and sanitation needs.

Today rainwater harvesting is primarily used for irrigation and other non-potable uses.

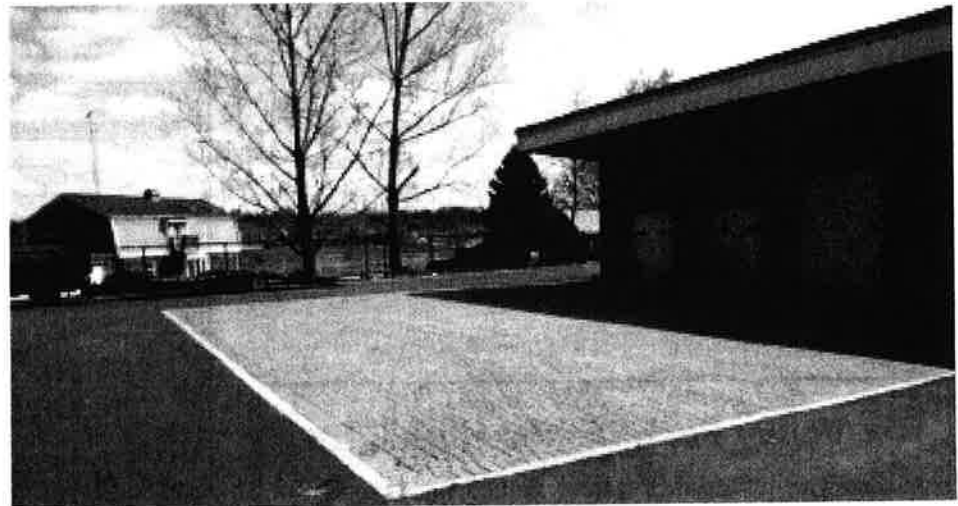
A good example of a modern rainwater harvesting system can be found at the Fox Valley Park District's Cole Center.

Today rainwater harvesting is primarily used for irrigation and other non-potable uses. A good example of a modern rainwater harvesting system can be found at the Fox Valley Park District's Cole Center in Aurora. The Fox Valley Park District purchased an existing industrial/manufacturing building that was strategically located so that they could transform it into a new administrative office space and operational facilities. This building reuse fit the Park District Board's mandate for sustainability. There are more than 100 environmentally friendly highlights including the rainwater harvesting system. For their efforts, the Park District received the 2011 Sustainable Development Award from The Conservation Foundation.

The Park District uses their rainwater harvesting system to wash their maintenance vehicles and machines. At the time of construction, its 10,000 gallon reservoir made it the largest rainwater



Rainwater harvesting system during construction (photo from Fox Valley Park District)



Rainwater harvesting system after construction (photo from Fox Valley Park District)

harvesting system in the country to be used in this capacity.

The system harvests rain from both the roof and the parking lot. Most of the downspouts from the roof are connected to the reservoir through underground pipes. Each downspout has a dual stage filter with a coarse screen to remove leaves and other large debris as well as a fine mesh screen that will remove some smaller suspended

particles. These screens are designed for easy access to maintain them. The back parking lot is graded to drain to a permeable paver pad that captures runoff and directs it into the reservoir. The reservoir was installed where the loading dock used to be. This reduced the necessary excavation, saving thousands of dollars. The reservoir consists of modular engineered plastic AquaBlox® surrounded by a water-

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proof liner. The modular blocks allow the system to be assembled on site and provide enough strength for the permeable paver granular subbase to be installed directly on top of it. A high pressure pump is then used to provide access to the stored water and clean the vehicles. The vehicles are cleaned on the permeable paver pad, allowing the same water to be used multiple times, getting filtered through the permeable pavers and granular base. Overflows are directed to the existing storm sewer system and then to the Fox River.

In summary, the Fox Valley Park District successfully took a century's old technology and updated it to a modern application that allows them to clean their maintenance vehicles without paying for municipal water while protecting the Fox River. The District is using the project as an educational and environmental model for public awareness of large scale sustainable design features that can easily be transferred to one's home or office. **ASCE**

Mr. Walker has been with Engineering Enterprises, Inc. since 2005 and is the Vice Chairman of the Urban Planning and Development Group. He has over 13 years of experience in land development, is a founding member and past chairman of the Central Kane County Chapter of Ducks Unlimited, and a founding member and current chairman of the Fox Valley Branch of the Illinois Chapter of the US Green Building Council. This article provided by UP&D Group.

Fox Valley Park District Highlights

- Largest rainwater harvesting system for vehicle washing in the county
- Environmental education for visitors to the building and users of the nearby Fox River Trail
- Reduces the pollutant load to the Fox River
- Water bill savings



Illinois Section
Founded 1974

PROPOSED FY 2012-13 Section Budget

	2013 Budget
REVENUES	
Interest Income - Savings	\$ 40.00
Section Dues	\$ 46,500.00
Society Allotment	\$ 14,500.00
Ad Income - Newsletter	\$ 4,500.00
Ad Income - Web Site	\$ 150.00
Annual (IL Sect dinner) Meeting	\$ 37,500.00
President Elect Dinner	\$ 5,250.00
Minority Affairs Committee	\$ 10,000.00
Sustainability Committee	\$ 1,000.00
Total Revenues	\$ 119,440.00
EXPENSES	
ASCE Conferences	\$ 7,500.00
Board Meetings	\$ 750.00
Postage	\$ 50.00
Rent/Local Phone	\$ 3,000.00
Secretarial Services	\$ 15,000.00
Stationary/Off. Supplies/Software	\$ 200.00
Newsletter	\$ 10,000.00
Web Site Maintenance	\$ 190.00
Annual IL Sect dinner Meeting	\$ 39,000.00
Awards - Misc.	\$ 650.00
President Elect dinner	\$ 8,000.00
Minority Affairs Committee	\$ 10,000.00
Section Projects	\$ 7,500.00
Legislative Events	\$ 3,000.00
Sustainability Committee	\$ 1,000.00
TFIC	\$ 1,000.00
Engineer's Week	\$ 1,000.00
Future City's Competition	\$ 1,000.00
Student Activities	\$ 3,500.00
Total Expenses	\$ 112,340.00
NET INCOME	\$ 7,100.00