

# CONSERVATION *Showcase*



## **Downtown Cedar Rapids' First Green Roof**

*Jason Johnson, Public Affairs Specialist, January 2011*

WaterTower Place – Cedar Rapids' first warehouse converted to condominiums – is now home to the downtown district's first vegetated green roof, designed to mitigate storm water runoff. The green roof was complete in September 2010 and includes about 7,400 square feet of low-growing, low-maintenance sedum and native Iowa plants.

Linn County Resource Conservationist Jon Gallagher says the green roof will reduce storm water runoff from a 1.25" rain by 50-80 percent. "Any storm water that does run off will be filtered and cleaner because of the green roof, which helps protect water quality in the Cedar River Watershed," he said.

The WaterTower Place roof is unique because it is accessible to residents with a walking path, benches, and even grills for cooking. "Most green roofs aren't accessible like this and that was a priority for us," said resident Ann Knierim. "We want this area to be shared, experienced and enjoyed by all residents."

### **Roof Vegetation**

The new roof is a LiveRoof® Pre-vegetated system where plants are grown in modules, or trays. The trays are 2' x 1' and four or six inches deep, depending on the species. According to condo resident Ruth Fox, there are several benefits to growing the plants in trays. First, the trays can be easily removed if access to the roof is needed for maintenance. Another benefit is if a plant dies it can be easily removed. The trays also discourage weeds and save the time and money traditionally required to develop and maintain a green roof grown from plugs or seeds. Other systems may



**The new green roof includes a walking path, benches and grills for outdoor enjoyment for residents of WaterTower Place.**

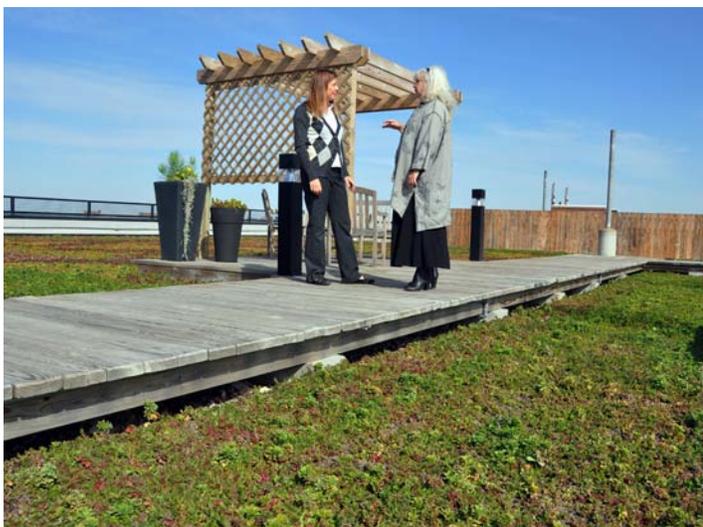
require three or more years for establishment and intensive care is needed during this time period. Finally, the tray system does not expose soil which reduces the potential for soil erosion by wind and water.

Knierim, who has a passion for gardening, and Fox, a landscape architect by trade, designed the green roof, and chose which plants to include. "This is definitely not the cheapest version of a short greenery roof," said Fox. "But with just one rooftop



**The vegetation includes 40 varieties of sedum that are low-growing and low-maintenance.**

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**WaterTower Place residents Ann Knierim (left) and Ruth Fox dedicated hours of their free time to finish the green roof project.**

drain, we needed to be sure it did not clog.”

The green roof includes about 40 sedum varieties and 15 Iowa native plants. Plant species are all sustainable and relatively easy to care for, says Knierim. “We did not include turf grass or an irrigation system,” she said. “We will only need to water the plants in the summer during extended droughts.”

Knierim used the six-inch deep trays as a hedge-effect with greenery along the edges of the landscaped roof. Remaining plant species were placed in a more random effect, she said. “It’s a planned out randomness. We wanted reds, oranges, and yellows mixed in with different bloom times, textures, and heights,” said Knierim.

## Other Benefits

Along with reducing storm water runoff, the green roof will provide a few other benefits. One benefit is lowering heating and cooling bills. “Research has shown that a vegetative green roof will lower the interior temperature of a building by an average of six to eight degrees during the summer months,” said Knierim. “And during the winter months it will hold snow in for an extra layer of insulation, which will hold the heat in during wintertime.”

Fox, who is currently designing a handful of other green roofs in Cedar Rapids, says green roofs help reduce the heat island urban roofs give off better than all other types of roofs, including white roofs. She says they also positively impact the environment like trees by putting oxygen back into the atmosphere.

Vegetative roofs also help protect building rooftops from the elements, extending the life of a roof. Fox said that was a selling point for many of the residents. Fox says green roofs can extend roof life two to three times. “It may be 45 years before we need to replace the roof, and that was a big benefit when talking to other homeowners here,” she said.

## Project Funding

The project was spearheaded by a handful of WaterTower Place residents, including Candace Wong who wrote much of a grant proposal through the state of Iowa’s I-Jobs program. Fox said the green roof was in its early planning stages before the devastating 2008 floods hit the Cedar Rapids community. She said several residents had not totally bought into the idea of the green roof at that time. “I think the floods made a difference in people’s acceptance of this,” she said.



**The soil base is not your typical Iowa dirt, but actually a special blend of organic and inorganic engineered rocky soil purchased from a company in West Branch.**

The project was partially funded by a \$98,000 grant through I-Jobs. The WaterTower Place Homeowners Association was required to nearly match the I-Jobs grant to finance the project. “We are thankful for the I-Jobs grant through the Iowa DNR (Department of Natural Resources),” she said. “We want to be the leaders in the community in green rooftops and we needed to start with a small project like this. I’m not sure we would have been able to fund the project without the grant money.”

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The residents also worked with the Linn Soil and Water Conservation District (SWCD) to receive cost-share funds through the Resource Enhancement and Protection (REAP) program for educational programming on the green roof. They received an additional low-interest loan of \$40,000 through the State Revolving Fund (SRF) Low-Interest Loan Program, also through the Linn SWCD.

## **More Than Green Roofs**

The WaterTower Place project is the first of several in downtown Cedar Rapids to help better manage storm water following the 2008 floods that ravaged the city. Other projects include porous asphalt, pervious paver blocks, and bioswales to help absorb storm water runoff from parking lots, instead of allowing it to run off into storm sewers.

Gallagher hopes the WaterTower Place project will spur additional private and public green roof ventures in downtown Cedar Rapids. "This project can serve as an example for Cedar Rapids and all of Linn County as they move forward with the replacement and renovation of flood damaged structures," he said.

Wayne Petersen, an urban conservationist with the Iowa Department of Agriculture and Land Stewardship's Division of Soil Conservation, says it is more important than ever to help rainwater infiltrate. "Today, rainwater is often sent into storm sewers where it is flushed into our streams and rivers along with pollution from roads, parking lots, or yards," he said. "As we add more roofs and pavement to our communities, we need to find ways to minimize storm water runoff and allow water to infiltrate the ground to minimize flooding and protect water quality."

For more information about urban conservation practices, visit the USDA-Natural Resources Conservation Service website at [www.ia.nrcs.usda.gov/features/Backyard.html](http://www.ia.nrcs.usda.gov/features/Backyard.html).



***The green roof plants were installed in modules, or trays, which provide many benefits, including access to the roof in case of maintenance needs.***