

CONSERVATION *Showcase*



Grant Helps Stream Rehab on UNI Campus

Sport fishing could soon be added as a campus activity thanks to a University of Northern Iowa project to improve water quality on its 900-acre Cedar Falls campus. This work entails a series of storm water management projects—including rehabilitation of a unique on-campus stream—Dry Run Creek, which flows through the northern part of campus.

The Iowa Department of Natural Resources (DNR) designated Dry Run Creek an impaired water body in 2002 after studies found a lack of aquatic species, including benthic macroinvertebrates, nearly microscopic “bugs” that lay their eggs in the bottom of healthy streams. According to Rebecca Kauten, Dry Run Creek watershed coordinator, benthic macroinvertebrates



Dry Run Creek Watershed Coordinator Rebecca Kauten collects water samples from a “first flush” collection unit. A curb cut allows water to flow from the Towers parking lot to a biocell, which is built to absorb water from large rain events.

serve as a food source for fish, birds, and other mammals, and are often indicators of good or poor water quality.

Further investigation found that hydraulic alteration from flashy, storm-related runoff events and sedimentation were not only reducing habitat, but levels of E. coli bacteria were surpassing limits for safe human contact. In 2005, the Black Hawk Soil and Water Conservation District (SWCD) received a grant from the Iowa Watershed Improvement Review Board (WIRB) to install a series of structural best management practices to demonstrate innovative ways to improve and protect water quality in the creek.

Kauten said the university was already in the formative stages of what is now a campus-wide sustainability initiative. “It worked out that the timing of both efforts coincided,” she said.



Well water from UNI’s cooling system discharges into Dry Run Creek. With water temperatures barely in the 50s, Dry Run Creek might mimic a cold water trout stream someday.

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Mimic Coldwater Stream

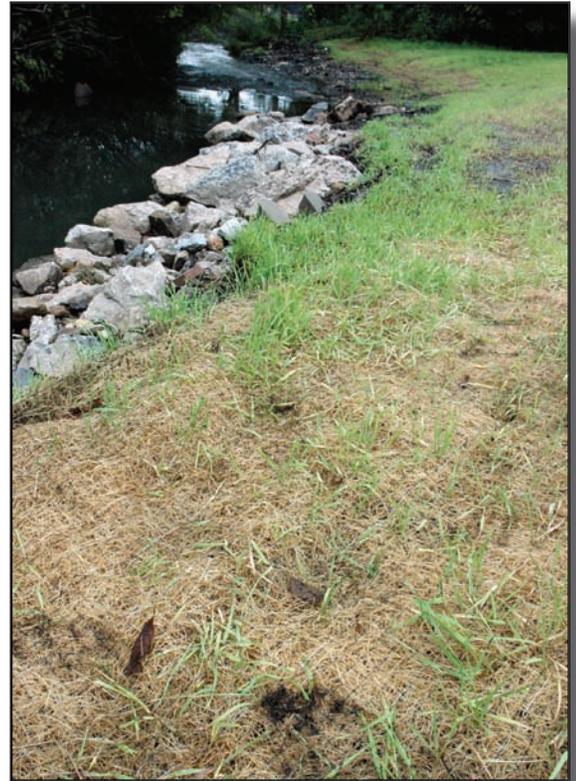
The portion of Dry Run Creek that runs through the UNI campus is cooled by hundreds of thousands of gallons of well water discharge from the university's cooling system between the months of April and October. The water temperature stays in a constant range of 56 to 59 degrees, helping the creek maintain a high, constant flow and a level of dilution that reduces impacts from upstream erosion.

With the cool water temperatures, Paul Meyermann, UNI assistant director for operations planning, knew Dry Run Creek could mimic a natural coldwater stream, with the potential of attracting sport fish such as smallmouth bass and trout. "More than 20 years ago several local environmentalists, including UNI students, promoted the exact same concept," he said. "It just happened that the timing was right for it to occur now. The grant money was available and all stakeholders were on board."

Stream Bank Stabilization

Due to incised and eroded stream banks, it was important for Dry Run Creek's banks to be sloped back, stabilized, and properly vegetated to limit the amount of sediment and pollutants from running off into the stream. A collaborative plan by Kauten and Urban Conservationist Wayne Petersen with the USDA Natural Resources Conservation Service (NRCS) began with land survey work by NRCS. UNI grounds crew and fisheries technicians from the DNR excavated selected areas along the creek. Stream banks were then sloped back to a stable angle (3:1 or 4:1).

The newly sloped banks were reinforced with rip rap and a product called A-Jacks™ to dissipate energy and prevent soil erosion. A-Jacks™ are stable, concrete armor units that are designed specifically for stream bank stabilization and flow and grade control.



A temporary rye seeding provides vegetative cover until a more permanent landscaping solution is applied. Plans are for a spring seeding of native grasses.

To provide vegetative cover, a fast-growing temporary rye seeding was established. A seeding of native grasses and a continued effort to maintain stable stream banks is the plan for Spring 2008.

Fish Habitat

To provide fish habitat, crew members made areas along the stream bank six to eight inches deeper to accommodate fish hides beneath them. Bank or fish hides provide fish overhead cover. The UNI carpenter shop built the fish hides, based on DNR specifications, with lumber donated by the DNR.

Kauten said the idea for fish hides came from a late fall 2006 conversation she had with Petersen. "He and I talked over the idea and the next day I contacted DNR fisheries staff," she said. "Before we knew it we were all gathered at the creek, walking the bank and talking over ideas." After a few more meetings and planning sessions, plans were made to install fish hides.

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The DNR recorded temperatures every 15 minutes from June through October 2007. Based on that data, project leaders will know whether trout would be suitable in the creek. “There are currently some smallmouth bass, white suckers and chubs in the project area,” said Kauten. “A few folks claim to have seen trout already, but it may just be wishful thinking.”

Water Monitoring

Kauten monitors the quality of parking lot runoff entering the creek with GKY “first flush” collection units that collect storm water runoff as it flows from two parking lots on either side of the creek. Dry Run Creek runs between the Towers Complex parking lot and the Malcom Price Lab School parking lot. Based on data she has recorded, Kauten believes any fishing will be for sport only—catch and release. “As you might expect, we’re picking up oil and grease readings from both parking lots, but we’re also getting occasional PCB (Polychlorinated biphenyls) readings for Aroclor 1254, which may lead to human health risks.”

A strategically placed rain garden, or biocell, captures storm water runoff from the Towers Complex parking lot. Rain gardens are concave-shaped gardens landscaped with perennial flowers and native vegetation that soak up rain water. “Based on what I have seen, no water or pollutants that enter the rain garden are directly reaching the creek,” said Kauten.

Dry Run Creek water monitoring is currently funded through December 2008.

Future of Project Site

The future of the project site is bright. Meyermann says the stream corridor offers an ideal opportunity to connect people with the land and water in a way that shows the value

of the campus’ natural resources. “Instead of making an effort to avoid the creek, now you see people leaving the sidewalk and heading toward the water,” he said. Signs are posted to educate people about the creek restoration.

Meyermann was able to take the concept of infiltration-based practices, such as rain gardens near the stream corridor and apply them to new projects on campus. UNI’s new library plaza, which appears to have merely an attractive paver block system, is really a storm water treatment practice called permeable paving. Under the paver blocks is a four-foot deep rock chamber and sub-drain that treats rooftop and sheet flow runoff. In the past, this area was prone to ice build-up, creating a slip and fall hazard, but now infiltrates rainfall quickly and eliminates standing water and icing.

“The work done on Dry Run Creek was the inspiration for our paver block system,” said Meyermann.

Kauten said Meyermann is doing a great job of bringing UNI grounds crew up to speed on low impact practices. “His contact with various academic and service departments throughout campus have shed light upon our efforts in a way no other single person could,” she said. “We could not have done this project so successfully, if not for Paul.”

UNI is also home to two pervious concrete parking lots, one which was poured in October 2007. The new infiltrating lot is adjacent to the university’s new McLeod Center athletic and event arena. These and other projects around campus are examples for students and the community-at-large to learn ways to build sustainability and work to improve water quality.

*By Jason Johnson, Public Affairs Specialist
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