National Great Rivers Research and Education Field Station installs an Innovative Wastewater Treatment and Re-use System in its Quest for LEED Certification

Architects
AAIC Inc.
Collinsville, IL
618-345-1270
www.aaicinc.com

Wastewater Treatment System Design
Jacques Whitford NAWE,
now Naturally Wallace Consulting
Vadnais Heights, MN
612-802-2329
www.naturallywallace.com

Infiltrator Systems, Inc.
Old Saybrook, CT
800-221-4436
www.infiltratorsystems.com

Owners/Operators
National Great Rivers Research and Education Center
Lewis and Clark Community College
University of Illinois at Urbana Champaign
Illinois Natural History Survey
www.ngrrec.org

INFILTRATOR®
systems inc.

1-800-221-4436
www.infiltratorsystems.com

The National Great Rivers Research and Education Confluence Field Station in Alton, Illinois is tracking toward its goal of LEED Gold or Platinum certification due to its low impact design and construction process. The 32,000 square foot center sits on approximately eight acres of land leased from the Army Corps of Engineers. When complete, it will provide scientific resources and public outreach designed to improve the sustainable management of large rivers. As part of the project goal of achieving LEED certification, the NGRREC pursued numerous environmental initiatives including the design and installation of a natural system to treat wastewater onsite. In selecting a wastewater treatment system the NGRREC made water reuse a priority.

Jacques Whitford NAWE (JW NAWE), now Naturally Wallace Consulting (NWC) prepared a feasibility analysis for the use of engineered wetlands for wastewater treatment and reuse for the project. Given the unique ecosystem that is created by the confluence of the Mississippi, Missouri and Illiniois Rivers, a natural wastewater treatment system fit well with the organic design of the building which allows subsurface wetland cells to incorporate native plants into the design. The wetland system includes 56 Infiltrator® Quick4® Equalizer 36 chambers installed in seven rows in the infiltration bed disposal system, which enables the return of the treated wastewater into the soil.

After the size of the wetland system was determined, the project team began the design of a two-stage wetland treatment system with ultraviolet disinfection. The system uses Infiltrator® Quick4® Equalizer 24 chambers within the wetland cell for distribution and collection. Chambers were incorporated at the influent (front) and effluent (back) ends of the engineered wetland system and were the ideal choice due to the sensitive marine environment and the fact they are manufactured entirely from recycled materials.

The onsite wastewater treatment design includes tertiary and secondary wetlands, UV and Micron filter treatment, and a 5000-gallon greywater storage tank to feed toilets and facilitate external water recycling.

The project was submitted under LEED version 2.2 and specific LEED points accumulated directly or indirectly due to the design of the wastewater treatment system include:

WE 2 - Innovative Wastewater Technologies - 1 point for treating 100 percent of wastewater onsite to tertiary standards.
WE3.1 - Water use reduction 20 percent - 1 point
WE 3.2 - Water use reductions 30 percent - 1 point
ID Point - Water use reduction 40 percent - 1 point

In addition to the natural wastewater treatment system, the field station building also incorporates a solar hot water system, wind and hydrokinetic energy systems, and a green living roof. Visit www.ngrrec.org for more details about the project.