

design and development. The Corps is striving to be a leader in the sustainability movement, building to the USGBC Leadership in Energy and Environmental Design (LEED) Silver standard (a level of sustainability never before seen in Army facilities), reducing energy to comply with relevant federal energy policies and executive orders on the environment, energy and transportation management, producing non-polluting renewable energy (hydropower), and supporting research in these fields.



The Lodging Facility, Niagara Falls Air Reserve Station, N.Y., offers water efficiency, energy saving features and is built using a percentage of recycled materials.

them more sustainable. The entrance to its Engineering and Construction Division is now a greener office space through the use of products certified by Greenguard Environmental Institute, including carpeting, office furniture and a reception area countertop made of recycled aluminum in an eco-friendly resin.

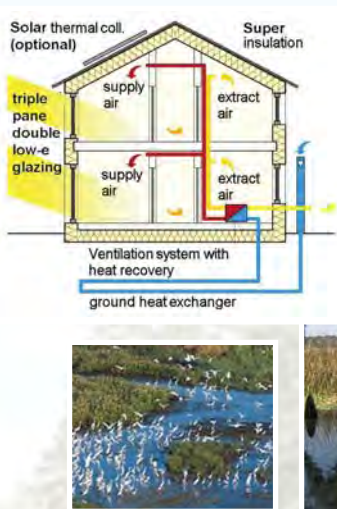
Corps districts are employing green remediation techniques as well. One example can be found at a Formerly Used Defense Sites cleanup project, Nebraska Ordnance Plant,



One of two solar-powered long-distance circulators is placed into Willow Creek Reservoir in Oregon as part of a pilot study to manage harmful algae blooms. The unit draws water from a specified depth and distributes it throughout the reservoir. This process mixes the specified layer of reservoir, disrupting blue-green algal habitat.

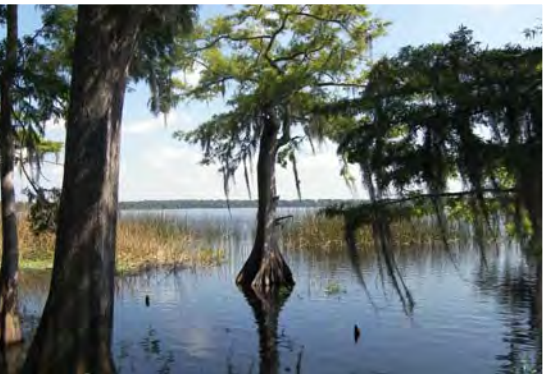
In fact, the 4th Infantry 1st Brigade and Battalion Headquarters building at Fort Carson, Colo., recently earned LEED Gold certification. Led by Omaha District personnel, the design team and contractors used native plants, natural daylight, an interior courtyard and reflective, energy-efficient, blast-resistant windows to create a livable, sustainable building.

Existing facilities also are getting “green” looks. Seattle District is revamping its existing work areas to find ways to make



Energy savings is a big part of the sustainability efforts as depicted in the drawing of a new residential building in Germany.

Corps projects sustainably manage about 8 million acres of land and 4 million acres of water at various ecosystems nationally.



Mead, Neb. A wind-powered turbine there is supplying approximately 30 percent of the power needed for a groundwater recirculation well. As a side benefit, the treated water is irrigating crops.

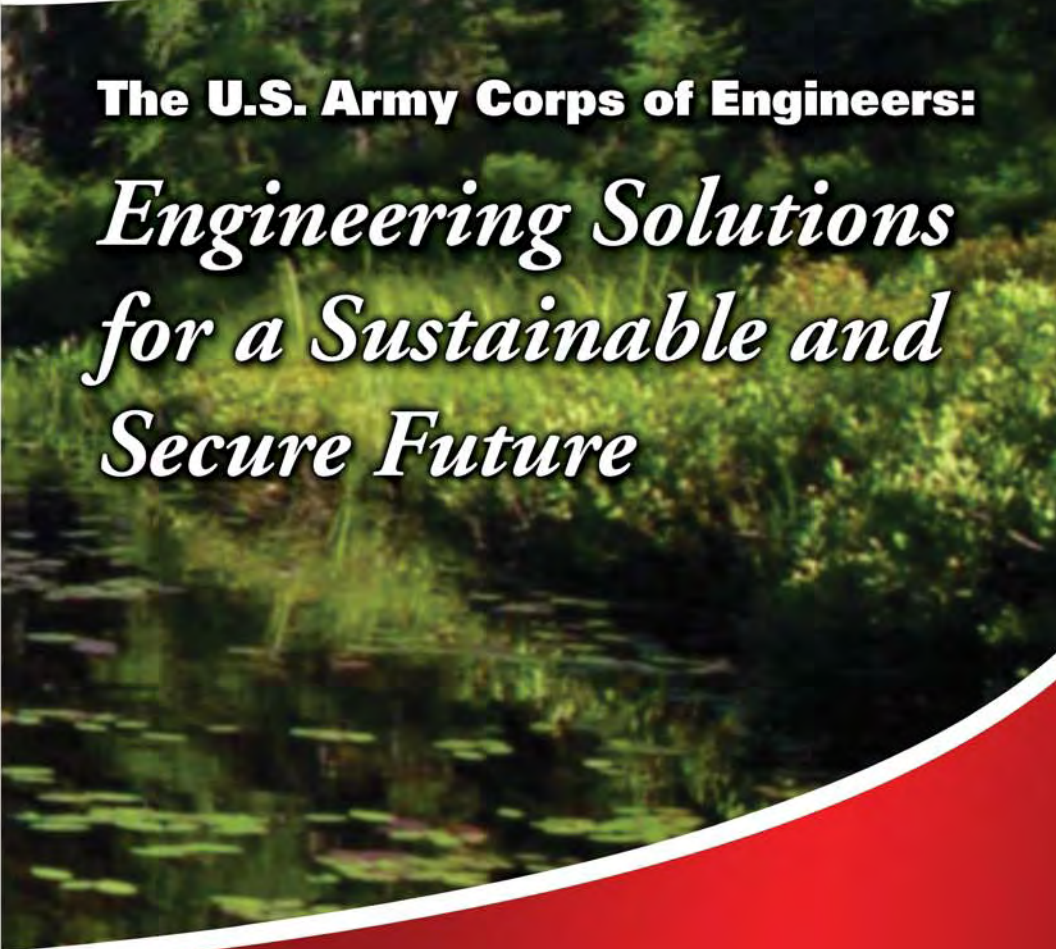
Corps labs conduct research and development in the areas of infrastructure and environmental sustainability. This regularly leads to new technologies, which enables the Corps to provide military installations with quality training lands and facilities for Soldiers and their Families.

During the past 10 years, the Corps has implemented the principles of sustainable design and development in all engineering and construction activities to minimize waste disposal and the use of precious resources, encourage recycling, enhance energy efficiency and permitting the use of environmentally friendly and less harmful materials.

The Corps also established the Sustainable Design and Development (SDD) Directory of Expertise at Savannah District with the Center for the Advancement of Sustainability Innovations (CASI) at the U.S. Army Engineer Research and Development Center Construction Engineering Research Lab in Champaign, Ill., Working in tandem, these two initiatives are providing technical expertise, research, sustainable design and development planning, construction support and a sustainable knowledge environment that benefit not only the Corps but the entire Army as well.

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The U.S. Army Corps of Engineers:
*Engineering Solutions
for a Sustainable and
Secure Future*

“Sustainability results from integrating economic, social and environmental elements into systems approaches to meeting the needs of present and future generations.”

This definition of “sustainability” fits with the Army’s Triple Bottom Line Plus of sustainability: Mission, Environment and Community, plus Economic Benefit. Applying a systems approach to the concept of sustainability enables wise decision-making about financial, human and natural resources today to ensure the U.S. Army Corps of Engineers can fulfill its missions well into the future.

The sustainability ethic has been part of the Corps’ culture since it adopted the *Environmental Operating Principles* in March 2002. The first principle sets the stage for the Corps’ work — “Strive to achieve Environmental Sustainability. An environment maintained in a healthy, diverse and sustainable condition is necessary to support life.” It also is inherent in the Corps’ new Campaign Plan, which envisions a great engineering force of highly disciplined people working with its partners through disciplined thought and action to deliver innovative and sustainable solutions to the nation’s engineering challenges.



The wind-powered turbine at the Nebraska Ordnance Plant, Mead, Neb., supplies approximately 30 percent of the power needed for a groundwater recirculation well. The treated water is also beneficially used to irrigate crops.



New auto-venting turbines are part of the oxygen injection system now being used at the J. Strom Thurmond Dam in South Carolina to improve water quality and provide better habitats for several different species found in the water.

The sustainability ethic is part of everything the Corps does, from:

- improving navigation;
- restoring degraded aquatic and related habitats to improve ecosystem sustainability, both in large scale ecosystem restoration projects such as the Everglades, the Louisiana Coastal Area and the Missouri River and in smaller ecosystem restoration projects where system-wide watershed approaches are solving problems;

- improving flood risk management by both evaluating structural measures and the opportunities for incorporating more non-structural alternatives when feasible;
- embracing low impact development;
- building green and buying green;
- cleaning up environmental damage at formerly used and active military sites;
- supplying hydropower and recreation;
- protecting and managing the environment through stewardship of project lands; to
- considering how the Army’s carbon footprint can be reduced through better designs and operating practices, and considering potential impacts of climate change on how the Corps builds and operates facilities.

The Corps continually strives to make sustainability an outcome of its mission activities. An Environmental Management System (EMS) framework moves the Corps toward sustainability by systematically identifying and controlling those mission aspects that have potential to impact the environment. EMS provides structure and accountability within the business processes to help the Corps enhance and expand the positive environmental impacts of its mission, while reducing, mitigating or eliminating the negative impacts.

In 2002, the Corps and The Nature Conservancy launched the Sustainable Rivers Project (SRP). The collaborative program assesses ecosystem needs downstream of Corps projects and evaluates water management opportunities for potential operational changes and/or reallocations that enhance ecosystem values while



Solar-powered lights will guide traffic at night on a street in front of a mosque in Fallujah, Iraq. The Corps is installing solar-powered lighting as part of infrastructure reconstruction work in Iraq.



A worker installs photovoltaic solar panels on Bldg. 1350 at Fort Sam Houston, Texas.

maintaining or improving primary project purposes (e.g. flood risk reduction, water supply, and hydropower). The SRP, which involves quantifying and implementing “environmental flows” and integrating them into water management decisions, is being used on eight river systems encompassing 36 federal reservoirs in 12 states.

The Corps and the Army have collaborated on developing *The Army Chesapeake Bay Strategy*,

which sets the Army’s direction toward a more sustainable future for the Bay. With 19 major Army installations located within the Bay’s watershed, the Army and the Corps, especially through its Civil Works and Regulatory programs, play major roles in influencing factors that affect the health and integrity of the Chesapeake Bay watershed.

In Fallujah, Iraq, the Corps is installing solar-powered lighting as part of its infrastructure reconstruction work. Using the sun’s renewable energy source balances the needs of the environment and communities by providing power, conserving natural resources for other uses and improving air quality through reduced air emissions. In the United States, the Corps produces almost 25 percent of the nation’s hydropower. Two other noteworthy renewable energy projects are a geothermal heating and cooling project at Fort Sill, Okla., that will save nearly 2,500 barrels of oil a year; and solar walls and rehabilitation shops at Fort Knox, Ky., which will save 2,400 barrels of oil a year. These two projects alone will have a lasting impact on the nation’s economic and environmental health.

As the Army’s construction agent, the Corps is building efficient and sustainable facilities to meet future missions and support Soldiers and their Families. Corps-built Army facilities are meeting standards set by the U.S. Green Building Council (USGBC) for sustainable



New dorms at Wright Patterson Air Force Base, Dayton, Ohio, offer energy savings and elevated covered walkways help keep the elements away.