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## Old Buildings Give New Hope to Needy Families

“See that lumber? That’s some of our nation’s last remaining old growth timber. Wouldn’t that look good in someone’s home?” asks Bob Falk, research engineer at the USDA Forest Service Forest Products Laboratory.

No, Falk is not wishfully thinking about logging old growth timber. In fact, what he is proposing will help conserve our forests while preventing about a billion board feet of lumber from going into landfills each year. The process he is referring to is called building deconstruction. Simply put, it involves carefully dismantling a building and using the salvageable parts, including lumber. It is labor intensive, but cuts down immensely on the volume of waste going into our nation’s landfills. And in most cases, it makes economic sense. The potential market for the salvaged lumber is large and includes structural reuse or remanufacturing as millwork, flooring, and trim.

In this case, Falk is describing an old barracks building at Fort Campbell, Kentucky, but it could be at virtually any military base in the United States. Thousands of wood buildings on active and closing military bases have served their purpose and are now slated for demolition. These WWII era buildings contain some of our nation’s last remaining old growth timber. Until now, much of that timber was going to landfills when buildings were pulled out of service. *(continued on page 3)*

*Lumber stacked and ready to be moved. Bill Bowman, Habitat for Humanity deconstruction manager, says the sale of oak floorboards and joists from this building alone will raise about \$32,000. The money will be used to build homes for needy families.*





## Turning Scrapwood Into Energy

A new energy system has been developed that may help solve two problems facing our nation: overcrowded forests and the shortage of energy in rural communities.

The system, called BioMax 15, uses forest residues to produce electricity and heat suitable for small businesses, rural homes, and schools. BioMax 15 is transportable, fully automated, and environmentally friendly. It produces 5 to 15 kW of electricity and up to 50 kW of useful heat.

Sue LeVan-Green of the Forest Products Laboratory sees promise in BioMax 15. "When this biopower technology is fully developed it will help improve forest health, increase sustainable domestic energy production, and help form new businesses with their accompanying jobs."

For the next two years, BioMax 15 will be tested at seven demonstration sites:

- White Spruce Enterprises, Salcha, AK
- Indigenous Community Enterprises, Flagstaff, AZ
- The Shasta Energy Group, Mt. Shasta, CA

- North Park School District, Walden, CO
  - Mount Wachusett Community College, Gardner, MA
  - SBS Wood Shavings, Glenco, NM
  - American Medal Products, Cuba, NM
- Robb Walt, president of Community Power Corporation (CPC), says these test sites will be useful in gaining a better understanding of the operation. According to Walt, "These demonstrations will let us know the potential of using wood chips as a fuel source, the cost of operation and provide suggestions on how to modify and improve the system." CPC was awarded a Department of Energy grant to develop this technology and has been working on the project for three years. They hope to move forward quickly with their research through these field demonstrations.

*For more information, contact Susan LeVan-Green, Technology Marketing Unit Program Manager, (608) 231-9518, [slevan@fs.fed.us](mailto:slevan@fs.fed.us), [www.fpl.fs.fed.us/tmu](http://www.fpl.fs.fed.us/tmu)*

NewsLine Team: Gordie Blum, Jim Anderson, Judy Patenaude, Rebecca Hoene, JoAnn Benisch, Noreen Esser, Sue Paulson and Sandy Morgan



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**New Hope** (continued from page 1)  
Falk says the lumber deserves a better fate.

“Much of this lumber is very high quality. Some of it is old growth, which is very desirable. It has few knots, tight growth rings, and high density. What we’re doing at FPL is testing it to develop a grade stamp. Then the lumber will meet building codes and can be used by architects and builders. Right now its use is limited,” says Falk.

Falk adds that while the inherent quality of the wood is high, the lumber has often suffered damage (such as nail holes, gouges, and splitting) due to the original construction process, a lifetime of use, and then the deconstruction process. Falk, along with lumber grading and standards agencies, is working to quantify these types of damage and see what effects they have. To date, Falk has evaluated over 1,000 pieces of lumber.

Falk says the work has opened doors to some intriguing partnerships, such as Habitat for Humanity International. Habitat for Humanity specializes in building homes for low-income, needy families.

Lumber taken from deconstructed buildings is sold in Habitat Restores, raising money to build the homes.

“Affordable housing is a big problem in this country,” says Mike Ritter, head of FPL’s Advanced Housing Research Center. “We feel this partnership can take a building disposal problem and turn it into a housing opportunity.”

Habitat estimates that more than 14 million families pay over half their income for housing. In Florida, a minimum-wage worker must work 93 hours to afford the average market rent. In California, it takes 116 hours. According to Department of Housing and Urban Development statistics, more than 5 million people in this country are in substandard housing. Habitat estimates that more than 10 million affordable houses need to be built in the United States. To date, Habitat has built 120,000 homes worldwide, including 40,000 in the United States.

Habitat recently teamed up with Americorps volunteers to dismantle five buildings at Ft. Campbell (home of the 101<sup>st</sup> Airborne Division’s Screamin’ Eagles.) Americorps volunteers devote 10 months of their time



*Left: An Americorps volunteer saws some planking. Americorps volunteers work on projects like this to earn money for their education. Said one volunteer, “This project is an education itself.”  
Right: A Habitat for Humanity worker pulls nails out of some roof supports. “Deconstruction work involves a lot of nail pulling,” says Bob Falk, FPL project manager.*



For more information, contact Bob Falk at 608-231-9255.

On the web:  
[www.fpl.fs.fed.us](http://www.fpl.fs.fed.us)  
[www.dnr.state.wi.us](http://www.dnr.state.wi.us)  
[www.co.sauk.wi.us](http://www.co.sauk.wi.us)  
[www.habitat.org](http://www.habitat.org)

to pursue activities “that help meet the critical needs of the American public.” It is hard work, but most volunteers will tell you the experience is worth it.

“I overcame my fear of heights,” says volunteer TaNisha Templeton. “And I’ve learned to use tools I never heard of before. I’ve also had to work closely with 20 people I’d never met before. It teaches you teamwork and leadership.”

Bill Bowman, a Habitat deconstruction project manager from Austin, Texas, says that enough material was salvaged from those five buildings to earn enough money to build a single-family home. “We recovered about 85 percent of the material. That’s not typical, we usually recover about 75 percent from these WWII era buildings. But even in the worst cases we usually get over 60 percent.” Bowman adds that an FPL-developed grade stamp will make the materials even more valuable.

Bowman and U.S. Army officials hope that the work at Ft. Campbell can be used as a pattern for other military facilities around the country.

“We need to get out of the smash and trash mentality we’ve used in the past,” says Trudy Carr, solid-waste manager at Ft. Campbell. Carr says the Army wants to reduce its solid waste output by 40 percent over the next few years. This project could go a long way toward reaching that goal.

Another candidate being studied for deconstruction is Badger Army Ammunition Plant near Baraboo, Wisconsin. It will be interesting to see, if Bowman’s “worst-case” 60 percent scenario can be reached there. The approximately 7,000-acre facility has been decommissioned. More than 1,500 buildings sit on the site, most of them constructed from lumber that would make any weekend home improvement shopper drool. Falk estimates that the largest 77 buildings on Badger could contain 4 million board feet of lumber—enough to build about 300 homes and roughly equivalent to cutting 17,000 trees on 600 acres of forest.

The problem is that the Badger plant manufactured propellants used in explosives, so some of the wood contains dangerous chemicals. Falk says that a feasibility study must be done at Badger to catalog what types of buildings and how much lumber could be salvaged, as well as what buildings are safe and practical to deconstruct. Sen. Herb Kohl was instrumental in getting \$475,000 for FPL to do just that.

“What makes the Badger project so interesting is that it’s located right in FPL’s backyard in an ecologically important area,” says Falk. “The land use plan for the site is being closely watched by the entire state. One of the key components is restoration. We want to do our small part to help restore the landscape.”



## Ask FPL

Mold problems in homes and buildings have been making headlines across the country. The following questions can help you understand mold problems and find out how to avoid them in your home.

*Several beams in my attic are discolored in areas. How can I tell if it's mold or decay?*

Differentiating between mold and decay is very important—mold fungi simply discolor wood, whereas decay fungi actually weaken the wood structure.

Several features distinguish mold growth from decay. Mold often appears as black, green, or brown fuzzy or powder patches. Spores can also be gray, purple, or red in color. Mold growth can easily be brushed, planed, or washed off, and the wood beneath the discoloration is most often sound.

Decay may appear as unnatural brown or bleached areas in early stages of fungal infection, and it can be difficult to recognize. Brown-rot, the most destructive type of decay fungi, is characterized by darkening and shrinking of wood, with eventual crumbling in the advanced stage. White-rot, another common decay fungi, may cause wood to lose its color or appear bleached. The wood will not shrink or crack but will feel spongy in the advanced stage.

*How can I discourage mold and decay fungi growth in my home?*

Both mold and decay fungi thrive in areas with high humidity and poor ventilation. The following tips can help deter mold and decay fungi growth:

- Increase ventilation in enclosed areas with fans and vents.
- Run a dehumidifier.
- Look for and remedy leaks in pipes and foundations.

- Use paint containing mildewcide in high moisture areas.

In new construction, certain design features can also help keep mold and decay at bay:

- Adequate roof overhangs
- Properly ventilated crawl spaces and attics
- Proper flashing and moisture barrier installation
- Ventilating bathrooms to the outdoors
- Using exterior finishes that shed water

There is no sure way to eliminate mold from your home, but following tips such as these can help you keep the upper hand.

*I've discovered mildew growing in my basement. Is there an effective way to remove it?*

Mildew is the common term used to describe mold and its discoloration on unfinished wood. To clean mildew from wood, you can use a commercially available cleaner or create one yourself using the following formula:

- 1 quart household bleach
- 1/3 cup powdered laundry detergent (**Caution:** Do not use liquid detergent or any other detergent that contains ammonia. Ammonia reacts with bleach to form a poisonous gas.)
- 3 quarts warm water

Washing the affected areas with this mixture will remove most of the mold spores while renewing the look of the wood. Rinse thoroughly with fresh water and be sure to dry the area after cleaning.

*For more information on mold and decay, visit our website at [www.fpl.fs.fed.us](http://www.fpl.fs.fed.us)*

### Questions?

Contact us at  
Forest Products  
Laboratory,  
One Gifford  
Pinchot Drive,  
Madison, WI  
53726-2398  
or write  
mailroom\_  
forest\_products\_  
laboratory  
@fs.fed.us

We can also be  
reached by  
telephone at

608-231-9200

TDD  
608-231-9544

FAX  
608-231-9592



## NewsLine

Published Quarterly by

USDA Forest Service  
Forest Products Laboratory  
One Gifford Pinchot Drive  
Madison, WI 53726-2398

Chris Risbrudt  
Director

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## On the Calendar

**September 23-25**

**NAPFSC–NPC Fall Conference on Biobased Forest Products: More Effective Use of Forest Resources,**  
FPL, Madison, Wisconsin.

The National Planning Committee of the National Association of Professional Forestry Schools and Colleges (NAPFSC–NPC) and the USDA Forest Service are sponsoring this meeting to look at cooperation and fund-

ing opportunities in biobased forest products.

*For more information, visit our website at [www.fpl.fs.fed.us](http://www.fpl.fs.fed.us) or call Sue Paulson at (608) 231-9249.*

**October 1**

**WasteCap Wisconsin Talk and Tour,**

FPL, Madison, Wisconsin.  
This tour of FPL will feature a presentation outlining FPL's role in studying the feasibility of deconstructing some of the

1,500 buildings at the former Badger Army Ammunition Plant. (See page one.) Participants will also get an inside look at the Lab and its projects aimed at improving recycling processes for wood, paper, and composite products. A highlight will be the 2,200-square-foot Research Demonstration House built on FPL grounds.

For more information, visit the WasteCap website at [www.wastecapwi.org](http://www.wastecapwi.org) or call Gordie Blum at (608) 231-9325.

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