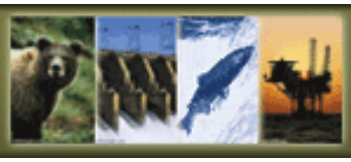
Land Letter
THE NATURAL RESOURCES WEEKLY REPORT



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MINING: Pilot biochar project puts wood waste to work cleaning up mines (Thursday, June 30, 2011)

April Reese, E&E reporter

ASPEN, Colo. -- For the first time in 100 years, a steep hillside on the outskirts of this mining-town-turned-skiing-mecca is showing signs of life, thanks to an innovative pilot project that could hold promise for cleaning up thousands of former mines across the country.

Last October, soil scientists spread biochar -- burned wood mixed with compost and other organic matter -- on the slope, part of an abandoned silver mine that closed in the early 1900s, to try to restore the soil to health and establish grasses, which would then take up heavy metals from the soil.

The slope lies just above Castle Creek, a primary source of drinking water for Aspen residents, and city managers and Forest Service officials, who oversee the land, were concerned that the contaminated soil could be washed into the creek, potentially threatening the water supply.

So far, the experiment seems to be working: What was once a three-quarter-acre tailings pile is now sprouting shoots of green grass.

John Bennett, executive director of For the Forest, a local environmental group that paid for the $100,000 pilot project, said it will be some time before the full effects of the project are evident, but the initial transformation is encouraging.

"At this point, the fact that we're getting all these green shoots is a very positive sign," Bennett said. "But the success of the project will be partly determined by this growing season, which ends around September. And it takes several years to reclaim a mine waste site like this one. It'll take a while before we blow the trumpets and call it a big success, but right now it looks very hopeful."

Traditional remediation methods could not be used at the site because the slope was too steep, and the new plant growth suggests the pilot project is having the desired effect on the soil, said Morgan Williams, a managing partner with Biochar Reclamation Labs, which conducted the remediation project.

"When we showed up to the site last summer, we were standing on a pile of waste rock that had been without vegetation for 100 years, and today we go there and we stand on a slope that has grasses growing on it for the first time in over a century," Williams said. "We're

very happy so far."

Biochar has been used to regenerate depleted agricultural soils, but the Hope mine project was the first to apply the technology to a tailings site, Williams said.

Williams is hoping the method can be used to reclaim some of the other 23,000 old mine sites in Colorado, as well as the 500,000 sites scattered throughout 32 other states.

He has formed a new for-profit venture, called Biochar Solutions, with soil scientist Andrew Harley to provide customized biochar for a variety of reclamation projects, including restoring abandoned oil and gas well pads.

Like the Hope mine, many of the contaminated mine sites that mar the landscape carry the added threat of fouling waterways, and biochar could provide a less expensive means to reclaim them, proponents of the method say.

According to EPA, about 40 percent of watersheds in the West contain headwaters contaminated with toxic substances from abandoned mines. And remediating those sites is not cheap: The agency spends about $30,000 per day to treat contaminated mine drainage at Colorado's Summitville mine alone, and EPA officials estimate it will cost up to $35 billion to clean up all the abandoned mines in the United States.

A new market for beetle-killed trees?

One disappointment with the project, however, was that initially, For the Forest and White River National Forest managers had hoped beetle-killed trees from the forest could be used as the feedstock for the biochar, but there was no local facility that could handle the volume of wood needed to make that much biochar.

Instead, project managers had to truck in the wood from forests across the state, on Colorado's Front Range, Bennett said.

But as the market for biochar grows, the needed infrastructure will as well, making it easier to match local wood from tree removal projects with biochar reclamation projects, Bennett added.

"Biochar provides a market for all these millions and millions of acres of beetle-killed trees," he said, noting that more than 50 million acres in North American are now affected by bark beetles. "Right now, we have very little market for those trees. So if we can use biochar, it would be a tremendous benefit."

From wood to soil

Biochar, which has been used by tribes in the Amazon rainforest for centuries, is formed through the partial combustion of biomass, such as wood, yard waste or corn stalks, in a limited oxygen environment. The result is a charcoal-like material that is highly porous and brings myriad benefits to even the most degraded soils.

"In those holes, that's where the magic happens," Williams said. "Biochar has been shown

to increase soil water retention, because it's almost like a little sponge, and it provides habitat for microorganisms, because they like to reside in all these little holes." Microorganisms play an essential role in rebuilding and maintaining healthy soil ecosystems.

Biochar increases the soil's ability to retain nutrients, too, and it sequesters carbon for thousands of years -- another reason to use beetle-killed trees, which emit carbon dioxide as they decompose. Initial studies suggest that biochar also can reduce soil emissions of two other greenhouse gases, nitrous oxide and methane.

April Reese writes from Santa Fe, N.M.

About Land Letter

Land Letter is written and produced by the staff of E&E Publishing, LLC. For more than 20 years, Land Letter has been the publication professionals have turned to for objective, accurate coverage of natural resource policy issues. From lawsuits over national forest management, to water resource allocation in the West, Land Letter is the source all sides turn to for clear, timely, objective information. Land Letter publishes Thursdays at 10 a.m.

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