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A clear-cut drought solution?

Logging urged to boost runoff, but eco-groups object

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Sunday, November 10, 2002 - State officials intend to push a program of aggressive logging that would change the face of Colorado's high-country forests for decades in hopes of increasing the water supply.

Up to half a million acre-feet of new water - enough to supply a million families - could be created by sawing out clear-cuts in clumps and thinning trees on broad swaths of federal and state land, according to Kent Holsinger, the top water official in the Colorado Department of Natural Resources.

Cutting mountain forests to produce water has been studied on small plots since the Depression, but has never been applied as broadly as officials of Gov. Bill Owens' administration now advocate. With Republicans in control of the statehouse and in Washington, big projects are now expected to get serious consideration from state and federal officials.

"The idea of more actively managing forests to mitigate wildfire and help restore water yields holds tremendous promise," Holsinger said.

Holsinger and other officials have been stumping across the state for several months, promising drought-stricken communities that new water will follow new logging projects.

"With scientific data showing active management can result in more water for Coloradans, this is right near the top of the list of things we need to look at," said U.S. Rep. Scott McInnis, R-Grand Junction, who chairs the House Forest Health Subcommittee. "Heaven knows we can use all the water we can get."

Mark Rey, an undersecretary with the U.S. Department of Agriculture and a former timber lobbyist, said existing forest plans, which direct logging on federal land, could be changed to help achieve state goals.

"We are eager to work with the state as we go through the forest plan revision process to see under what circumstances we can agree to increase water yield for aquatic species and downstream users," he said.

Environmentalists cry foul

Environmentalists have universally panned the concept, which they say doesn't work everywhere but is guaranteed to increase flooding and degrade mountain streams.

"This is beyond harebrained," said Chris Wood, who was an adviser to Forest Service chief Mike Dombeck during the Clinton administration. "This will produce a tremendous backlash when people

see what this looks like on the ground."

The idea is simple: Removing trees allows more snow to fall to the ground, where it runs off into streams and rivers during the spring. Some forest researchers and many water users complain that Colorado's high country has grown too many trees in the last few decades, trees that intercept snow which would otherwise add to the snowpack that melts and runs downhill to farmers and cities every spring.

Huge amounts of forest - between 25 percent and 40 percent of a watershed - have to be cut to achieve this increased water yield, according to the research being used to support the effort. And land managers would have to maintain those clear-cuts or keep making new ones to keep that extra water flowing.

But those same studies show that removing tree cover only produces extra water during the spring runoff - when it's not needed. And the largest increases are in wet years, not during drought. So logging for water would require new and enlarged reservoirs, something that Owens has already indicated is a top priority.

The Owens administration has been careful to cast this as a forest health effort, saying that increased logging can serve the dual benefit of reducing wildfire risk while providing more water as forests are returned to a more "natural" state.

But the dry, over-dense pine forests that burned last summer never get enough snow to be sources of water to begin with. And a major logging effort in the high country will necessarily mean less money is available to thin the Front Range red zone that burned so fiercely in 2002.

Generating water requires cutting the moist high snow forests that only burn once every few centuries, when drought makes them so flammable that no amount of thinning or firebreaks will help.

"The link between logging for fire mitigation and logging for water is a false one," said environmental hydrologist Dan Luecke of Boulder.

Experiment tried in Fraser

Most of the research on how logging can increase runoff in the Rockies has been done at the experimental forest in Fraser, where water yield from the 714-acre Fool Creek watershed has been continuously monitored for 60 years.

Foresters removed 40 percent of the watershed's trees with alternating strips of clear-cuts in 1956, and documented a 40 percent increase in water flowing through a gauge at the bottom of the valley when compared with a nearby watershed that was not cut.

And the yield has been long-lived - four decades later, half of the increase can still be measured at a stream gauge at the foot of the valley, said retired Forest Service researcher Chuck Troendle, whose work underpins much of the support for logging for water.

Flows increased the most during wet years, and almost not at all during droughts, he said. That means the surplus water has to be captured in reservoirs and stored - perhaps for many years - until it's

needed.

But Troendle also found that the number of high-flow days each spring doubled, resulting in increased scouring of the stream channel.

The only large-scale demonstration of the concept was implemented on the 4,100-acre Coon Creek watershed of the Encampment River in southern Wyoming. Twenty-four percent of the watershed was removed in patch cuts during the early 1990s, producing a 17 percent increase in flow, said Troendle.

Two years ago, Troendle calculated that 185,000 acre-feet of water a year could be created by a logging program that cut half of the 1.1 million acres of national forest land in the North Platte watershed over a 120-year period.

But he also said any increase in streamflow downstream of the forest would be so small that it would be undetectable.

Holsinger said the state intends to increase logging on the 70,000-acre Colorado State Forest in Jackson County immediately. And he said the Owens administration wants all national forest plans to identify increasing water yield as a primary goal.

Clear-cutting would be required on lodgepole pine stands, a practice that would eat away at habitat favored by the federally threatened lynx and other interior forest species. The result would be the clusters of openings found at Coon Creek, which Troendle acknowledges have a significant environmental impact.

"It's pure destruction," said Luecke, as he examined a photo of the watershed. "It looks like it was carpet-bombed. This is an outrageous idea. There's no way it can be economically viable."

Troendle said thinning could be used in the spruce-fir forests where most of Colorado's water-bearing snowpack collects. But the proportion of trees removed - 25 percent to 40 percent - would have to be the same.

Success elsewhere doubted

Many scientists, however, doubt that logging for water would be as successful in other parts of Colorado. In the 1970s, Richard Gaudagno studied what happened to runoff after ski runs were cut at Eldora Mountain.

He discovered that deep snow collected in the spruce-fir stands, while the open runs were scoured almost bare by the winds - the exact opposite of what Troendle found in the Fraser study just a few miles away.

Troendle's studies also showed that cutting on the slopes with the wrong exposure or too much wind would result in no new water.

And the environmental cost could be immense. Removing trees causes erosion, which clogs streams with sediment that stifles habitat for fish and aquatic insects, environmentalists said.

"You're completely altering the hydrology of these systems for a short-term gain in water quantity," said Wood, now the vice president for conservation programs at Trout Unlimited. "But the long-term impacts on water quality and wildlife are immense."

Greg Aplet, a forest ecologist with the Wilderness Society, said that the amount of water flowing off Colorado's middle-aged forests is about to naturally increase as they mature into old-growth stands. The uniform tops of today's forests may intercept snowfall, but gaps caused by insects and storm damage in old-growth forests help capture snowfall.

"These forests are just at the point where water yield should come back on its own," Aplet said. "Why reset the clock now?"

Despite the official support, many environmentalists think economics will be the idea's undoing.

"You have to ask two questions: How much will it cost and what else could we be doing with the money?" said Luecke.

"The Forest Service has been losing money on logging projects in Colorado for a long time," Aplet said. "It's expensive to build roads and log on steep slopes, and Colorado trees just don't get that big. That's why the timber industry has largely abandoned the state."

"The fact you do need to virtually clear-cut an entire area to get some measurable runoff - and then only in certain years - makes this such a long shot it doesn't seem to be worth all that effort," said former Colorado Natural Resources director David Getches, now a law professor at the University of Colorado.

"We haven't done any planning for the state's water future, and we're growing like crazy," Getches said. "Frankly, decision-makers have been caught flat-footed, and they want to do something. I hope they don't do something destructive."

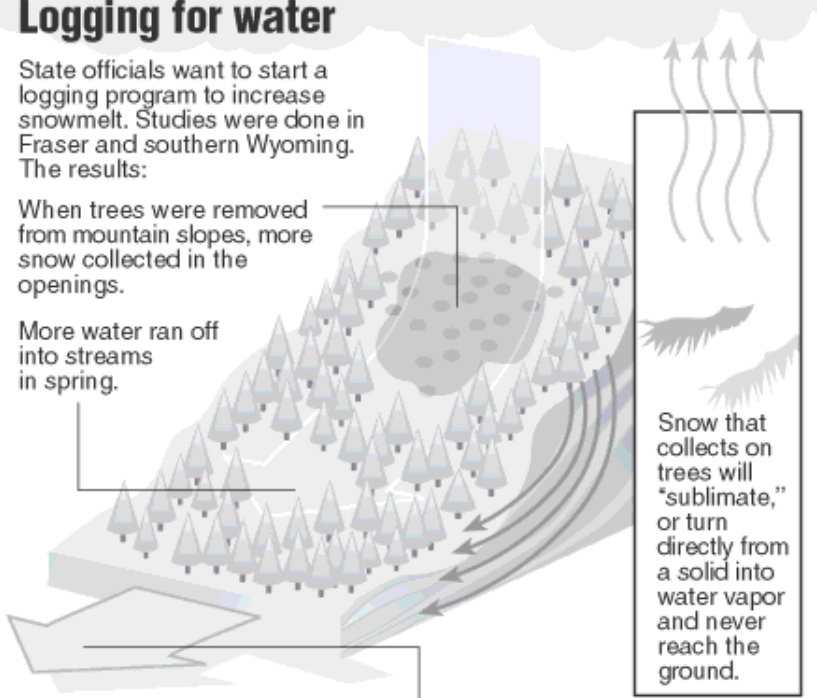
"We're not going to solve water problems in the West by focusing on the supply side," said Wood. "We need to find ways to be more efficient with the water we have."

Logging for water

State officials want to start a logging program to increase snowmelt. Studies were done in Fraser and southern Wyoming. The results:

When trees were removed from mountain slopes, more snow collected in the openings.

More water ran off into streams in spring.



Snow that collects on trees will "sublimate," or turn directly from a solid into water vapor and never reach the ground.

Environmentalists say logging for water doesn't work everywhere. When it does, the increased runoff chokes streams with sediment, degrading fish habitat. And since the increase is only measurable in spring, new reservoirs need to be built to capture the extra water.