


1996

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Recommended Citation

Gorte, R. (1996). Salvage timber sales and forest health. Congressional Research Service (CRS) Report for Congress, Report 95-364 ENR.

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CRS Report for Congress

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Salvage Timber Sales and Forest Health

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June 7, 1996

95-364 ENR

INTRODUCTION

Interest in salvaging timber has increased markedly since extensive forest fires in 1994. The focus is to use the dead and dying timber before it goes to waste and to increase the supply of Federal timber available to the wood products industry. Supporters also note that salvage sales are one tool that can be used to improve forest health. Critics counter that some dead and dying trees are necessary for healthy ecosystems, and that salvage sales are costly to the U.S. Treasury and to the environment. This report describes the concerns over forest health, and then examines the benefits, costs, and financial consequences of salvage timber sales.

WHAT IS THE FOREST HEALTH PROBLEM?

Many of the forests in the interior West -- from the Black Hills of South Dakota to the crests of the Cascades and the Sierra Nevadas, and from the Canadian border to Arizona and New Mexico -- are dominated by pines, especially Ponderosa pine, Western white pine, and lodgepole pine. The pine ecosystems of the West are in unnatural, and unhealthy, conditions. The history of white man's presence in the region has altered these forests substantially. Overgrazing since the 1800s has reduced vegetative competition for the trees (especially the grasses); logging (both before and since the national forests were established) has emphasized cutting the big pines; and fire suppression over the past 75 years has virtually eliminated the natural cycle of frequent fires.

The pure pine forests (pure being defined by foresters as more than 80% of the trees in one species) have been affected by these activities. Prior to aggressive fire suppression, the Ponderosa pine forests of Arizona, South Dakota, Montana, and Oregon burned frequently, with low-intensity fires that reduced fuels and killed some (but not all) of the seedlings and saplings. The principal change from fire suppression is a substantial increase in the numbers of trees, especially in the smaller size classes. A study in northern Arizona, for example, found a pre-settlement average of 23 trees per acre, but 851 trees per acre today. ([See Endnote 1.](#)) While the change is probably less dramatic elsewhere, it nonetheless illustrates the nature of the change -- far more trees, and thus far more woody fuels for high-intensity, standreplacement fires, instead of low-intensity ground-fuel fires.

The mixed-species forests have been similarly altered, with substantial increases in the number of trees (mostly saplings and pole timber) and in the quantity of woody fuel. However, the species composition of these forests has also been changed, with much more Douglas-fir and true fir than existed 150 years ago. This is the result of both logging the high-value pines and of suppressing the low-intensity fires (because the pines are less susceptible to damage from fire). Furthermore, Douglas-fir and true firs are less tolerant of drought than the pines. However, the West has been in a drought for more than a decade, and the stress of drought has made the Douglas-fir and true firs susceptible to insect and disease attack. As a result, annual timber mortality in the national forests of the Intermountain region (excluding the Pacific Coast States) was nearly 16% higher in 1991 than it was in 1986. ([See Endnote 2.](#))

TIMBER SALVAGE SALES

Salvage sales have long been viewed as a means of harvesting dead and dying timber before its value to society was "wasted" through decay. However, timber salvage has never been specifically defined in law. Section 14(h) of the National Forest Management Act of 1976 (NFMA) authorized the creation and use of a special fund "in situations involving salvage of insect-infested, dead, damaged, or down timber, and to remove associated trees for stand improvement...." Section 2001 -Emergency Salvage Timber Sale Program -- of P.L. 104-19, the 1995 Emergency Supplemental Appropriations and Rescissions Act, contains a more explicit definition:

(a)(3) The term "salvage timber sale" means a timber sale for which an important reason for entry includes the removal of disease- or insect-infested trees, dead, damaged, or down trees, or trees affected by fire or imminently susceptible to fire or insect attack. Such term also includes the removal of associated trees or trees lacking the characteristics of a healthy and viable ecosystem for the purpose of ecosystem improvement or rehabilitation, except that any such sale must include an identifiable salvage component of trees described in the first sentence.

Both of these definitions clearly allow the removal of green timber associated with dead and dying trees. The second one expands the rationale for including green timber, but some green timber has always been included in salvage sales.

Not all dead and dying timber is salvageable. Some trees deteriorate quickly, and have no salvageable value. Some are essentially inaccessible -- because of legal restrictions (e.g., wilderness areas and national parks), or because of prohibitive costs (e.g., many miles of new road construction or infeasible roadless harvesting systems). Thus, only a portion of annual timber mortality can be salvaged.

Benefits of Salvage Sales

Salvage sales can offer a number of benefits. When salvage is added to other timber sales, it can increase the supply available to the wood products industry. This may be particularly opportune, since total timber harvests from the national forests have declined from a peak of 12 billion board feet (BBF) in FY1988 to less than 4 BBF in FY1995.

Salvage sales can also be used to help clear sites to prepare for reforestation; while not a prerequisite for establishing new stands (forests have been regenerating themselves naturally for thousands of years), human intervention can accelerate reforestation and can help promote a desirable mix of tree species (both ecologically and for wood production). In addition, typically in combination with other practices, salvage sales can reduce fire hazards by removing large diameter fuels and by placing the remaining fuels closer to the ground, where they are likely to rot faster or can be eliminated manually or with prescribed fires. ([See Endnote 3.](#))

Costs and Limitations of Salvage Sales

Salvage sales might also impose environmental costs on society. The effects of timber sales generally on aesthetics, on animal populations, on water quality and flows, and on other forest values have been widely discussed elsewhere. ([See Endnote 4.](#)) In this respect, salvage sales do not differ from other timber sales; however, if environmental analysis, sale planning, and administrative and judicial reviews are expedited or bypassed, the environmental impacts of salvage sales might be greater than normal. Furthermore, the possible ecological benefits of dead and dying trees are largely unknown; such trees may be necessary to maintain endemic levels of native pests and pathogens that are essential to sustainable ecosystems (e.g., insects that lay eggs in streams that feed native fish, or cankers that feed small mammals that are in turn eaten by carnivores). Finally, salvage sales remove only the large woody material, and may increase shortterm fire hazards by increasing the amount of fuel on or near the ground. Thus, any benefits of salvage sales to forest ecosystem health might offset in part or in total by environmental damages, depending on the sale location, design, and implementation.

Salvage sales are a tool that can be used to improve forest health, but are insufficient to do the entire job. Salvage sales are associated with past, current, or imminent damage, and cannot be readily used prospectively. Salvage sales also require commercially valuable timber, but part of the health problem is an excessive number of small trees that have little or no commercial value. Thus, salvage sales must be combined and coordinated with other tools to improve forest health.

Economic Consequences of Salvage Sales

The economic consequences of timber salvage sales are highly variable and uncertain. Salvage sales have often been "belowcost" sales, where the government's timber sale costs exceed the returns, ([See Endnote 5.](#)) because dead and damaged timber typically has lower prices than green timber. However, if environmental analysis and other requirements are expedited or bypassed, sale expenses are likely to be lower, with the frequency and cost of "below-cost" sales declining.

Salvage sale finances are complicated by the Forest Service's Timber Salvage Sale Fund. ([See Endnote 6.](#)) Section 14(h) of NFMA authorized this fund for collecting receipts from salvage sales, to be used:

to cover the cost to the United States for design, engineering, and supervision of the construction of needed roads and the cost for Forest Service sale preparation and supervision of the harvesting of such timber.

Originally, salvage sale receipts were excluded from the requirements for the Forest Service to return

25% of gross receipts to the States for use on roads and schools in the counties where the national forests are located. The intent, as stated in a later provision of the section, was to just cover the direct costs (and thus create a self-sustaining revolving fund) and to return any excess to the Treasury as sale receipts. However, beginning with the Continuing Appropriations Act, Fiscal Year 1988 (P.L. 100-202), and continued annually under "Administrative Provisions, Forest Service" of the Interior and Related Agencies Appropriations Acts, deposits to the Salvage Sale Fund have been included as receipts subject to the 25% receipt-sharing. This direction effectively authorizes spending up to 125% of salvage sale receipts, since 25% is paid to the counties while up to 100% can be deposited into the Salvage Sale Fund.

As noted above, 14(h) directs the Forest Service to transfer "sums found to be in excess of the cost of accomplishing [these] purposes" to the U.S. Treasury. To the extent that salvage sales have often been below-cost, such transfers are unlikely. If stumpage prices are high enough to lead to an excess, and if that excess is greater than the 25% receipt-sharing payments, then the U.S. Treasury (and the taxpayers) might benefit from continued or expanded salvage sales. If expediting or bypassing some timber sale requirements lowers average salvage costs sufficiently, excess receipts returned to the U.S. Treasury become possible. However, the Forest Service Manual, at 2435.11, requires an estimate of direct and indirect costs for each salvage sale, but no auditable system exists to identify such costs. Furthermore, the Manual, at 2435.12, allows each national forest to retain excess collections "to build and maintain a fund equal to 1 1/2 times the annual needs." This direction may prevent transfers of excess receipts to the U.S. Treasury, even if prices are high enough or costs low enough to generate excess receipts.

Finally, prior to July 1995, the Forest Service did not track deposits from salvage sales in a manner that allows a determination of excess receipts returned to the U.S. Treasury. Unless deposits to the Salvage Fund are less than 75% of salvage sale receipts, such sales effectively require transfers from other (non-salvage) timber sales, thus reducing total timber sale deposits to the U.S. Treasury and costing taxpayers. ([See Endnote 7.](#)) Hence, it is unknown whether salvage sales benefit or cost U.S. taxpayers.

ENDNOTES

(1) W.W. Covington and M.M. Moore. "Postsettlement Changes in Natural Fire Regimes and Forest Structure: Ecological Restoration of Old-Growth Ponderosa Pine Forests." In: Assessing Forest Ecosystem Health in the Inland West. R. Neil Sampson and David L. Adams, eds. New York, NY: Food Products Press, 1994. pp. 153-181.

(2) Douglas S. Powell, Joanne L. Faulkner, David R. Darr, Zhiliang Zhu, and Douglas W. MacCleery. Forest Resources of the United States, 1992. General Technical Report RM-234. Ft. Collins, CO: U.S.D.A. Forest Service, Sept. 1993. pp. 9899.

It is worth noting that annual mortality on private lands in the same region was nearly 75% greater in 1991 than in 1986, and that annual mortality in 1991 was greater in almost every region (except California) and for nearly every landowner class (except non-Forest Service government lands) than in 1986.

(3) Prescribed fires are fires set intentionally in specific places, under prescribed weather and fuel conditions, to lower fuel levels, reduce physical barriers to seedling growth and development, and

remove low-growing competing vegetation (typically hardwoods and herbaceous plants in the South, and conifer seedlings competing with larger pines in the West).

(4) See, for example, CRS Report 92-607 ENR, [Clearcutting in the National Forests](#).

(5) For a discussion of the below-cost sale issue, see CRS Report 95-15 ENR, [Below-Cost Timber Sales: Overview](#).

(6) The Bureau of Land Management (BLM) now has a similar program, the Forest Ecosystem Health and Recovery Fund, for collecting the Federal share of salvage sale receipts and subsequent spending on further salvage sales. This fund was authorized in the Interior and Related Agencies Appropriations, 1993 (P.L. 102-381).

(7) This ignores the potential deposits of salvage sale receipts to the Knutson-Vandenberg (K-V) Fund for reforestation and other sale-area mitigation and enhancement activities. Some salvage sales generate deposits for reforestation of areas that would otherwise be reforested using annual appropriations; this would benefit the U.S. Treasury. However, some salvage sales generate insufficient deposits for reforestation; for areas that would not have needed reforestation, either because damages were insufficient to require reforestation or because reforestation would have occurred naturally, but where reforestation following salvage sales requires appropriations, salvage sale area reforestation would add to the Treasury costs.

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