

Forest Fire DAMAGES In Transition

If you burn down U.S. forestland, what do you owe the government in damages? A lot more than you might think and a lot more than you might have just a few years ago. The government has deployed an enhanced array of damages theories in recent California cases, including one that resulted in the \$102 million Storrie Fire settlement in 2008, the largest ever in a forest fire case (but maybe not for long). The settlement sprang directly from the District Court's decision on a series of summary judgment motions devoted to the subject of recoverable damages. The government sought damages for the harvest value of timber that cannot be harvested, plus the cost of replanting the trees, plus the value of unmeasurable lost "environmental resources" (scenery, wildlife habitat, recreation) calculated using a mathematical formula, and won on every theory. This article looks at the Storrie Fire decision to see where and how this trend departs from the long-established damages regime in forest fire cases and assesses where it makes sense and where it might not, given the (not necessarily) competing goals of fairness and full compensation to the public. California is burning. How much is it going to cost a defendant responsible for starting the fire?

By Steven S. Kimball

Forest fires in California seem to be getting bigger and occurring more frequently. For weeks during summer 2008, much of Northern California lay under a choking, smarting haze of smoke from the wildfires burning across the region. In 2007, the Zaca Fire—the second largest fire in California history—burned 240,000 acres of forest land in Santa Barbara County.

The growth in the size and frequency of forest fires may have been outpaced recently by the dramatic increase in damages claimed by the United States from defendants whose negligence assertedly ignited a fire. Whereas previous suits brought by the federal government for damages caused by forest fires in California were resolved for three or four million dollars, today defendants are paying tens and even hundreds of millions of dollars for similar damages. One reason might be the astronomic cost of fighting fires. The Zaca Fire burned for almost two months, and it cost some \$118 million to extinguish.

Another source of the increase in the amount awarded for damages is the adoption of new theories and methodologies for determining the United States' losses when a forest burns. The government's current approach amounts to a quiet revolution of the system that formerly sought compensation primarily for the commercial value of damaged and destroyed timber. Now, the United States is adding the cost of replanting the entire forest and using a mathematical model to estimate the loss of hard-to-value resources

like scenery, recreation, and wildlife habitat that formerly were simply omitted from a government claim.

The federal government announced a notable success with its new approach in a press release that the U.S. attorney for the Eastern District of California issued on July 22, 2008: "Largest Settlement Ever in a Forest Fire Case: Union Pacific Railroad Company Pays \$102 Million to Settle the United States' Claims Arising Out of the 2000 Storrie Forest Fire."¹ According to the release, the Storrie Fire, which began when Union Pacific employees were repairing railroad tracks, burned more than 52,000 acres and killed trees on 21,000 acres. It cost \$22 million to put the fire out. But over and above these "fire suppression" costs, the remaining \$80 million of the settlement constituted compensation for damage to "natural resources"—that is, the forest.² This amount was derived from the government's claims of approximately \$121 million to compensate for the commercially valuable timber (variously referred to as "sawtimber" or "merchantable timber") that was lost; \$24 million to \$33 million to replant mature trees and also plant young trees with no harvest value; and \$13 million for lost scenery, recreation areas, and habitat, which was calculated using a mathematical model called Habitat Equivalency Analysis (HEA).

The press release about the Storrie Fire identified a predecessor suit that may have been the debut of the government's new concept of forest fire damages. In 2006,



the U.S. attorney for the Eastern District announced a \$14 million settlement in the Big Creek Fire case. In 1994, that fire had burned more than 5,600 acres in the Sierra National Forest, killed trees with moderate to severe intensity on some 1,950 acres, and cost more than \$7.7 million to extinguish. The Big Creek Fire appears to have been the first forest fire for which the United States simultaneously sought the value of lost commercial timber and replanting costs for mature and young trees as well as HEA-based resource damages.

The Big Creek and Storrie Fires are illustrative of the kind of case in which the cause and origin of the fire is not subject to any real dispute.³ In such circumstances, the government typically assumes that liability is a foregone conclusion. These cases can (and perhaps should) be settled without significant litigation, with the private party defendant accepting responsibility and working out a damages figure with the government, including the cost of the fire suppression effort and the damage to the forest. Now, however, the “damage to the forest” component has become a battleground as the United States seeks a far larger monetary recovery than it formerly did, using new theories and methodology to quantify the loss. In this new era, the cases are still settled, but it takes longer to do so (generating a substantial prejudgment interest claim along the way) and for a far higher amount than ever before. Thus, a case that might have been settled in a year or two for several

million dollars now may take eight or 10 or 12 years to resolve and may involve eight- and nine-figure sums.

The Big Creek Fire might have been the federal government’s first attempt to expand its recovery in a forest fire case, but it was the case of the Storrie Fire in which the battle was played out in public and the government scored a real success. To put things in perspective, 12 years after the Big Creek Fire, the United States settled for a total amount (\$14 million) that was less than twice the claimed suppression costs (\$7.7 million). In contrast, the total amount of the settlement award in the Storrie Fire case (\$102 million) was more than four and one-half times the \$22 million in claimed suppression costs.

The United States would never have achieved this landmark settlement without the resounding victory it obtained in four partial summary judgment motions—three brought by the defendant and one by the government—aimed at determining the validity of the government’s damage claims. In *United States v. Union Pacific Railroad Company*,⁴ Judge Frank C. Damrell Jr. decided every significant issue definitively in favor of the government’s position and, in the process, may have ushered in a new era in which cases involving forest fires—for better or worse—become high stakes litigation to a greater extent than ever before.

Sawtimber Damages for Timber That Cannot Be Sawed

The amount of damages awarded is a question that a

jury resolves. What the court decided in *Union Pacific* was whether certain measures and categories of damages to natural resources—other than fire suppression costs, which were not disputed at least for purposes of these motions—were appropriate and recoverable. As set forth in the court’s opinion, the United States claimed \$121 million for the loss of commercial timber, \$24 to \$33 million for reforestation costs, and \$13 million for loss of habitat and other environmental “services” as calculated by an expert witness using HEA. Ultimately, Judge Damrell held that all these elements were properly recoverable and rejected every argument offered by the defendant to eliminate or reduce those costs.

It is surprising that neither of the parties so much as mentioned an article published in a law journal in 1985 that specified the categories of damages recoverable by the United States after a forest fire and also cited cases heavily relied on by the United States and the court.⁵ The author of the article, Norman J. Wiener, an attorney in Oregon who had practiced some 40 years, laid out the measure of damages Uncle Sam may recover for damages caused by a fire in a national forest.

In addition to the cost of suppressing the fire, Wiener stated that, for “merchantable timber,” the government can recover the value of the timber before and after the fire, as estimated by experts based on the volume of timber and available pricing.⁶ Wiener cited one supporting case, *Feather River Lumber Co. v. United States*, in which the Ninth Circuit made the following ruling: “As to the merchantable timber, the measure of damages was the value of the trees, and that measure was applied by [an expert witness] by proof of local stumpage prices.”⁷

The court’s decision in the *Feather River Lumber* case, which evidently was not challenged for more than 70 years, would seem hard to oppose in a federal trial court in California. But, given the \$121 million in damages claimed for timber lost in the Storrie Fire, the defendant in *Union Pacific* really had no choice. Directly countering *Feather River Lumber*, the defendant in *Union Pacific* argued to Judge Damrell that the proper measure of damages for burned trees is the diminution of the value of the land in which the forest is located before and after the fire, which its expert appraisal witness put at \$5,700,000. Judge Damrell agreed that this principle was “generally” true but held that it did not apply in this instance, where there was no real estate market for protected government forestlands.

In fact, the Ninth Circuit had said the same thing in *Feather River Lumber* with respect to forestland that had “young growth” of trees that had no stumpage value.⁸ But there was no need for the Ninth Circuit to make this point about merchantable timber, because the court had already addressed the matter by citing its decision in *Corvallis & Eastern Railroad Co. v. United States*⁹ for the rule on damages for burned merchantable timber. In *Corvallis*, the Ninth Circuit had approved an instruction that informed the jury that the “value of this property [in a federal forest reserve] consisted in the timber, and that the land, without the timber, is of no special value” and observed that the law did not allow sale of the land but did permit sale of the timber.¹⁰ The jury was therefore instructed that “it will

be your duty to take into consideration the market value of the timber both burned and unburned upon the land immediately before and immediately after the fire, and the difference between such market values, if any, will be the damage sustained by the plaintiff to this land and the timber thereon.”¹¹ In other words, the diminution in the value of federal forestland before and after the fire is the same as the diminution in the value of merchantable timber before and after the fire. Judge Damrell’s holding on this element of damages falls squarely within case law in the Ninth Circuit that extends back nearly 100 years.

Probably anticipating this ruling, the defendant in *Union Pacific* fell back on a number of arguments designed to reduce recovery of the value of lost timber. The most significant of these is that much of the timber was located on land specially protected by statute, such as a designated wilderness area, where timber could not be harvested. The United States responded—and Judge Damrell agreed—that these statutes were not an absolute bar to timber harvest for all time, including, in this particular instance, the Quincy Library Group Act, which is due to expire in 2012.

Naturally, these arguments were not made in *Feather River Lumber* and *Corvallis*, both of which predated legislation that put such areas off-limits to logging. However, the reasoning for the damages calculation adopted in these cases rested on the notion that, under the law, the trees could be sold but the land could not. Seen this way, the defendant in *Union Pacific* had the better argument: if there is a law prohibiting the sale of the timber, the government should not recover its sale value. Nevertheless, in *Feather River Lumber*, the Ninth Circuit also said that “The fact that property has no market value does not restrict recovery to normal [sic] damages only, but its value or the plaintiff’s damages must be ascertained in some rational way and from such elements as are obtainable.”¹² Ascertaining damages in a “rational way” is a loose enough standard to eliminate a requirement for the United States to show that it could sell the trees in order to establish their marketable value; therefore, the result of a “constructive” sale of trees is permissible to establish damages (and perhaps preferable to giving a defendant whose negligence caused a forest to burn down a free pass if legislation protected the trees from being harvested).

Yet, if the government is going to recover for the loss of trees that it never could have or would have logged and sold but nonetheless uses their commercial timber value as a “rational way” to ascertain damages, then the amount fixed for the loss ought to recognize deductions for the costs of harvesting and selling the trees. Judge Damrell, however, rejected any deduction for the cost of selling the timber, holding that it was “not appropriate” to deduct the cost of a “forced sale” caused by the defendant’s “admitted negligence.”¹³ Judge Damrell went on to say that damages must be awarded in full for lost trees “not then reduced by fictitious, unrealized income from a hypothetical sale of the timber.”¹⁴ However, since the trees are being valued for the purpose of determining damages as if there were a “hypothetical sale of the timber,” it seems hard to justify eliminating the part of the hypothetical case that would re-

duce damages. Beyond this, the United States itself apparently had recognized that it was appropriate to deduct the cost of selling the timber. Judge Damrell noted the government's "damage appraisers deducted the actual anticipated logging costs from the value of the timber claimed."¹⁵ Thus, Judge Damrell gave the government something it evidently had not even sought when he ruled that the defendant would not "be permitted to ask the jury to make these deductions to plaintiff's claimed timber damages."¹⁶

Reforestation for All

Where Judge Damrell seems to part company with the Ninth Circuit in *Feather River Lumber* is in his ruling that the government could seek between \$24 million and \$33 million in "reforestation" damages (sometimes called "restoration" or "cost of repair" damages) represented by the cost of replanting the trees damaged in the fire, including merchantable timber. In *Feather River Lumber*, to determine damages, the court set a value on only young trees destroyed in a fire as based on the "cost of restoring the land to the condition in which it was before the fire."¹⁷ That amount was calculated to be "the cost of replanting the area where young growth was killed. ..." ¹⁸ In his 1985 article, Wiener described such damages as "the total economic cost of restoring the land, [which] includes the cost of preparing the soil and of purchasing and planting seedlings."¹⁹

Wiener's article cited one case for this proposition, *People v. Southern Pacific Co.*, in which the California appellate court upheld a jury instruction on damages for destruction of property as the "fair market value of such property at the time of its loss or destruction."²⁰ But the jury instruction had a second part that stated that the "measure of damages for the loss to a timberland owner of the 'stocking' of such timberland with growing trees is the dollar amount reasonably requested to replace such stocking, to the extent it existed just before the fire, by the planting of trees."²¹ The instruction goes on to define the term "stocking" as referring to "the degree which such timberland is occupied by live and healthy trees of a commercial species in place at least two growing seasons."²²

Combining *Feather River Lumber* and *Southern Pacific*, as Wiener did in his article, yields a measure of damages for the loss of young trees: the cost of replacing them by planting and tending seedlings such that they are healthy for at least two growing seasons. However, *Southern Pacific* does not specifically limit this replanting measure of damages to the loss of young trees. Rather, the two-part instruction approved by the court appears to award two types of damages for lost trees—both full-grown and young trees—in its reference to recovery of the "fair market value" of destroyed property, as well as the cost of "stocking." In fact, the defendant objected to the jury instruction, because it appeared to allow the jury to award two types of damages that the defendant maintained should have been offered as alternatives, but the court rejected this argument. As a practical matter, two types of damages would only be recoverable for full-grown, merchantable trees, because young trees have no commercial value. Nonetheless, Wie-

ner's analysis, in effect, subordinated *Southern Pacific* to *Feather River Lumber* and limited such "restoration" damages to young trees, calculating those costs as the expense involved in replanting them.²³

Suffice it to say that Judge Damrell did not accept any such restrictions on restoration damages. Relying on *Southern Pacific* and *Feather River Lumber*, Judge Damrell held that these cases allow recovery of restoration damages for all the trees killed in the fire, not just young trees, because these authorities permit recovery for separate harm to "soil and the pre-merchantable timber. ..." ²⁴ Actually, only *Southern Pacific* refers to "damage to the soil" as a separately compensable injury after a forest fire.²⁵ Wiener cited that case and commented that the cost of "preparing the soil" before replanting the trees is part of the damages recoverable for the loss of young trees.²⁶ By contrast, Judge Damrell, observing that "[t]he damage to the soil, according to plaintiff, may take hundreds of years to rebuild, if ever," held that replanting costs for merchantable timber, as well as young trees, are recoverable under *Feather River Lumber* and *Southern Pacific*:

Plaintiff calculates its expected future costs, if all the areas in which trees were killed were replanted, at \$32,608,739, or if a more conservative approach is taken and initial efforts are directed only to areas that suffered moderate and high intensity burns, at \$23,916,190. These damages are legally recoverable, for the separate injury to the soil and pre-merchantable timber, under the authorities discussed above.²⁷

The ruling in *Southern Pacific* may provide support for this statement, but the decision in *Feather River Lumber* is actually to the contrary: the Ninth Circuit unmistakably applied damages based on replanting costs as a measure only for the destruction of young trees. Whether or not *Southern Pacific* is sufficient support for Judge Damrell's decision, it is clear that he adopted a damages principle that differs from long-standing Ninth Circuit case law about the appropriate application of restoration damages.

An undebated and essentially unstated issue in Judge Damrell's opinion is whether awarding a plaintiff the value of the trees and the cost of replanting them—in this instance, \$121 million for the former and \$24 million to \$32 million for the latter—constitutes improper double recovery.²⁸ It seems a sound proposition that the "fair market value" of merchantable timber compensates the plaintiff for the cost of growing trees to maturity so that they have commercial value. Market price should account for the cost of producing the timber and should also typically furnish some profit to the producer. By paying the plaintiff damages for the fair market value of merchantable timber and the cost to replant replacement trees, a defendant has to pay the cost of production twice. This notion is acknowledged at least by implication in the *Feather River Lumber* ruling in its limitation of restoration damages to young trees.²⁹

Leaving aside double recovery, it is a valid question whether the *Feather River Lumber* damages measure for the loss of merchantable timber should continue to control

when other measures exist under California law. As Judge Damrell repeatedly pointed out, the goal of tort damages in California is to compensate the plaintiff for all detriment caused by the defendant's negligence.³⁰ Taking California law into account, in conjunction with the Ninth Circuit's jurisprudence in *Feather River Lumber* and *Corvallis*, there is authority for using the cost of restoration, not loss of timber, as the appropriate way to calculate the damages for timber destroyed by fire in a national forest in California.

The legal analysis in favor of restoration damages is straightforward. In *Mozetti v. City of Brisbane*, California's appellate court stated the general rule that "if the cost of repairing the injury and restoring the premises to their original condition amounts to less than the diminution in value of the property, such cost is the proper measure of damages; and if the cost of restoration will exceed such diminution in value, then the diminution in value of the property is the proper measure. ..."³¹ In *Corvallis* and *Feather River Lumber*, the Ninth Circuit concluded that the diminution in the value of forestland is the fair market value of the timber lost, because the land has no other value since the land could not be sold.³² Combining the principles articulated in *Corvallis*, *Feather River Lumber*, and *Mozetti* yields the conclusion that the cost of repair of the damage from the Storrie Fire (between \$24 million and \$32 million to replant the lost trees) ought to be chosen as the appropriate measure of damages, because the diminution of the value of the land (\$121 million in lost timber) is greater than the cost of repair—that is, restoration costs.

Another consideration in favor of restoration damages in the context of a forest fire is that this measure avoids the fiction inherent in awarding the "fair market value" of burned timber that never could be or actually would be logged and sold. The volume of the timber harvested from national forests has dropped precipitously since 1990. Although multiple contributing factors to this decrease can be identified, there seems to be no doubt that efforts to smooth the way for increased timber harvest in recent years have failed. Because there is no basis for anticipating that, for the foreseeable future, logging in federal forests will return to a level at which the government could reasonably expect to cut and sell the trees that burned in the Storrie Fire, Judge Damrell seemed to strain to explain away the defendant's assertion that timber value damages were inappropriate and speculative for trees that statutes had declared were off-limits to harvest until at least 2012. Judge Damrell referred to these trees as "banked" for future use—a phrase that might have been accurate in the past but fails to reflect the current reality.³³ Moreover, it would seem obvious that legislative protection for these trees is not likely to be stripped in 2012, especially when the trend seems decisively against any substantial harvesting of timber on national forestlands. In fact, the defendant's assertion that timber value damages are speculative has force even with respect to trees that lack special statutory protection, because there is little reason to believe that national forests may ever again be logged at the volume involved in the Storrie Fire.

By contrast, the prospect of the U.S. Forest Service

planting seedlings after a fire is real. In *Union Pacific*, the court could—and readily did—foresee that the United States would suffer actual restoration-based damages arising out of the cost of replanting the burned area. Judge Damrell disposed of the defendant's argument that this cost was speculative by pointing out that more than \$250,000 had already been spent on replanting 300 acres, further replanting was stalled only because of the lack of funds, and the United States had submitted detailed reforestation plans and costs.³⁴

Restoration damages also reflect the changed nature of the management of national forests by the U.S. Forest Service. Gifford Pinchot, the first chief of the Forest Service, envisioned the purpose of national forests, in large part, as a conservation measure that would ensure a reliable supply of wood products for the nation. Today, the vision has changed to emphasize other values, such as preservation of habitat for threatened and endangered species or mitigation of global warming. The time may have come to prefer a damages measure that focuses on these values by emphasizing the preservation of trees instead of harvesting them.

Finally, an award of \$121 million based on the hypothetical sale value of lost timber seems an unreasonable consequence of acts of ordinary negligence that are likely to recur in a national forest. It is widely accepted that the severity of forest fires in recent decades is linked to 70 or more years of intensive fire suppression by state and federal agencies. Without the natural process of fire, thick stands of trees surrounded by thick underbrush can result, and a spark can lead to a devastating fire that can destroy thousands or even hundreds of thousands of acres of trees. The reported circumstances that ignited the Storrie and Zaca Fires involved conduct by work crews that may have been negligent but was hardly extraordinarily so.³⁵ Despite employers' best efforts, it would be naïve to assume that policy, procedure, or supervisory diligence will prevent further incidents of this sort. Forests are simply too vulnerable to substantially lessen the incidence of devastating fires caused by negligence. Seen in this way, the current damages regime is overly burdensome. After all, utilities—which, by definition, perform necessary public services—operate extensively on national forestlands. In addition, this is not a cost imposed only on big business; many individuals live or work on or adjacent to national forestlands and millions visit these lands each year. Members of the public may not appreciate that a trip to a national forest includes the risk of exposure to an overwhelming damages claim.

The U.S. suit against the Boy Scouts of America seeking \$14 million in damages provides a cautionary illustration. In 2002, some scouts decided to camp out in the Uinta Mountains on the border between Utah and Wyoming without an adult leader, in violation of Boy Scout guidelines. The scouts built a campfire, which also violated a temporary ban, and left the area without dousing the embers sufficiently. The resulting East Fork Fire destroyed more than 14,000 acres of alpine forestland and meadowland. The U.S. attorney for the District of Utah sought to recover the cost of fighting the fire and rehabilitating the land from the

Boy Scouts' national organization. According to a spokesperson for the U.S. attorney, "We are not going to seize Scout camps and little pup tents. ..." ³⁶ But the largely self-insured Boy Scouts reported nationwide revenue of \$78 million in 2002; thus, the suit claimed nearly 18 percent of the organization's annual revenue.

In short, there is no guarantee that the government will limit suits to recoup multiple measures of damages on behalf of U.S. taxpayers to a small number of cases like the Big Creek and Storrie Fires—cases that involve corporate defendants with deep pockets. Indeed, in its press release related to the Storrie Fire, ³⁷ the government announced the expansion of its forest fire litigation via formation of a legal task force dedicated to maximizing recovery of damages:

"Pursuing these cases is a top priority for our Office," said United States Attorney [McGregor W.] Scott. "The Eastern District of California is among the districts with the largest amount of National Forest System acreage in the United States. Our District contains over 16 million acres of National Forest System lands, which is 8.3% of the total National Forest System Lands in the entire country."

In recognizing the Eastern District of California as being on the forefront of pursuing recoveries following forest fires, it was recently selected to receive special funding from the Department of Justice. Earlier this year, the Department of Justice created special Fire Recovery Litigation Teams in the United States Attorney's Offices for the Eastern District of California, the Central District of California, and the District of Utah, to enhance the fire recovery litigation efforts already taking place in those districts. "The Fire Recovery Litigation Teams will enable the U.S. Attorney's Offices in those three districts to hire additional attorneys and support staff to focus solely on fire recovery cases because the Department of Justice recognizes the value of these cases to the taxpayers," stated Associate Attorney General [Kevin] O'Connor.

Quantification of Unmeasurable Damages Using Habitat Equivalency Analysis

The final element of damages that Judge Damrell analyzed in *Union Pacific* concerned additional harm to the forest environment besides the destruction of timber. The United States quantified the damages in this category as \$13,326,000 via expert testimony from Robert Unsworth using HEA. Unsworth is a founder in the development of HEA, a technique used in this instance to produce a damages figure for environmental losses—including lost scenery, wildlife habitat, and soil; damage to water quality and recreational use; and other losses not related to timber—that are difficult or even impossible to measure. ³⁸ Unsworth provided a substantially similar expert opinion in the case arising out of the Big Creek Fire, which may have marked the debut of HEA as applied to damages claimed for losses resulting from forest fires. Reported cases applying HEA had previously been confined to circumstances involving

destruction of marine environment and oil pollution, where the use of HEA was prescribed by statute or regulation. ³⁹

In *Union Pacific*, Judge Damrell accepted HEA for the first time as a methodology used to calculate environmental losses in litigation related to forest fires. Because the issue came to Judge Damrell on a motion for summary judgment, he did not consider HEA under the criteria formulated for admissibility of expert opinion in federal court—that is, whether the HEA methodology can properly and reliably be applied to injury sustained by a forest in a fire. ⁴⁰ However, having ruled in favor of HEA on summary judgment, Judge Damrell would likely allow it to be presented to the jury at trial (at least so the defendant in *Union Pacific* no doubt thought). This question then has yet to be answered after thorough debate, and it may never be answered if courts simply cite *Union Pacific* as authority for using HEA in a forest fire case.

A better course would have been for the court to take up the question on a motion in limine. Habitat Equivalency Analysis presents a number of special issues that ought to be contested before expert opinion on the subject is considered. HEA is a mathematical model that can be applied in different ways. The analysis is complex and formula-driven in application, and, to someone who is not an economist, it is sufficiently confusing that assessing the validity of conclusions of competing HEA experts can amount to an act of faith on the part of a trier of fact.

Greatly oversimplifying, HEA involves picking a compensatory "service" performed over time for some other environment that is equivalent to the consequences over time of the injury to the subject environment. Thus, if the public has lost the scenery provided by full-grown trees in one location for 100 years because of a forest fire, the cost of action taken at another forest location that will provide a benefit equivalent to that loss may be the damages figure generated by the HEA process. The calculation involves scaling as the consequence of the injury decreases (for example, as the newly planted trees grow they provide more scenery). HEA also requires a "social" discount said to be analogous to the discount to the present value of monetary damages for future losses, as well as subtraction from the cost of equivalent services of "collateral" benefits generated thereby beyond those that were lost.

There are many steps in the process, and the expert using HEA exercises discretion as to every step. Among other things, the expert determines the baseline (the condition of the environment in the absence of the fire), selects the metric (a measurable item to represent the value of environmental attributes), decides on the equivalent service among possible candidates, and determines the nature and value of collateral benefits. Any error or unreasonable choice the expert makes can greatly affect the result.

The Big Creek and Storrie Fires may well have set the pattern for future HEA expert opinion on environmental losses from a forest fire. In both cases, Unsworth picked the diameter of the trunks of full-grown trees as his metric for losses, and he chose fuels management (brush clearing to lessen the chance and severity of future forest fires) as the equivalent service.

However, these cases illustrate concerns about using a methodology that involves an expert picking inputs for mathematical models to calculate millions of dollars of damages that cannot be checked or verified by any other method, including an actual assessment of conditions on the ground. For example, in the course of the Big Creek Fire litigation, Unsworth dramatically revised his initial opinion of \$11.8 million in lost environmental resources and ultimately concluded that the loss was only \$6.5 million.

In addition, the relative difference between the numbers that Unsworth calculated for environmental losses in the Big Creek Fire versus the Storrie Fire is disconcerting. For the Big Creek Fire, Unsworth applied HEA to 1,583 acres of moderately or severely burned forestland; for the Storrie Fire he applied the analysis to 19,500 acres of similarly damaged land. Unsworth opined that environmental losses from the Big Creek Fire amounted to \$6.5 million and \$13.2 million from the Storrie Fire. To be sure, there may be differences in the burned area environments resulting from the Big Creek and Storrie Fires, or Unsworth may have refined his application of the HEA process in the three-year interval between his opinions in the two cases. Nonetheless, using HEA for two fires in national forests in California's Sierra Mountains, Unsworth came up with a final damages figure for the Storrie Fire that is about twice the one he had calculated for the Big Creek Fire, even though the size of the acreage burned in the Storrie Fire is more than 12 times that of the Big Creek Fire.

The assessment obtained by HEA in these initial cases raises concerns that this methodology is too malleable to be reliable in a case involving a forest fire. Other weaknesses of HEA used in this kind of context have been noted. In his expert reports on the Big Creek and Storrie Fires, Unsworth cited an article by Dr. Richard Dunford, who identified the circumstances in which HEA works best: (1) one source of injury, (2) a relatively short and certain injury period, (3) good baseline information about the services provided by the injured habitat, (4) one affected service, (5) similar habitat nearby that can be created or enhanced, and (6) a short and relatively certain compensation restoration period.⁴¹ Based on these factors, a forest fire is not suitable for HEA assessment because, at a minimum, the analysis involves multiple affected services (scenery, wildlife habitat, recreation, and so forth) and a long restoration period. When multiple services are involved, Dunford also cautions that a single metric may be inadequate: "Because of the complexity of service flows in most habitats, an integrated measure of service flows for many habitat/injury categories is most likely preferable to determination of a single empirical metric."⁴² Unsworth, however, picked a single metric in the Storrie Fire—the diameter of the trees—despite acknowledging the multiple lost services provided by the forest that his HEA opinion sought to quantify.

Dunford summed up the strengths and weaknesses of using HEA to calculate damages:

HEA can be a useful tool for achieving an NRDA [natural resource damage assessment] settlement at

certain sites; however, it should not be viewed as a replacement for the process of injury determination, service quantification, and damage determination in formal NRDAs. In using HEA, many of the critical determinations of causality, baseline, and service losses may be simplified or negotiated with little technical basis. Because HEA generates a quantitative result, it can lead to a false sense of accuracy when these technical shortcomings are not recognized. As with any mathematical model, HEA results are only as meaningful as the assumptions and input parameters used to derive them. Moreover, because many of the important HEA assumptions cannot be known with certainty in typical applications, HEA should only be viewed as a general approximation of required restoration.⁴³

Nonetheless, if damages that are not based on loss of timber and cost of restoration are to be quantified in litigation, Dunford appears to concede that HEA may be the only feasible way to arrive at a figure. "[T]here are few alternatives for estimating the monetary value of ecological service losses, and the reliability of the resulting monetary estimates is highly suspect."⁴⁴ In the litigation that arose out of the Big Creek Fire case, Forest Service witnesses testified that they simply gave up trying to find a reliable and reasonable number for wildlife losses and damage to scenery and recreational use. Unsworth also testified that he has asked the Forest Service for any available information on measured effects of the Big Creek Fire on wildlife and recreation use, but none was made available. Admittedly, the damages regime outlined in the *Feather River Lumber* case does not contemplate claims for damages in categories like these. However, this appears to be another area in which changing public values may signal a need to modify the traditional evaluation of damages caused by forest fires.

In any event, these questions were not submitted to Judge Damrell in the *Union Pacific* case. The defendant challenged the government's HEA-based damages only as "duplicative and unauthorized,"⁴⁵ and the idea that HEA could not be used because it was not authorized did not get far with Judge Damrell. The defendant asserted that, even though HEA was authorized by statute in other contexts, no such authorization existed for using HEA to assess damages in the case of a forest fire. Judge Damrell disposed of this argument by pointing out that no statute precluded the use of HEA and that California statutes expressly provide that a plaintiff suing for fire damages caused by the defendant's negligence can recover compensation for any and all injury and damages.

The problem of double recovery associated with HEA-based damages still remains. In *Union Pacific*, Judge Damrell discounted the defendant's argument on this point by again relying on *Southern Pacific* for the proposition that separate damages may be awarded for separate injuries. However, even though Judge Damrell itemized the habitat and scenic injuries in the burned-out area left by the Storrie Fire, his decision did not expressly consider the implication of awarding damages both for these losses and

for lost merchantable timber. If lost timber damages are calculated based on the proceeds of a future harvest and sale, that harvest would result in the absence of large trees in the area. Indeed, after the trees have been harvested, the same habitat would be missing for the same period of time involved in an HEA calculation, while the trees grow back to their former size. Historically, the U.S. Forest Service cut down trees in substantial sections of national forestland; sold the timber; replanted the trees; and, in the process, caused a reduction in the “services” provided by the habitat, environment, and recreational use in the harvested area. Today, this approach to forest management is out of favor because of changing notions of stewardship of national forestland. However, because, in litigation, compensation for lost timber is determined as if former harvesting practices still continued, the totality of environmental effects of such practices should be part of the calculation. Viewed this way, the government receives compensation for lost habitat (just as it receives compensation for the cost of replanting trees) as part of an award of damages based on the commercial price of the volume of timber that was destroyed in the fire.

The double recovery problem disappears if damages for lost timber—both merchantable and nonmerchantable—are based only on replanting costs. Under this scenario, the United States does not receive monetary damages as if it would have sold the timber at some point in the future, which would have resulted in a clear-cut area in which trees needed to be replanted and a period of lost habitat while the trees grew to their former size. Rather, the government is compensated for the costs incurred in reforestation and for the loss of habitat during the reforestation period. Allowing recovery of both restoration and HEA-based environmental damages would make the United States whole in a manner that does not rely on the fiction of a future timber sale and avoids double recovery.

Conclusion

For nearly 100 years, the *Corvallis* and *Feather River Lumber* decisions have defined the damages recoverable for negligence resulting in a forest fire on federal land in California and other states in the Ninth Circuit’s jurisdiction. In *Union Pacific*, Judge Damrell departed from that regime in favor of an assessment of damages that more fully recognizes the different types of injury sustained when a forest burns. In the process, however, Judge Damrell created the problems of double recovery and excessive damages that are not truly resolved by the reasoning of his opinion or the authorities he cited. Also, *Union Pacific* marked the introduction of Habitat Equivalency Analysis as a way to fix hard-to-measure and intangible losses from a forest fire, but the ruling did not settle the question of whether HEA is sufficiently reliable for that purpose.

Nonetheless, the decision in *Union Pacific* seems to have appropriately indicated that it may be time to retire strict adherence to the damages regime applied in the *Corvallis* and *Feather River Lumber* cases. The author hopes that the replacement will be something other than a system that awards the government every sort of damages it can

conceive of without honoring legitimate concerns about double recovery and reliability of the assessment of losses. To that end, there is legal authority for choosing restoration damages as more appropriate than an award of the fair market value of lost timber. A focus on restoration also reflects the current reality of the U.S. Forest Service’s timber management of national forests, in which large-scale harvesting of trees may well be a thing of the past, and restoration and rehabilitation of damaged forestland is the current and future objective. **TFL**

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Endnotes

¹M.W. Scott, U.S. attorney for the Eastern District of California, U.S. Department of Justice, Press Release, July 22, 2008.

²*Id.* at 2.

³The Big Creek Fire ignited after an explosive short circuit in a 12,000-volt electrical substation. Workers found a blackened ground squirrel at the base of a transformer. No one witnessed the event, but there was little doubt that the squirrel had entered the substation enclosure, climbed to the top of the transformer, and touched the electrified conduit above.

⁴565 F. Supp. 2d 1136 (E.D. Cal. 2008).

⁵Norman J. Wiener, *Uncle Sam and Forest Fires: His Rights and Responsibilities*, 15 ENVTL. L. 623 (1985).

⁶*Id.* at 633.

⁷30 F.2d 642, 644 (1929). “Stumpage” refers to the value of standing trees, which is now calculated by estimated board feet.

⁸30 F.2d 644.

⁹191 F. 310 (9th Cir. 1911).

¹⁰*Id.* at 315.

¹¹*Id.*

¹²30 F.2d 644 (citation omitted).

¹³*Id.* at 1148.

¹⁴565 F. Supp. 2d 1148.

¹⁵*Id.*

¹⁶*Id.*

¹⁷30 F.2d 644.

¹⁸*Id.* at 643.

¹⁹Wiener, *supra*, n.5, 15 ENVTL. L. 634.

²⁰139 Cal. App. 3d at 627 (1983).

²¹*Id.*

²²*Id.*

²³See Wiener, *supra*, n.5, 634; *Feather River*, 30 F.2d 643–644.

²⁴565 F. Supp. 2d 1150.

²⁵139 Cal. App. 3d 635.

²⁶Wiener, *supra*, n.5, at 634.

²⁷565 F. Supp. 2d 1150 (*emphasis added*, footnote omitted). In the footnote, Judge Damrell observed that the Unit-

ed States did not seek reforestation damages for wilderness lands where such efforts were not allowed, a conceptual inconsistency with the government's seeking the harvest value of timber in an area where harvest is not allowed. Nonetheless, this position avoids a double recovery program in wilderness lands even if harvest value damages are sought for lost timber there. *Id.*, n.23.

²⁸See 6 Bernard Witkin, *SUMMARY OF CALIFORNIA LAW, TORTS* § 1550, 1023 (10th ed., 2005) ("The general theory of compensatory damages bars double recovery for the same wrong."); see also *Mozetti v. City of Brisbane*, 67 Cal. App. 3d 565, 575–576 (1977) (sustaining double recovery objection to the instruction that allowed recovery of the cost of repair of injured property and buildings, plus loss of rentals and difference in market value before and after the damage).

²⁹Judge Damrell cites *McKay v. State of California*, 8 Cal. App. 4th 937 (1992), a number of times as support for awarding multiple categories of damages under the California statute that prescribes damages for escaped fire. Health and Safety Code § 13007. In *McKay*, the court of appeals permitted recovery of lost profits from a retail business connected to property that had been damaged by a negligently set fire. 8 Cal. App. 4th 938. Employees of the California Department of Forestry and Fire Prevention started a "controlled burn" on adjacent property, which spread to the plaintiffs' farm, burning six acres of improved property containing trees, plants, and trellises, and, in the process, destroyed the plaintiffs' retail business, which sold products supplied by the farm. *Id.* The court rejected the state's claim that only damage to the property measured by diminution in market value of the land was recoverable, emphasizing that the plaintiffs "lost a business as well as acreage, and lost profits were awarded for damage to the business, not damage to the acreage." *Id.* at 940. While *McKay* certainly reflects flexibility in the type of damages that may be awarded for a fire ignited negligently, the decision does not raise an analogous double recovery issue, because the plaintiffs did not seek damages, for example, for the diminution in the value of the land plus the cost of replacing the crops. *McKay*, rather, awarded lost profits "under the general rule allowing recovery of lost profits for property damage caused by negligence." *Id.* at 940, citing *J'Aire Corp. v. Gregory*, 24 Cal. 3d 799, 803–804 (1979). It is possible, however, to analyze *McKay* as allowing damages both for loss of the value of planted land and the stream of profits from the plants represented by the profits of the retail business. In this sense, the more accurate, single measure of the plaintiffs' damages might be to award the value of the plants, which, for commercial fruit-bearing plants, would include expected future profits discounted to present value. See *Santa Barbara Pistachio Ranch v. Chowchilla Water Dist.*, 88 Cal. App. 4th 439, 446 (2001). Under California law, courts have the flexibility to pick the most appropriate alternative measure of damages for injury to land bearing valuable vegetation, so long as plaintiffs are not awarded double recovery for the same injury. *Id.*

³⁰565 F. Supp. 2d 1143, citing Cal. Civ. Code § 3333.

³¹67 Cal. App. 3d 576 (italics and citations omitted).

³²*Corvallis*, 191 F. 315; *Feather River*, 30 F.2d 644.

³³565 F. Supp. 2d 1145–1146.

³⁴*Id.* at 1151. The damages sought by the United States for reforestation after the Big Creek Fire added an element of speculation not present in Judge Damrell's decision regarding the Storrie Fire litigation. The United States proposed to replant and tend to the trees (referred to as performing "forest treatments" such as thinning, removing underbrush, and so forth, to grow trees faster and to create a less fire-prone forest) for up to 150 years. The government claimed approximately \$2.5 million for this "future work." Several government witnesses, however, testified that the Forest Service had never planned for replanting even 10 years in the future and further testified that they could not be reasonably certain any of these treatments would ever be done, even if the United States recovered the money to perform them in the suit. The costs of these treatments, therefore, were not sufficiently certain to qualify as prospective damages under California law. See 6 Witkin, *supra*, n.42, § 1152, at 1026–1027.

³⁵The Zaca Fire reportedly began when ranch employees were grinding irrigation pipe on July 4, and a spark flew off and landed in dry grass. See Christopher Meagher, *Charges Dropped Against Men Who Started Zaca Fire*, SANTA BARBARA INDEPENDENT, Oct. 10, 2008.

³⁶See Scott Gold, *U.S., Utah Want Boy Scouts to Pay \$14 Million for Wildfire*, L.A. TIMES, July 1, 2004.

³⁷Scott, *supra*, n.1, 3–4.

³⁸See *Union Pacific*, 565 F. Supp. 2d 1151–1152; see also R.E. Unsworth and R.C. Bishop, *Assessing Natural Resource Damages Using Environmental Annuities*, 11 ECOLOGICAL ECONOMICS 35 (1994).

³⁹See *United States v. Fisher*, 174 F.3d 201 (11th Cir. 1999); *United States v. Great Lakes Dredge & Dock Co.*, 259 F.3d 1300 (11th Cir. 2001); see also 16 U.S.C. § 1432(6)(A)(i)–(ii); 33 U.S.C. § 2706(d)(1)(A)–(C). The first mention of habitat equivalency in a reported case occurred in 1997 in the trial court's opinion in *United States v. Fisher*, 977 F. Supp. 1193, 1198 (S.D. Fla. 1997), affirmed by the Eleventh Circuit.

⁴⁰See *Daubert v. Merrell Dow Pharmaceuticals Inc.*, 509 U.S. 579, 593 (1993).

⁴¹R. Dunford, T. Ginn, and W. Desvousges, *The Use of Habitat Equivalency Analysis in Natural Resource Damage Assessments*, 48 ECOLOGICAL ECONOMICS 61, 68 (2004).

⁴²*Id.* at 61.

⁴³*Id.* at 68. It goes without saying, as well, that a mathematical model does not purport to describe the actual conditions in the affected area—for example, observed and acknowledged changes in wildlife in a forest habitat after a fire can include an increase in deer population, which can lead, in turn, to an increase in recreational visits by hunters during deer hunting season.

⁴⁴*Id.* (footnote citing examples omitted).

⁴⁵565 F. Supp. 2d 1151–1152.