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## A Survey of Approaches to Assessing Damages to Contaminated Private Property

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# A SURVEY OF APPROACHES TO ASSESSING DAMAGES TO CONTAMINATED PRIVATE PROPERTY

by KENNETH F. McCALLION\*

## INTRODUCTION

WHENEVER a major oil or chemical spill occurs, the primary focus of attention is to ascertain how much of the oil or other contaminant can be recovered as soon as possible, how much beach area can be cleaned, and how many sea mammals, birds and fish hatcheries can be protected.<sup>1</sup> After these initial steps are taken, attention is turned to scientific studies to determine the persistence of the pollutant and its impact on all aspects of the ecological system affected.<sup>2</sup> Finally, economists, scientists and land appraisers seek to quantify all damages suffered as a result of the spill.<sup>3</sup> These damages may cover the full range of economic losses, from damages to commercial fisheries and fish processing companies to quasi-economic damages relating to the losses sustained by native Americans and others who subsist off the natural resources in the affected lands and waters.

In cases where wilderness or natural lands are contaminated, damages also may be assessed which flow from the impairment of the visual and scenic environment. Such an impairment adversely affects both the tourism industry and the aesthetic enjoyment of all users and non-users who suffer non-economic damages arising from the sense of loss and knowledge that a once pristine area has now been polluted. In a pollution case involving a supertanker such as the Amoco Cadiz<sup>4</sup> or the Exxon Valdez,<sup>5</sup> the range of damages can be formidable.

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1. See A. Myrick Freeman III & Raymond J. Koop, *Assessing Damages from the Valdez Oil Spill*, RESOURCES, Summer 1989, at 5, 5.

2. *Id.*

3. *Id.*

4. Damages calculated following the 1978 Amoco Cadiz supertanker oil spill off the British coast included clean-up costs, damages to commercial fisheries and other marine resources, recreation losses to tourists and residents, losses to the tourist industry, and "other" costs (including the value of lost cargo and tanker, legal costs, research costs, damages to agricultural crops, and damages to human health). Thomas A. Grigalunas et al., *Estimating the Cost of Oil Spills: Lessons from the Amoco Cadiz Incident*, 2 MARINE RESOURCE ECON. 239, 254 (1986). Damages to tourism were addressed in *In re Oil Spill by Amoco Cadiz*, 471 F. Supp. 473, 476 (J.P.M.L. 1979). In addition to direct damage to some of the beaches the tourist trade on beaches that did not suffer direct harm was injured by extensive adverse publicity in the media.

5. Following the Exxon Valdez oil spill, vivid visual media images of dead sea otters, sea birds, and bald eagles focused international attention on the losses to wildlife and natural resources. Damages claimed by plaintiffs in the litigation include damage to the commercial and recreation fisheries, recreational damages, land damages, economic damages to area businesses, cultural damages, and damage to subsistence lifestyles.

This Article will address the problem of assessing damages for contaminated private property and evaluate the various economic and scientific methods presently in use.

### I. CONTAMINATED PROPERTY: WHAT MEASURE OF DAMAGES?

The debate among scientists, appraisers, and lawyers regarding the most accurate and effective method of assessing the damages to real property and natural resources is far from being resolved, and the stakes are high for all parties. Whether the legal theory of damages is one in trespass, negligence, nuisance, or strict liability, the measure of damages is critical to an accurate calculation of loss. Indeed, the accurate determination of the values of a resource and the damage to it is often essential to its preservation and restoration.

The selection of a comprehensive methodology to assess fully the damages caused by environmental pollution is important both to society in general as well as to the property owners and users who are directly impacted by the lost value and use of the contaminated property. Society no longer has the luxury of permitting individuals and corporations to exploit land and natural resources without being fully accountable for the environmental degradation caused. Economists refer to this age-old practice of avoiding economic costs by those who accrue the benefit of pollution as "externalizing costs."<sup>6</sup> One of the basic functions of environmental legislation and environmental law is to force polluters or other responsible parties to internalize the costs of environmental harm they cause.<sup>7</sup> The main purpose of the Superfund legislation, for example, is to assure "that those responsible for any damage, environmental harm, or injury from chemical poisons bear the costs of their action."<sup>8</sup>

Generally speaking, a victim may recover for loss to property only to the extent that such a loss can be objectively determined.<sup>9</sup> This objective determination of loss, however, should approach as closely as possible the subjective loss that the injured owner places on the property, both because the blameless owner-victim has a right to the full use and enjoyment of the property free from accidents and resulting contamination and because the law should maximize the incentive of polluters to internalize costs and take all possible precautions.<sup>10</sup> Most significantly, a polluter should not benefit from his intentional wrongdoing or negligence in

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6. Frank B. Cross, *Natural Resource Damage Valuation*, 42 VAND. L. REV. 269, 271 (1989).

7. When companies do not voluntarily try to "internalize" environmental costs and risks, Congress sometimes has mandated that they do so. For example, following the Exxon Valdez oil spill, Congress required that all new tankers and barges of at least 5,000 gross tons have double hulls. See Oil Pollution Act of 1990, Pub. L. No. 101-380, § 4115, 104 Stat. 484, 517-22 (1990).

8. S. REP. NO. 848, 96th Cong., 2d Sess. 13 (1980).

9. See WILLIAM W. LANDES & RICHARD A. POSNER, *THE ECONOMIC STRUCTURE OF TORT LAW* 29-31 (1987).

10. See generally, Heidi Wendel, Note, *Restoration as the Economically Efficient*

causing the contamination of the property by seeking the benefit of a valuation theory that results in the payment of less than full damages.

In this regard, the valuation of property in eminent domain cases is not entirely analogous to pollution damages since, in eminent domain cases, there is a strong public policy favoring the acquisition of the property for public purposes at market-based prices. Consequently, the subjective value that an owner attaches to the property that grossly exceeds market value cannot be recognized fully in valuing the property.<sup>11</sup>

In a pollution case, however, there is no public policy favoring the trespass and damage to the landowner's property. Indeed, there is a strong public policy *against* it. Consequently, the methodology used to value the damaged property in a pollution case should approach as closely as possible the subjective value that the owner places on it, even if it may exceed a traditional market value analysis.<sup>12</sup>

Traditionally, when an owner suffers injury to his real property, the standard for damages is the diminution in value of the property caused by the injury, after first determining the "highest and best use" for the property and applying comparable sales information relating to similar properties. Diminution in value is the difference between the value of the property before and after the pollution damage. Most early cases permitting damage recovery to land and natural resources focused extensively on the economic use value of those resources.<sup>13</sup>

This focus on the consumptive use value of the property to its owner reflects Western philosophical and religious traditions forming the basis of our capitalistic and consumer based economic system, which places the human species at the top of the natural order, if not at the center of the universe, with all other animate and inanimate objects regarded as mere "resources" for its exploitation. Aristotle taught, for example, that "plants are created for the sake of animals, and the animals for the sake of man."<sup>14</sup> Similarly, the Book of Genesis teaches us of man's "domin-

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*Remedy for Damage to Publicly Owned Natural Resources*, 91 COLUM. L. REV. 430, 433-34 (1991).

11. LANDES & POSNER, *supra* note 9, at 21-22; STEVEN SHAVELL, *ECONOMIC ANALYSIS OF ACCIDENT LAW*, 132-35 (1987).

12. On the other hand, the damages assessed must not so grossly exceed actual damages that the business responsible is unable to reasonably calculate the cost benefits of taking precautionary measures to avoid future accidents. SHAVELL, *supra* note 11, at 7-8.

13. See, e.g., *Geer v. Connecticut*, 161 U.S. 519, 534 (1895) *overruled by* *Hughes v. Oklahoma*, 441 U.S. 322 (1979) (sole rationale expressed for preserving game birds is to preserve a valuable food supply); Stuart L. Hart, *The Environmental Movement: Fulfillment of the Renaissance Prophecy?*, 20 NAT. RESOURCES J. 501, 517-18 (1980); see also *A.E. Nettleton Co. v. Diamond*, 264 N.E.2d 118, 123, (N.Y. 1970). *But see* *Barret v. New York*, 116 N.E. 99, 101 (N.Y. 1917) ("The police power is not to be limited to guarding merely the physical or material interests of the citizens. His moral, intellectual and spiritual needs may also be considered. The eagle is preserved, not for its own use but for its beauty.").

14. ARISTOTLE, *POLITICS* 1256 (W. Ellis trans., 1962).

ion" over nature.<sup>15</sup> This anthropocentric view of man's domination of nature has been tempered with the concept of man's "stewardship" of nature, which traces its roots as far back as Noah's construction of an ark to shield all species of plants and animals from the ravages of the great flood.<sup>16</sup>

Some courts, however, have recognized the inadequacies of a strict market-based analysis of damages, especially where the natural resource damaged, such as a shade tree, has unique attributes or value to the owner that may not be fully reflected in the market price of the property.<sup>17</sup>

Similarly, in the case of pollution of public lands, it was recognized as early as 1929 in the case of *Feather River Lumber Co. v. United States* that awarding diminution in value for the destruction of a young growth stand of timber was an inappropriate remedy because the land had been intended for public uses.<sup>18</sup> The holding of *Feather River* was modified by *SS Zoe Colocotroni*,<sup>19</sup> which held that *Feather River* need not be literally applied where relocation was not feasible or not actually intended. The court, however, rejected the defendants' argument that diminution in value was the appropriate measure of damages, since the Puerto Rican environmental statute, upon which the suit was based, was explicitly created to protect the natural environment from despoliation and development.<sup>20</sup> The court recognized that "portions of the land and sea which at first glance seem useless . . . often contribute in subtle but critical ways to an environment capable of supporting both human life and the other forms of life on which we all depend."<sup>21</sup>

Federal and state statutes relating to environmental pollution have

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15. *Genesis* 1:26; see also JOHN PASSMORE, *MAN'S RESPONSIBILITY FOR NATURE* 3-27 (1974).

16. Unfortunately, as the number of species threatened with complete annihilation has accelerated over the past few decades primarily due to population expansion, destruction of tropical rain forests, and other environmental abuses, the Noah's ark allegory seems to be repeating itself in reverse as species after species walk back down the plank to extinction. Dr. Edward O. Wilson and Fr. Paul R. Ehrlich, two prominent biologists, estimate that if the tropical rain forests continue to be cut at the current rate, a quarter or more of all the species on earth could be exterminated within 50 years. William K. Stevens, *Species Loss: Crisis or False Alarm?*, N.Y. TIMES, Aug. 20, 1991, at C1. Dr. Wilson further estimates that 50,000 species a year, or about six every hour, are being doomed to eventual extinction. *Id.*

17. See, e.g., *Denoyer v. Lamb*, 490 N.E.2d 615, 618-20 (Ohio 1985) (owner entitled to restoration expenses where "the owner's use is not . . . measurable by commercial standards, and . . . the trees form a part of an ecological system of personal value to the owner"); see also *Farny v. Bestfield Builders, Inc.*, 391 A.2d 212, 214 (Del. 1978) (loss of shade trees affecting land value); *Fiske v. Moczik*, 329 So. 2d 35, 37 (Fla. Dist. Ct. App. 1976) (loss of ornamental trees as affecting land value); *Philips Petroleum Co. v. Mengan*, 114 P. 2d 454, 456 (Okla. 1941) (loss of soil and shade trees).

18. 30 F.2d 642, 644 (9th Cir. 1929).

19. *Puerto Rico v. SS Zoe Colocotroni*, 628 F.2d 652, 677 (1st Cir. 1980), *cert. denied*, 450 U.S. 912 (1981).

20. *Id.* at 672-74.

21. *Id.* at 674.

also tended to apply a restoration standard. For example, the federal Clean Water Act defines the measure of damages as the cost of replacing or restoring the damaged natural resource, within certain specified statutory limits, for each discharge of oil or hazardous substance.<sup>22</sup> The Clean Water Act itself was amended by the Oil Pollution Act of 1990,<sup>23</sup> which specifies that the measure of damages to natural resources includes the cost of restoration while also allowing recovery for the diminution in value of the resources while restoration is proceeding.<sup>24</sup>

However, the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA)<sup>25</sup> was silent as to the yardstick for measuring damages, leaving it up to the Department of the Interior to promulgate regulations on the subject.<sup>26</sup> The Interior Department issued regulations requiring that the trustees involved in recovering damages "select the lesser of: restoration or replacement cost; or diminution of use values as the measure of damages."<sup>27</sup> This had the practical effect of making diminution in value the primary measure of recovery because the cost of restoration is generally greater. Indeed, the cost to remediate contaminated property often exceeds the value of the property itself.<sup>28</sup>

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22. 33 U.S.C. § 1321(f)(5) (1988).

23. 33 U.S.C.A. § 2701-2719 (West Supp. 1991).

24. *Id.* at § 1006(d)(1), 104 Stat. at 496. The Trans-Alaska Pipeline Act (TAPA), 43 U.S.C. § 1653 (1988), amended by 104 Stat. 565 (1990), also expressly provides for recovery based on restoration costs. See Trans-Alaska Pipeline Liability Fund, 43 C.F.R. §§ 29.1-29.13 (1991). A restoration measure of damages is also suggested by the legislative histories of the Deepwater Port Act of 1974, 33 U.S.C. §§ 1501-1524 (1988) and the Outer Continental Shelf Lands Act, 43 U.S.C. §§ 1331, 1350(b) (1988), § 1350(b) amended by 104 Stat. 570 (1990). See S. REP. NO. 284, 95th Cong., 2d Sess. 89 (1978) and H.R. REP. NO. 590, 95th Cong., 2d Sess. 182 (1978).

25. 42 U.S.C. §§ 9601-9675 (1988) [hereinafter CERCLA].

26. Section 107(f) of CERCLA, 42 U.S.C. § 9607(f), like § 311(f) of the Federal Water Pollution Control Act of 1948 (FWPCA), 33 U.S.C. § 1321(f) (1988), authorizes representatives of state and federal governments, as well as Native American tribes to act as "trustees" for the natural resources by recovering damages from polluters for damages to natural resources impaired or destroyed by oil spills and the release of hazardous substances. CERCLA § 301(c), 42 U.S.C. § 9651(c), requires the Department of Interior to develop regulations to assist the trustees in assessing natural resource damages. Since Section 107(f)(1) of CERCLA, 42 U.S.C. § 9607(f), and § 311(f)(5) of FWPCA, 33 U.S.C. § 1321(f)(5), both provide that state and federal officials "shall act on behalf of the public as trustees of natural resources to recover for" natural resources damages, the trustees failure to perform their fiduciary duty may be actionable by citizens. Thus, Congress provided for citizen suits enabling citizens to act as "private attorneys general" to force trustees to fulfill their statutory duties, CERCLA § 310, 42 U.S.C. § 9659, FWPCA § 505, 33 U.S.C. § 1365. See Erik D. Olson, *Natural Resource Damages in the Wake of the Ohio and Colorado Decisions: Where Do We Go From Here?*, 19 *Envtl. L. Rep. (Envtl. L. Inst.)* 10551, 10552-53 (1989). In addition, citizens may sue for natural resource damages under state statutes (for example, Alaska Stat. § 43.03.822 (1991) and common law doctrines such as nuisance and negligence. E.g., FWPCA §§ 311(o) and 505(e), and CERCLA § 114.

27. 43 C.F.R. § 11.35(b)(2) (1991).

28. Peter J. Patchin, *Valuation of Contaminated Properties*, APPRAISAL J., Jan. 1988,

In *Ohio v. United States Department of the Interior*,<sup>29</sup> the Court of Appeals for the District of Columbia struck down the Department of the Interior's regulations, finding the primary remedy in actions brought by federal or state governments as trustees of the natural resources to be the cost of restoration, which is usually higher.<sup>30</sup> In rejecting the Department of the Interior's diminution of value standard, the court observed that the fatal flaw of the Interior Department's approach was that it assumed that natural resources are fungible goods, "and that the value to society generated by a particular resource can be accurately measured in every case — assumptions that Congress apparently rejected."<sup>31</sup> The *Ohio* court gave a striking example of how the Department of the Interior's "lesser of" rule could lead to the undervaluation of natural resources:

[I]magine a hazardous substance spill that kills a rookery of fur seals and destroys a habitat for seabirds at a sealife reserve. The lost use value of the seals and seabird habitat would be measured by the market value of the fur seals' pelts (which would be approximately \$15 each) . . . plus the selling price per acre of land comparable in value to that on which the spoiled bird habitat was located. Even if, as likely, that use value turns out to be far less than the cost of restoring the rookery and seabird habitat, it would nonetheless be the only measure of damages eligible for the presumption of recoverability under the Interior rule.<sup>32</sup>

#### A. *Calculating Restoration Costs and Damages*

In calculating restoration costs, a determination must be made of (1) how much money it would take to restore the contaminated property and related natural resources to as close to their pre-spill condition as possible, and (2) how these restoration costs compare to the money damages suffered by the landowner and all others affected by the reduction in flow of services from the land and its diminished value as a result of the contamination. In answering the second question, an economic analysis must include the lost value of service to those who directly use the property (*i.e.*, use values) as well as the lost value to people who do not make direct use of the property (*i.e.*, non-use values).<sup>33</sup>

The cost of restoration, or "cost to cure" as it is sometimes referred to,

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at 7, 9; JOEL S. MOSKOWITZ, ENVIRONMENTAL LIABILITY AND REAL PROPERTY TRANSACTIONS, § 1.1 at 4 (1989).

29. 880 F.2d 432 (D.C. Cir. 1989).

30. *Id.* at 444-48.

31. *Id.* at 456. The *Ohio* court also noted that restoration costs should not be viewed as a "ceiling" on the amount of damages recovered; it was to be applied primarily to carry out Congress' intent that damage recoveries at least be sufficient to pay for restoration. *Id.* 445-46. Damages could include the lost use of the property during restoration. *Id.* at 446-48.

32. *Id.* at 442.

33. Freeman & Kopp, *supra* note 1, at 5-7.

is largely a theoretical construct since it is virtually impossible to return polluted property to its exact, pre-contaminated condition,<sup>34</sup> especially in the case of pristine wilderness land. Once defiled by a contaminant and the often adverse consequences of the clean-up activities themselves, scenic and wilderness property and the natural resources associated with them are never precisely the same again.

Restoration ecology is a complex science that is still in its infancy.<sup>35</sup> Even the best efforts may be unable to replicate preexisting conditions, and complete restoration is often impossible.<sup>36</sup> Moreover, restoration efforts beyond a certain point actually may be impractical or even counter-productive.<sup>37</sup> The goal of restoration often is not to return a contaminated system to its exact, preexisting condition, but to return it to a fully functioning ecosystem.<sup>38</sup>

Restoration cost as a measure of damages, therefore, is something more than the cost of clean-up activities where the goal is usually to *reduce* the level of contamination to both water and land environment and to leave the rest to nature. Thus, the full measure of damages should be the sum of the amounts that are or could reasonably be expended for damage assessments, clean-up, and restoration of a contaminated site, plus the lost use and diminished value of the property prior to "restoration" and any remaining diminution in value after restoration activities cease.<sup>39</sup>

Only through such an analysis can the full extent of losses be determined, which is the goal of both the legal principles of strict liability and theories of economic efficiency. Only by requiring a polluter to pay the true costs of the damage inflicted can society be ensured that the wrongdoer will be properly motivated to internalize the costs of its hazardous activities.<sup>40</sup> Both common sense and accepted economic theory support the proposition that polluters will take all reasonable precautions to avoid accidents only if the cost of those precautions is less than the

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34. Nevertheless, in the case of publicly held property, damages recovered by federal or state trustees under CERCLA or The Clean Water Act (FWPCA) *must* be applied to actual restoration purposes. See *Ohio v. United States Dep't of the Interior*, 880 F.2d 432, 444-45 (D.C. Cir. 1989); CERCLA, 42 U.S.C. § 9607(f)(1) (1988); FWPCA, 33 U.S.C. § 1321(f)(5) (1988).

35. See John D. Aber & William R. Jordan, III, *Restoration Ecology: An Environmental Middle Ground*, BIOSCIENCE, July-Aug. 1985, at 399.

36. JOHN V. KRUTILLA & ANTHONY C. FISCHER, *THE ECONOMICS OF NATURAL ENVIRONMENTS: STUDIES IN THE VALUATION OF COMMODITY AND AMENITY RESOURCES* 43-44 (1975).

37. Cross, *supra* note 6, at 299-300 n.154.

38. *Id.* at 300 n.159.

39. Section 1006(d) of the Oil Pollution Act of 1990 codifies a similar measure of damages to natural resources, including (a) restorations costs, (b) diminished value of the natural resources pending restoration, plus (c) reasonable damage assessment costs, Pub. L. No. 101-380, § 1006(d), 104 Stat. 484, 496 (1990).

40. See, e.g., A. MITCHELL POLINSKY, *AN INTRODUCTION TO LAW AND ECONOMICS* 39 (1983); GUIDO CALABRESI, *THE COSTS OF ACCIDENTS* 69-70, 80-93 (1970).



amount of damages they will have to pay in the event of an accident.<sup>41</sup>

### B. *Public Versus Private Land Damages*

Some commentators have suggested that the higher measure of damages and corresponding level of legal protection offered by a restoration standard should be available only in cases of contamination of publicly held lands and not when private property is involved.<sup>42</sup> However, the rationale for protecting natural resources is identical in the case of the pollution of private property as it is for public lands.<sup>43</sup> Does it really make sense to have a different damage standard applied when oil washes up on privately owned wilderness property than when it washes up on public lands? Is a tree on private land worth less than an identical tree on public land? Of course not. It is equally appropriate, therefore, that a restoration standard rather than a diminished value one be applied in the case of pollution to private lands.<sup>44</sup>

Thus, unless it can be shown that the private landowner is holding the land strictly to maximize the market value of the property exclusively or for commercial purposes rather than for recreational and conservation purposes, a restoration standard of damages must be considered as appropriate for privately owned property as it is for publicly held lands. Organizations such as The Nature Conservancy, as well as native American tribes, corporations and other entities, view their role as holding the land in trust for future generations, and damage to such lands does not readily respond to a simple market valuation formula.<sup>45</sup>

Under the Clean Water Act as amended by the Oil Pollution Act of 1990 and CERCLA, federal, state, and Indian tribe trustees have the right to recover natural resource damages on publicly owned property.<sup>46</sup> In defining the jurisdiction of the trustees under CERCLA, Congress de-

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41. See CALABRESI, *supra* note 40, at 69-70.

42. See, e.g., Wendel, *supra* note 10, at 438 n.46.

43. As Cross explains, "if private resources are valued at market price, but comparable public resources receive a different valuation, then economic activities may be distorted." Cross, *supra* note 6, at 304. Similarly, as Senator Max Bacus of Montana has eloquently put it, it "is inconceivable that any reasonable person would suggest measuring the [value of the] Grand Canyon or Yellowstone Park on the basis of a land appraisal." 132 CONG. REC. S14,931 (daily ed. Oct. 3, 1988) (statement of Sen. Max Bacus).

44. A restoration standard as a means of measuring at least some of the total damages to contaminated property must be distinguished from a restoration injunction, which requires the polluting party to actually restore the contaminated property. See, e.g., *United States v. Robinson*, 570 F. Supp. 1157, 1166 (M.D. Fla. 1983).

45. The holding of land by private parties in trust is analogous to the "public trust doctrine" for public lands. While the consumptive or market value of resources on such lands is an important part of a damage analysis, other values are also important. These include option value (the holding of land for its future consumptive value), existence value (the value of land to people in its natural state) and intrinsic value (the value of land and natural resources independent of what human beings think). Victoria Adams & Bill Mundy, *The Valuation of High Amenity Natural Land*, 59 APPRAISAL J. 48 (1991).

46. 33 U.S.C. § 2702(b)(2)(A) (1988); 42 U.S.C. § 9607(f)(1) (1988).

liberately excluded purely private property having no government management or control from jurisdiction of the statute.<sup>47</sup> The Department of the Interior's first set of regulations under the statute explicitly excluded damages to privately owned resources from the trustees' jurisdiction.<sup>48</sup> However, the *Ohio* court criticized these regulations as being too narrow, to the extent they prohibited recovery for publicly managed natural resources located on privately owned property.<sup>49</sup>

In revising its regulations, the Department of the Interior reaffirmed that, in defining the scope of trusteeship, its rule tracked the CERCLA statutory definition of "belonging to, managed by, appertaining to, or otherwise controlled by" government, thus covering a broad range of government interests in natural resources located on both publicly and privately owned lands.<sup>50</sup> Presumably, traditional rights of navigation, hunting, and public access to beaches may be sufficient property interests for purposes of this provision.<sup>51</sup> Political subdivisions of states, such as towns and municipalities, may also have standing as "authorized representatives" under CERCLA to recover natural resource damages.<sup>52</sup>

However, even where federal jurisdiction under the Clean Water Act and CERCLA may arguably extend to privately owned property, trustee standing to sue is clearly *concurrent* with that of the private landowner. CERCLA does not pre-empt state or common law remedies.<sup>53</sup> Similarly, the Clean Water Act, which gives the trustees jurisdiction in water pollution cases, also has a "savings clause" that specifically preserves the right of private parties to bring nuisance claims under state law.<sup>54</sup>

This right of a private party to sue for resource damage to land is firmly established in common law, where the owner of the resource — either public or private — may be compensated for damages.<sup>55</sup> If the private party seeks recovery of damages under a public nuisance theory, it must demonstrate that it suffered particularized damages separate and apart from that suffered by other members of the public.<sup>56</sup> Direct harm

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47. *Ohio v. United States Dep't of the Interior*, 880 F.2d 432, 460 (D.C. Cir. 1989).

48. See 51 Fed. Reg. 27,696 (1986).

49. *Ohio*, 880 F.2d at 460.

50. 56 Fed. Reg. 19,761 (1991); Anton P. Giedt & Gordon J. Johnson, Prosecuting NRD Claims, Address at the Natural Resource Damage Claims and Litigation Conference (Apr. 15-16, 1991). Lead responsibility for the preparation of rules for natural resource damage assessments will shift from the Interior Department to the National Oceanic and Atmospheric Administration by August 1992 at the latest.

51. See *Phillips Petroleum Co. v. Mississippi*, 484 U.S. 469, 483 n.12 (1988).

52. *Mayor of Boonton v. Drew Chem. Corp.*, 621 F. Supp. 663, 667-68 (D.N.J. 1985); see *City of N.Y. v. Exxon Corp.*, 697 F. Supp. 677, 683-85 (S.D.N.Y. 1988).

53. CERCLA §§ 302(d), 114(d), 42 U.S.C. §§ 9652(d), 9614(a) (1988).

54. See *International Paper Co. v. Ouellette*, 479 U.S. 481, 497 (1987).

55. *Puerto Rico v. SS Zoe Colocotroni*, 456 F. Supp. 1327, 1336-37 (D.P.R. 1978), *aff'd in part, vacated in part*, 628 F.2d 652 (1st Cir. 1980), *cert. denied*, 450 U.S. 912 (1981).

56. See RESTATEMENT (SECOND) OF TORTS § 821C(1) (1977); William L. Prosser, *Private Action For Public Nuisance*, 52 VA. L. REV. 997, 1010-11 (1966).

to either a business<sup>57</sup> or real property<sup>58</sup> resulting from contamination is generally considered sufficient to establish such particularized harm.

Even where the government has successfully recovered for damages to resources owned or used by the public, a private nuisance claim is nonetheless viable since it is a separate and distinct cause of action.<sup>59</sup>

### C. Comparing Restoration and Market Value Damages

A troublesome aspect of the *Ohio* decision is that the court held that Interior need not apply the restoration measure when it was "grossly disproportionate" to the diminution in value of the resources.<sup>60</sup> This decision is consistent with the First Circuit view, as expressed in *SS Zoe Colocotroni*,<sup>61</sup> that restoration must not be so "disproportionately expensive that it would not be reasonable to undertake such a remedy."<sup>62</sup> The court seemed to suggest that the cost of restoration must be considered in the context of the ecological value of the resource lost and the likelihood of success in restoring it.<sup>63</sup>

Indeed, in *SS Zoe Colocotroni*, the court ultimately concluded that restoration costs as a measure of damages were inappropriate because restoration of the damaged mangrove trees appeared to be infeasible and the government never intended to restore the damaged site.<sup>64</sup> In cases where restoration was not feasible or would be disproportionately costly, the court found that recovery could be based on the cost of acquiring a substitute site or the cost of putting a substitute site in a condition equivalent to that of the damaged site prior to contamination.<sup>65</sup> The court explicitly rejected a diminution in value standard of damages even where restoration of the contaminated site was not feasible.<sup>66</sup>

### D. Market Value Damage Analysis

In many cases, however, a traditional diminution in value approach may be appropriate in determining the lost value of contaminated property as an alternative to a restoration cost analysis. Even in *SS Zoe*

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57. *Masonite Corp. v. Steede*, 23 So. 2d 756 (Miss. 1945) (damage to fishing business).

58. *Frady v. Portland Gen. Elec. Co.*, 637 P.2d 1345 (Or. Ct. App. 1981); *Riblet v. Spokane-Portland Cement Co.*, 274 P.2d 574 (Wash. 1954).

59. See, e.g., *Ouellette v. International Paper Co.*, 602 F. Supp. 264, 273-74 (D. Vt. 1985), *aff'd*, 776 F.2d 55 (2d Cir. 1985), *aff'd in part, rev'd in part on other grounds*, 479 U.S. 481 (1987).

60. *Ohio v. United States Dep't of the Interior*, 880 F.2d 432, 461-62 (D.C. Cir. 1989); see Raymond J. Kopp, et al., *Natural Resource Damages*, 20 *Env'tl. L. Rep. (Env'tl. L. Inst.)* 10, 127-31 (1990).

61. *Puerto Rico v. SS Zoe Colocotroni*, 628 F.2d 652, 675 (1st Cir. 1980), *cert. denied*, 450 U.S. 912 (1981).

62. *Id.*

63. *Id.* at 676.

64. *Id.*

65. *Id.* at 675-76.

66. *Puerto Rico v. SS Zoe Colocotroni*, 628 F.2d 652, 676 (1st Cir. 1980), *cert. denied*, 450 U.S. 912 (1981).

*Colocotroni*, the court recognized that, "[t]here may indeed be cases where traditional commercial valuation rules will afford the best yardstick, as where there is a market in which the damaged resource could have been sold that reflects its actual value."<sup>67</sup> Applying this approach, however, may not be such an easy task, since an expert appraiser may have to predict how long it will take for contaminated property to restore itself, either through man-made intervention or natural processes. Indeed, one of the difficulties in applying a "diminution-in-value" analysis is that existing valuation techniques tend to underestimate the full scope of the loss.<sup>68</sup> This problem is especially acute when valuing public and private lands that are held primarily for their intrinsic aesthetic, scenic, and wilderness qualities rather than merely for their commercial use.

Instead of totally rejecting this damage yardstick, however, a market value analysis may be used effectively both as a separate measure of damages as well as a means of supplementing a restoration analysis by quantifying residual damage to property after a restoration approach reaches the point of diminishing returns. Damages would then equal restoration costs plus remaining diminution in value of the partially restored property.<sup>69</sup>

#### E. *Towards A Full Assessment Of Land Damages*

While a full market value assessment of the non-commercial damage components of contaminated property is still more of an art than a pure science, there has been growing recognition of the intrinsic value of natural and wilderness lands. Tracing its origins to the public trust doctrine,<sup>70</sup> legal acceptance of the concept that the government and its citizens may act as "stewards" for the environment received a significant impetus in 1972, when Justice Douglas issued his famous dissent in *Sierra Club v. Morton*, suggesting that trees and other natural resources should have judicial standing in their own right.<sup>71</sup> Justice Douglas' elo-

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67. *Id.*

68. See, e.g., Wendel, *supra* note 10, at 451. In *Ohio v. United States Department of the Interior*, the court itself relied on the argument that present methods of assessing the diminished value of property were too primitive to be accurate, noting that "[f]rom the bald eagle to the blue whale and snail darter, natural resources have values that are not fully captured by the market system." 880 F.2d 432, 462-63 (D.C. Cir. 1989); see Wendel, *supra* note 10, at 453.

69. Wendel, *supra* note 10, at 453 n.128 (citing A. Mitchell Polinsky & Steven Shavell, *Economic Analysis of Liability for Natural Resource Damages Caused by an Oil Spill* (Nov. 10, 1989) (memo submitted on behalf of Exxon Corp. to United States Department of Interior)).

70. See *Illinois Cent. R.R. v. Illinois*, 146 U.S. 387, 450-62 (1892); see also *National Audubon Soc'y v. Superior Court of Alpine County*, 658 P.2d 709 (Cal.), *cert. denied*, 464 U.S. 977 (1983).

71. 405 U.S. 727, 741 (Douglas, J., dissenting) (1972). As Justice Douglas explained: Contemporary public concern for protecting nature's ecological equilibrium should lead to the conferral of standing upon environmental objects to sue for their own preservation. . . .

Inanimate objects are sometimes parties in litigation. A ship has a legal per-

quent argument that the rights of wildlife and natural resources be vindicated in court by "those people who have so frequented the place as to know its values and wonders,"<sup>72</sup> is now generally recognized.<sup>73</sup>

Recently, there has been some landmark work done by appraisers specializing in the valuation of wilderness lands to study the growing market in scenic, recreational, wilderness, and wildlife habitat properties systematically.<sup>74</sup> There is thus a considerable body of evidence that the purchase of high-amenity lands by the government, as well as by private individuals and groups, has created an identifiable market that lends itself to traditional appraisal methodologies. For example, the purchase price of land by environmental groups to prevent its development creates an "existence value" market price.<sup>75</sup> This market primarily involves sales and exchanges by local, state, and federal agencies, as well as by environmental and conservation organizations such as The Nature Conservancy, the Archaeological Conservancy, and the Trust For Public Lands.<sup>76</sup> These private groups, along with federal agencies such as the U.S. Forest Service and the U.S. Fish & Wildlife Service, have developed sophisticated procedures for identifying prime wilderness properties and often bid against private timber and industrial development interests for

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sonality, a fiction found useful for maritime purposes. The corporation sole—a creature of ecclesiastical law—is an acceptable adversary and large fortunes ride on its cases. . . . So it should be as respects valleys, alpine meadows, rivers, lakes, estuaries, beaches, ridges, groves of trees, swampland, or even air that feels the destructive pressures of modern technology and modern life. The river, for example, is the living symbol of all the life it sustains or nourishes—fish, aquatic insects, water ouzels, otter, fisher, deer, elk, bear, and all other animals, including man, who are dependent on it or who enjoy it for its sight, its sound, or its life. The river as plaintiff speaks for the ecological unit of life that is part of it.

*Id.* at 741-43.

72. *Id.* at 752.

73. Environmental organizations have standing to sue for actual or potential non-commercial environmental damages merely if its members use the lands in question "for camping, hiking, fishing, and sightseeing." See *United States v. Students Challenging Regulatory Agency Procedures (SCRAP)*, 412 U.S. 669, 685 (1973). The Supreme Court also has recognized "the public interest in preserving reaches of wild rivers and wilderness areas." *Udall v. Federal Power Comm'n*, 387 U.S. 428, 450 (1967). In addition to environmental groups, the rights of native American and tribal interests to sue have been recognized, especially where they are suing on behalf of the land they hold as sacred, and which provides the central focus of their cultural and historical identity. See *Pyramid Lake Paiute Tribe Of Indians v. Morton*, 354 F. Supp. 252 (D.C. Cir. 1972), *cert. denied*, 420 U.S. 962 (1975). Native American rights to seek damages where traditional hunting grounds have been contaminated should thus be a protected property right, see Christopher D. Stone, *Should Trees Have Standing? Revisited: How Far Will Law and Morals Reach? A Pluralist Perspective*, 59 S. CAL. L. REV. 1, 125, 133 (1985), as should be damages to other cultural resources and archaeological sites. The right of native Americans to preserve their cultural heritage is now a First Amendment right protected by the American Indian Religious Freedom Act, 42 U.S.C. § 1996 (1988).

74. See, e.g., Adams & Mundy, *supra* note 45.

75. See Cross *supra* note 6, at 309 n.206; see generally 1984 Council on Env'tl. Quality, Annual Report: Env'tl. Quality 363-429.

76. See Adams & Mundy, *supra* note 45, at 49.

acquisition of these lands.<sup>77</sup> Thus, it can be assumed that holding or acquiring natural land for its non-economic use, including its aesthetic, recreational, natural, or archaeological value, is the "highest and best use" for the property under a traditional appraisal analysis.<sup>78</sup>

As established by the recent research of Mundy & Associates,<sup>79</sup> the concept of natural land value as the "highest and best use" of property is closely related to the economic concepts of "option value" and "contingent valuation." Natural lands acquired for preservation purposes are said to have been acquired for their option value because the owners have gained the option to preserve the resource in its present state in perpetuity or to develop it at a later time.<sup>80</sup> Under the laws of supply and demand, as natural lands become scarce, the demand for them and their value to society increases correspondingly.<sup>81</sup> This "value" can be captured in monetary terms through development of a data base to track the prices at which equivalent lands are sold or exchanged. This value usually exceeds what a buyer interested only in the economic value of the property would be willing to pay.<sup>82</sup>

As an example of this, in 1984 Congress established the purchase price for the acquisition of 8,000 acres of seabird cliff habitat on the Pribilof Islands in Alaska at \$640 per acre. This action was taken to preserve

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77. *Id.* Most environmentalists agree that since interrelationships within various environmental systems are still largely a mystery, a concerted effort must be made to preserve all aspects of an ecosystem. Otherwise, there is a fear that the loss of one seemingly insignificant feature will throw off the balance of nature — its homeostasis. When the dodo bird was mindlessly hunted into extinction, no one could have foreseen that the extinction of that one species would lead to the extinction of a species of South Pacific trees. Cross *supra* note 6, at 332 n.343. As Aldo Leopold states in A SAND COUNTY ALMANAC: "If the land mechanism as a whole is good, then every part is good, whether we understand it or not. If the biota, in the course of aeons, has built something we like but don't understand, then who but a fool would discard seemingly useless parts?" ALDO LEOPOLD, A SAND COUNTY ALMANAC 176-77 (1949).

78. Once the "highest and best use" of the property is determined to be that which remains in its natural and undeveloped state, its value can be determined, even though it is not for sale and the owner's intention is to hold it in perpetuity, by identifying comparable sales and exchanges of equivalent natural land parcels. See Adams & Mundy, *supra* note 45, at 52; AMERICAN INST. OF REAL ESTATE APPRAISERS, THE APPRAISAL OF REAL ESTATE, 270-74 (9th ed. 1987).

79. See Adams & Mundy, *supra* note 45, at 50.

80. *Id.* See *Ohio v. United States Dep't of the Interior*, 880 F.2d 432, 464 (D.C. Cir. 1989). The court in *Ohio* recognized that option and existence values "*prima facie*, ought to be included in a damage assessment" to ensure full compensation for damages, *id.* Option values can be determined through contingent valuation methods using survey techniques of individuals that create a hypothetical market for the land or resources by determining how much they believe the land to be worth. Similarly, "existence values" can be captured by surveying individuals to determine what they would pay to ensure that the resource continued to exist, *id.* at 475-76. The *Ohio* court held that the use of contingent valuation methodology as a "best available procedure" for damage assessment is consistent with congressional intent, *id.* at 476-77.

81. See Adams & Mundy, *supra* note 45, at 50.

82. *Id.* at 51.

these wilderness lands in their natural state.<sup>83</sup> This price was approximately eight times the appraisal value based upon the land's highest and best economic use for marginal homesites and reindeer grazing.<sup>84</sup> Were these lands damaged by an oil spill, the option value of the natural lands would serve as a far more equitable and accurate basis for a damage analysis than a traditional economic use analysis.<sup>85</sup>

#### F. *Measuring Duration of Market Impact*

Whether the contaminated land is publicly or privately owned, an assessment of the impact on land values usually requires a scientific assessment of the severity of the contamination and its persistence, for example, the length of time that the pollution will remain.<sup>86</sup> The severity of the land contamination can be determined through careful surveys of beach and shoreline segments and laboratory tests of samples. Persistence can be determined both through an analysis of the type of oil or chemical involved, as well as a study of shoreline property-types. Beaches can be categorized both by beach-types (for example, sandy or cobbled beaches) and by wave-energy level. Oil on a beach directly exposed to ocean wave action will degrade much faster than oil in marshlands or protected coves, which experience little or no wave action.<sup>87</sup> Climate also must be factored into a predictive model since the higher temperatures and increased sunlight of tropical areas will lead to higher oil degradation rates than in arctic areas, yet bright sunlight can increase toxicity.<sup>88</sup>

Armed with this scientific analysis, an appraiser can plot on a time-line the projected persistence of the contamination on individual parcels of property and compute the impact on market value over the time period in question through a "before-after" analysis.<sup>89</sup> Clean-up or other resto-

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83. *Id.*

84. *Id.*

85. *Id.*

86. Robert W. Howarth, *Oil Pollution: The Damaging Effects of Very Low Concentrations*, CORNELL U. C. OF ARTS & SCI. NEWSL., (Cornell Univ., Ithaca, N.Y.), Spring 1991, at 4. When a small chemical or oil spill on land can be cleaned up within a relatively short period of time, no projections as to persistence are necessary. Usually, however, especially in the case of an oil or chemical tanker spill in a marine environment, the contamination will persist for a number of years and scientists and appraisers are faced with the problem of projecting current data into the future. One oil spill off West Falmouth in Cape Cod, Massachusetts in 1969 left residual oil in marshlands twenty years after the accident, *id.*

87. Studies have shown that, when an oil spill occurs in a marine environment, it often reaches the bottom sediment in large quantities. Oil in bottom sediments frequently results in changes to the inhabiting species there just as oil in the water usually affects phytoplankton, thus changing the nature of the food web. Unfortunately, oil in fine-grained sediments can be very persistent due to the relative lack of oxygen, which slows microbial decomposition. Some of the toxic components of the oil can persist for a decade or longer. *Id.*

88. *Id.*

89. Damages would be computed as lost opportunity costs arising from the contami-

ration activities must also be taken into account in calculating the duration of the spill's effects; however, the intervention of clean-up activities would serve only to accelerate the recovery period, not eliminate it entirely.<sup>90</sup>

### G. Stigma

Studies have shown that once the contaminated property has substantially recovered, through clean-up activities and/or natural processes, the "market" does not automatically rebound to its pre-spill condition. Rather, there is often a lag time involved during which the property has been "cured" of its contamination, but its full market value has not been restored.<sup>91</sup> This difference between the "cured" value of the property and full market value is referred to as "residual stigma," which decreases over time as the public's perception of the risk subsides.<sup>92</sup>

For example, when contamination was discovered in the Love Canal area of New York, an emigration of residents resulted. The residential home market in the area became depressed even though the property on which many of the residences were located was, in many cases, not directly contaminated. After extensive clean-up, the value of property continued to remain depressed. The market is recovering only now, although several years have passed since the cessation of clean-up activities.

While the concept of stigma arises from subjective public perceptions, it may be objectively analyzed through various scientific techniques. For example, studies and survey research techniques have been used to document the adverse impact on values of property in the vicinity of real or perceived hazards such as nuclear power plants,<sup>93</sup> sanitary landfills,<sup>94</sup> and hazardous and toxic sites.<sup>95</sup> Similarly, when a property is itself con-

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nation. Contamination is measured by the diminished value over the duration of the event at a market rate. The "before" value, or baseline, would be the value of the property in its pre-spill condition, and the "after" value would be the post-spill value of the property during the period of "recovery." Bill Mundy, *The Impact of Hazardous and Toxic Materials On Property Values*, 60 APPRAISAL J. (forthcoming Apr. 1992).

90. It has often been pointed out that clean-up activities do not actually completely "cure" the damage or "restore" the property; they merely "control" the pollution by reducing the level of contamination and hopefully reducing persistence and duration. See e.g., *id.* at 6 n.21.

91. JOEL S. MOSKOWITZ, ENVIRONMENTAL LIABILITY AND REAL PROPERTY TRANSACTIONS § 1.1 (1989).

92. See Mundy, *supra* note 89, at 6-7. The duration of the residual stigma (or stigma) and the impact on property values would depend on a number of factors, including the public's knowledge of the type and amount of contamination, the clean-up methods employed, media exposure, real and perceived health risks, and visibility. *Id.* at 7.

93. James R. Webb, *Nuclear Power Plants: Effects on Property Values*, 48 APPRAISAL J. 230, 230-35 (1980).

94. Chris Zeiss & James Atwater, *Waste Facility Impacts on Residential Property Values*, 115 J. OF URBAN PLANNING & DEV. 64 (1989).

95. Peter J. Patchin, *Valuation of Contaminated Properties*, 56 APPRAISAL J., 7, 7-16 (1988); William N. Kinnard, Jr., *Analyzing the Stigma Effect of Proximity to a Hazardous Materials Site*, 2 ENVTL. WATCH 4, 4-7 (1989).



taminated or is in the vicinity of property that has been contaminated, there may be no market for such property for a significant period of time. This impact often persists beyond the clean-up period due to a variety of factors. For example, the sales agent or owner may be required to make a disclosure, or there may be concern on the part of the potential purchaser, lender, or his counsel over continuing legal liability, or the appraiser may decide to factor the contamination into his analysis.<sup>96</sup>

#### CONCLUSION

The evolution of economic and legal thinking on the valuation of damages to public and private lands reflects a fundamental shift in the way that we as a society have come to think about the environment and ourselves as well. A basic tenet of Western thought, namely, that abundant natural resources — the air, water, and land — are mere tools that humans are permitted and required to use for aggrandizement of the species and for technological development, has come under reexamination.<sup>97</sup> This philosophy, which leads to a narrow commercial market analysis of land and natural resources as merely commodities to be used and abused, has begun to give way to a realization that the base of uncontaminated natural resources available on the planet is indeed finite and diminishing. When a virgin wilderness is contaminated, it may be partially cleaned-up and may continue to have value, but it will never be a virgin wilderness again. Thus, an assessment of the full amount of damages is absolutely essential to the preservation of other wilderness properties and natural lands. Only if potential polluters are required to assume the full environmental costs of doing business will they have the incentive to maximize safety and precautionary measures to prevent subsequent ecological disasters.

Valuation of contaminated public property has already shifted to an analysis of the true costs and market consequences associated with efforts to restore non-renewable resources as closely as possible to their pre-contaminated condition. This analysis, which should take into account restoration costs, economic and non-economic market factors affecting value of the property, should be applied equally to private as well as to public natural lands. In other words, all real property should be afforded the same level of protection from polluters irrelevant of who holds title to the land.

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96. See Mundy, *supra* note 89, at 6.

97. See *supra* notes 14-16 and accompanying text.