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Natural Resource Damages in the Wake of the *Ohio* and *Colorado* Decisions: Where Do We Go From Here?

by Erik D. Olson

Editors' Summary: Large oil spills during 1989 in Alaska and elsewhere focused attention on the government's authority to recover compensation for natural resource damages. As if oil spills were not enough, in July 1989 the issue became hotter yet, when two decisions of the Court of Appeals for the District of Columbia overturned key elements of the Interior Department's regulations for placing a value on the natural resources damaged. The court's decisions substantially increased corporations' liability for natural resource damages under CERCLA and the FWPCA, striking down several parts of the Interior Department rule that had the effect of biasing the measure of damages downward. Now, natural resource damage liability can easily be of the same magnitude as the more widely appreciated liability for response costs.

In this Article, the author, one of the lawyers who sued the Interior Department concerning the regulations, reviews what the court decisions mean in practical terms. He analyzes the administration of the natural resource damage program to date and recommends steps to improve it for the future.

Under §107(f) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)¹ and §311(f) of the Federal Water Pollution Control Act (FWPCA),² authorized representatives of state governments, the federal government, and Native American tribes are named "trustees" for natural resources. The trustees are to sue polluters to recover damages for natural resources destroyed or injured by oil spills and hazardous substance releases. In addition, CERCLA §301(c) requires regulations to be developed to ease the trustees' burden in assessing the value of injured or destroyed resources. In studying the intricacies of these legal provisions, it

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1. 42 U.S.C. §§9601-9675, ELR STAT. CERCLA 001-075.

2. 33 U.S.C. §1321(f), ELR STAT. FWPCA 041.

is easy to lose sight of their profundity. Congress has unambiguously told government officials that they have a duty to recover from polluters for the devastation pollution wreaks on fish and otters plying the streams and seas, birds on the wing, and teeming wildlife of the meadows and forests. In view of the gripping photographs of some of the more than 900 oil-soaked dead sea otters, tens of thousands of lifeless sea birds, and over 130 adult bald eagles that have been found killed by the *Exxon Valdez* spill in Alaska,³ the importance of these legal provisions would be lost on few U.S. citizens.

This Article discusses how these far-sighted legal provisions have worked in practice, or rather, how they have not worked. The Article then analyzes recent court decisions that have mandated an overhaul of the program. Finally, the Article concludes that there is now a real opportunity to use these provisions to their full potential.

Poor Progress in the Natural Resource Damage Program

Regrettably, with few exceptions, the natural resource damage provisions to date have been doing little more than gathering dust. Few natural resource damage assessments

3. On the *Exxon Valdez* spill generally, see Straube, *Is Full Compensation Possible for the Damages Resulting from the Exxon Valdez Spill?*, 19 ELR 10338 (Aug. 1989).

have been done, and even fewer damage claims have been collected. The fundamental reasons for this can be summarized in four basic points:

1. *Interior's Rules.* The Interior Department's damage assessment rules—which Congress intended to simplify and streamline trustee claims—so undervalue resources and so complicate recovery that to our knowledge they have never been used to file a claim, and they have discouraged trustees from bringing claims. However, the D.C. Circuit's recent decisions striking down Interior's rules, and Interior's recent announcement that it will not appeal those court decisions, offer a unique opportunity to bring the program to its feet and to revise the rules to make them accord with Congress' intent to streamline trustee recovery.

2. *Lack of Assessment Money.* The 1986 CERCLA amendments cut off the availability of damage assessment funds from the Superfund, and generally no money is being made available for oil spill or other damage assessments from other sources. Therefore, trustees cannot assess the degree to which natural resources have been harmed, so they often cannot file strong claims against polluters. Congress could readily solve this problem in the oil spill legislation now pending enactment by making CERCLA's Superfund and the new oil spill fund available to pay for damage assessments.

3. *Trustees' Ignorance and Apathy.* The management of the Department of the Interior, and that of most other federal trustees, has demonstrated remarkable apathy towards the program, giving it little or no budget or management priority. Similarly, in part due to the vacuum in federal interest and leadership, and in part because most trustees seem uncomfortable with the unfamiliar task of assessing damage done by toxics, only a handful of states have vigorously pursued their own natural resource damage claims. However, the program's recent notoriety as a result of the D.C. Circuit's opinions and the *Exxon Valdez* spill, combined with the court-ordered overhaul of the Interior Department assessment rules, could change that apathy. Ultimately, citizens and environmental groups must be more involved in forcing natural resource restoration, through public pressure and as "private attorneys general."

4. *The Environmental Protection Agency's (EPA's) and Justice Department's Insouciance.* EPA and the Department of Justice (which in CERCLA cases views EPA as its primary client) traditionally have given little attention to natural resource damage issues or to trustees. However, recent court decisions, the adoption in 1986 of CERCLA §104(b)(2) mandating coordination of damage assessments with cleanup activities, and the new management teams being installed at EPA, the Justice Department, and the Interior Department, create a novel opportunity to invigorate this program.

The shocking lack of progress in the natural resource damage program is especially troubling because CERCLA's three-year statute of limitations for filing natural resource damage claims—which Congress extended in 1986 in part because of poor government performance in assessing and claiming damages—soon could again cut off CERCLA trustee recovery at many sites.* If damages

are not assessed at thousands of sites nationwide before the statute of limitations runs out, CERCLA claims may be forever lost.

Just a small investment in an assessment at many sites would yield a many-fold larger damage recovery, but trustees generally do not have the money to do the assessments. For example, at the National Oceanic Atmospheric Administration's (NOAA's) top priority pollution site, off the coast of Los Angeles, an assessment costing just \$1-2 million would allow NOAA to do what is estimated to be up to an \$80 million claim. But NOAA lacks the assessment money to develop the claim and may lose the claim because of the statute of limitations.

If the present course continues, claims against polluters across the country will be lost, and the taxpayer likely will be asked to foot the bill for the restoration of natural resources at hundreds of pollution sites. This is exactly the result Congress sought to avoid in adopting CERCLA's "polluter pays principle."

The Roots of the Natural Resource Damage Program

Under CERCLA §107(a)(C),¹ FWPCA §311(f)(4) and (5),² and several other federal environmental laws,³ state and federal government officials (and in some cases state subdivisions,⁴ Native American tribes,⁵ and individuals⁶) are authorized to recover from polluters for pollution-caused injuries to fish, wildlife, and other natural resources. Giving congressional recognition to the "public trust doctrine,"⁷ the government and tribal officials are designated "trustees" for the natural resources under these laws.

The trustees, therefore, are vested with a heavy burden to protect the natural resources entrusted to their care. Presumably, the trustees' failure to perform their fiduciary duty to the environment is actionable by citizens, the beneficiaries of this congressionally-recognized public trust. For example, §107(f)(1) of CERCLA⁸ and §311(f)(5) of the FWPCA⁹ both provide that state and federal officials "shall act on behalf of the public as trustee of [injured] natural resources to recover for" natural resource damages. The citizen suit provisions of these laws,¹⁰ admin-

Natural Resource Recovery by Federal Agencies: A Roadmap to Avoid Losing Causes of Action, 13 ELR 10324 (1983).

5. 42 U.S.C. §9607(a)(C), ELR STAT. CERCLA 024.

6. 33 U.S.C. §1321(f)(4) and (5), ELR STAT. FWPCA 041.

7. See, e.g., Outer Continental Shelf Lands Act, 43 U.S.C. §1813(a)(2)(C)-(E); Trans-Alaska Pipeline Authorization Act (TAPAA), 43 U.S.C. §1653. See also 43 C.F.R. §§29.1-29.13 (TAPAA regulations).

8. See Maraziti, *Local Governments: Opportunities to Recover for Natural Resource Damages*, 17 ELR 10036 (1987).

9. See, e.g., CERCLA, 42 U.S.C. §9607(f), ELR STAT. CERCLA 026.

10. See, e.g., 43 U.S.C. §1813(a)(2)(D) and (E) (Outer Continental Shelf Lands Act provisions authorizing individual suits for loss of use of natural resources and loss of profits from natural resource damages).

11. See *Illinois Central Ry. Co. v. Illinois*, 146 U.S. 387, 450-62 (1892); *National Audubon Society v. Superior Court of Alpine County*, 33 Cal. 3d 419, 658 P.2d 709, 13 ELR 20272, cert. denied, 464 U.S. 977 (1983). See also Sax, *Liberating the Public Trust Doctrine From its Historical Shackles*, 14 U. CAL. DAVIS L. REV. 185 (1980); Sax, *The Public Trust Doctrine in Natural Resource Law: Effective Judicial Intervention*, 68 MICH. L. REV. 471 (1970).

12. 42 U.S.C. §9607(f)(1), ELR STAT. CERCLA 026 (emphasis added).

13. 33 U.S.C. §1321(f)(5), ELR STAT. FWPCA 041.

14. CERCLA §310, 42 U.S.C. §9659, ELR STAT. CERCLA 067; FWPCA §505, 33 U.S.C. §1365, ELR STAT. FWPCA 039.

* CERCLA §113(g)(1), 42 U.S.C. §9613(g)(1), ELR STAT. CERCLA 039 (three-year statute of limitations begins running on date of discovery of loss and its connection with release, promulgation of CERCLA §101(c) assessment rules, or completion of remedial action at a National Priorities List site, whichever is later). On the passage of the original statute of limitations in 1983, see Breen,

istrative law principles, and mandamus law would be available to force reluctant trustees to perform these statutory duties. And of course, both CERCLA and the FWPCA specifically preserve the right of citizens to themselves resort to the courts under other provisions of law to sue polluters or otherwise assure the restoration and protection of the natural resources upon which they rely to sustain their livelihood or spirit.¹⁵ Indeed, under many state laws, polluters can be sued by citizens for injuries that toxic spills or releases have caused to natural resources.¹⁶

Conceptual Underpinnings

These legal provisions call to mind the aspiration, espoused so clearly by Justice William O. Douglas in his famous dissent in *Sierra Club v. Morton*, that trees and wildlife should be given standing to allow their protection by the courts.¹⁷ With the natural resource damage provisions, Congress has given new life to the public trust doctrine, without directly giving trees standing. Instead, under state and federal laws, humans are to act as stewards for the environment, or as trustees for those natural creatures and other parts of the environment injured by pollution, and to sue on their behalf. This is a major advancement in the law that had, until recently, received only sporadic attention from commentators.¹⁸

15. FWPCA §§311(o) and 505(e), and CERCLA §114, for example, clearly state that remedies under other statutes or common law are preserved. Thus, citizens may sue polluters on behalf of themselves and the public for environmental restoration or other natural resource damage under state statutes and under common law doctrines such as nuisance and negligence. See, e.g., *National Wildlife Federation v. Exxon*, No. 89-6957 (Alaska Super. Ct., Anchorage, filed August 17, 1989) (citizens groups suing, under state law, those who caused and those who failed to adequately prepare for and to clean up or contain *Exxon Valdez* spill).

16. See, e.g., ALASKA STATUTES §46.03.822.

17. Justice Douglas eloquently pled:

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 to litigation. A ship has a legal personality, 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, pine 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.

403 U.S. 727, 741-43, 2 ELR 20192, 20196 (1972).

18. Anderson, *Natural Resource Damages, Superfund, and the Courts*, 16 B.C. ENV'T'L AFF. L. REV. 405 (1989); Cross, *Natural Resource Damage Valuation*, 42 VAND. L. REV. 269 (1989); Atkeson & Dower, *The Unrealized Potential of SARA: Mobilizing New Protection for Natural Resources*, ENVIRONMENT, May 1987, at 6; Habicht, *The Expanding Role of Natural Resource Damage Claims Under Superfund*, 7 VA. J. NAT. RES. L. 1 (1987); Kenison, Buchholz & Mulligan, *State Actions for Natural Resource Damages: Enforcement of the Public Trust*, 17 ELR 10434 (1987); McKay, *CERCLA's Natural Resource Damage Provisions: A Comprehensive and Innovative Approach to Protecting the Environment*, 45 WASH. & LEE L. REV. 1417 (1988); Newlon, *Defining the Appropriate Scope of Superfund Natural Resource Damage Claims: How Great an Expansion of Liability?*, 5 VA. J. NAT. RES. L. 197 (1985); Breen, *CERCLA's Natural Resource Damage Provisions: What Do We Know So Far?*, 14 ELR

The CERCLA Natural Resource Damage Assessment Rules

CERCLA §301(c)¹⁹ requires the President to issue regulations governing how trustees may assess damages to natural resources caused by releases of hazardous substances covered by CERCLA, or caused by oil and hazardous substance discharges covered by FWPCA §311.²⁰ Trustees do not have to follow these regulations, but if they do they obtain a "rebuttable presumption" that the assessment is correct.²¹

CERCLA §301(c)(2) requires two types of regulations. Rules under subparagraph (A), which came to be known as the "Type A" regulations, were to specify "standard procedures for simplified assessments requiring minimal field observation." The Type A rules were intended to govern "most minor" spills and releases.²²

Rules under subparagraph (B), which became known as the "Type B" regulations, are required by CERCLA to specify "alternative protocols for conducting assessments in individual cases to determine the type and extent of short and long-term injury, destruction, or loss." Congress intended that they "would be employed in large or unusually damaging" spills and releases.²³

In 1986²⁴ and 1987,²⁵ pursuant to a delegation from the President²⁶ and under a consent order deadline resulting from suits filed by the National Wildlife Federation (NWF), Public Citizen, Environmental Defense Fund (EDF), and certain states,²⁷ the Department of the Interior published the CERCLA natural resource damage regulations.²⁸

The Interior Department regulations were too stingy in their measure of damages,²⁹ and they were promptly challenged in the D.C. Circuit by a coalition of 10 states and the same three public interest groups that earlier sued to force their promulgation (NWF, EDF, and Public Citizen). The numerous suits filed ultimately were consolidated as two cases, those challenging the Type A regulations, and those challenging the Type B regulations. Oral argument on both cases was heard on February 22, 1989, and after the *Exxon Valdez* oil spill on March 24, 1989, the landmark D.C. Circuit decisions handed down in the cases on

10304 (1984); Dower, *Spillers and Slickers Awake . . . Superfund Sleeper Sends Signals*, ENV'T. F., March 1984, at 43; Menefee, *Recovery for Natural Resource Damages Under Superfund: The Role of the Rebuttable Presumption*, 12 ELR 15057 (1982); Yang, *Valuing Natural Resource Damages: Economics for CERCLA Lawyers*, 14 ELR 10311 (1984). See also Halter & Thomas, *Recovery of Damages by States for Fish and Wildlife Losses Caused by Pollution*, 10 ECOL. L.Q. 5 (1982).

19. 42 U.S.C. §9651(c), ELR STAT. CERCLA 062.

20. 33 U.S.C. §1321, ELR STAT. FWPCA 041.

21. CERCLA §107(f)(2)(C); see generally Menefee, *supra* note 18.

22. S. REP. NO. 848, 96th Cong., 2d Sess. 86 (1980).

23. *Id.*

24. 51 Fed. Reg. 27674 (Aug. 1, 1986) (Type B rules).

25. 52 Fed. Reg. 9042 (Mar. 20, 1987) (Type A rules).

26. Exec. Order No. 12,316, 46 Fed. Reg. 42237 (1981), superseded by Exec. Order No. 12,580, 52 Fed. Reg. 2923 (1987).

27. *State of New Jersey v. Ruckelshaus*, No. 84-1688 (D.N.J. 1984), *aff'd mem.*, 782 F.2d 1031 (3d Cir. 1986).

28. The regulations are codified at 43 C.F.R. pt. 11.

29. See, e.g., Kenison, Buchholz & Mulligan, *supra* note 18.

July 14, 1989, have raised natural resource damages to new prominence.

The D.C. Circuit Cases

Two separate decisions were handed down: *Ohio v. United States Department of the Interior*,⁴⁰ considering the Type B regulations, and *Colorado v. United States Department of the Interior*,⁴¹ considering the Type A regulations.

Ohio v. United States Department of the Interior: The Type B Regulations

□ *The "Lesser of" Rule.* Ruling on what the court labeled "the most significant issue in this case,"⁴² the D.C. Circuit struck down the Interior Department's rule limiting recovery by trustees to the lesser of: (a) the cost of restoring or replacing the equivalent of the injured resource, or (b) the lost use value of the resource.⁴³ The court found this provision "directly contrary to the clearly expressed intent of Congress."⁴⁴

The "lesser of" rule was the centerpiece of the regulations' undervaluation of natural resources. It would have limited trustee recovery, in most instances, to "lost use value," generally defined under Interior's rigid hierarchy of assessment methods as the market value of the resources. Thus, in most cases, the cost of restoring, replacing, or acquiring the equivalent of the injured natural resources (usually referred to collectively simply as "restoration") would not have been recovered.⁴⁵

The court stressed the "lesser of" rule's "enormous practical significance" by using an example reminiscent of the *Exxon Valdez* spill:

[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 is 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.⁴⁶

The court found the "lesser of" rule to be contrary to CERCLA's text, structure, and legislative history, which "indicate clearly to us that Congress intended restoration costs to be the basic measure of recovery for harm to natural resources."⁴⁷ The court also found that the rules violate the natural resource damage provisions of the FWPCA, which also focus on restoration as a "standard measure of damages."⁴⁸ Thus, it held that the rules must be rewritten to comply with the law.⁴⁹

□ *The Market Value Hierarchy.* The rules⁵⁰ also established what the court described as "a rigid hierarchy of permissible methods for determining 'use values,' limiting recovery to the price commanded by the resource on the open market, unless the trustee determines that 'the market for the resource is not reasonably competitive.'"⁵¹ If the market is not competitive, an appraisal to estimate market value could be used. Only if neither market value nor an appraisal were available could other techniques be used. The rules prohibited trustees from using measures of option or existence values (sophisticated measures of the value people place on a resource aside from its possible value as a marketed commodity) unless there was no other method that could be used to put a price on the resource.⁵²

The court held unlawful the rules' extraordinary reliance on market values—which had given rise to Interior's \$15 fur seal cited by the court, based on the market value of the pelt.⁵³ 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,"⁵⁴ the court held that the rules did not comply with Congress' intent to broaden compensation for damages.

Rather than limiting trustees to recovering such narrow damages, the court found that "Congress intended the damage assessment regulations to capture fully all aspects of the loss."⁵⁵ Finding Interior's application of its market value rule at times "erroneous" and "quite obviously and totally fallacious,"⁵⁶ the court ordered the Department to issue a rule "that would permit trustees to derive use values for natural resources by summing up all reliably calculated use values, however measured, so long as the trustee does not double count."⁵⁷ The court also held that option and existence values "prima facie, ought to be included in a damage assessment"⁵⁸ to assure full compensation for the lost resource.

□ *Public Versus Privately Owned Resources.* The preamble to Interior's regulations took the position that there is "no doubt that resources owned by parties other than Federal, State, local, or foreign governments (i.e. privately-owned resources) are not included. . . . [D]amages to privately-owned natural resources are not to be included in natural resource damage assessments."⁵⁹

The court noted, however, that CERCLA states that trustees may recover for damages to natural resources "belonging to, managed by, held in trust by, appertaining to, or otherwise controlled by" a government or Native

establish some class of cases where other considerations—i.e., infeasibility of restoration or grossly disproportionate cost to use value—warrant a different standard. We hold the "lesser of" rule based on comparing costs alone, however, to be . . . invalid." 880 F.2d at 459, 19 ELR at 21113.

40. 880 F.2d 432, 19 ELR 21099 (D.C. Cir. 1989).

41. *Id.* at 481, 19 ELR at 21127 (D.C. Cir. 1989).

42. *Id.* at 441, 19 ELR at 21102.

43. 43 C.F.R. §11.35(b)(2).

44. 880 F.2d at 438, 19 ELR at 21101.

45. *Id.* at 441, 446 n. 13, 19 ELR at 21102, 21105 n. 13.

46. *Id.* at 442, 19 ELR at 21103.

47. *Id.* at 450, 19 ELR at 21108.

48. *Id.* at 450, 19 ELR at 21108.

49. The court noted in dictum that "this is not to say that DOI may not

40. 43 C.F.R. §11.83(c).

41. 880 F.2d at 462, 19 ELR at 21115.

42. On option and existence values, see Cross, *supra* note 18, at 285-97, 315-20; Yang, *supra* note 18.

43. 880 F.2d at 463, 19 ELR at 21116.

44. *Id.* at 462-63, 19 ELR at 21115.

45. *Id.* at 463, 19 ELR at 21116.

46. *Id.*

47. *Id.* at 464, 19 ELR at 21116.

48. *Id.*

49. 51 Fed. Reg. at 27696.

American tribe.⁵⁰ Since the preamble's reading of the statute "would ignore everything that comes after the words 'belonging to,'" the court remanded this issue for the Department to clarify its position.⁵¹ In remanding, the court pointed out that at oral argument the Interior Department's counsel backed away from the preamble's insistence that no recovery could be had by trustees for damage to privately owned resources, and suggested that adherence to the preamble's position would run afoul of CERCLA.⁵²

* ☐ *The "Committed Use" Requirement.* The court narrowly construed and then upheld a provision in Interior's rules which requires that in order for a trustee to recover for damages to natural resources, those resources must have had a "committed use."⁵³ A "committed use" is defined in the rules as any current use or a planned future use for which there was "documented legal, administrative, budgetary, or financial commitment established before the spill or release."⁵⁴

This requirement, broadly read, could have substantially limited damages in areas such as Alaska, where many resources may have no current use, and where it is likely that no one has formally documented a commitment to use the resources in the future. The "committed use" requirement also could have been problematic in areas such as long-polluted harbors or industrial sites, where long-standing pollution may have precluded current uses of natural resources, and would have discouraged any commitments for future uses as well.

Placing some judicial gloss on the rules, the court held that this "committed use" provision would be upheld based on the court's understanding that a resource need not have had a "committed use" for the trustee to recover from the polluter funds to restore the resource.⁵⁵ Under the court's interpretation of the rules, the committed use requirement only becomes relevant when the trustee seeks to recover for lost uses.

☐ *Contingent Valuation Method.* Several industry representatives challenged the use in the rules of the "contingent valuation" method. Contingent valuation uses sophisticated surveys of individuals to establish a hypothetical market for the resource to determine how much they believe it is worth. For example, a contingent valuation study could be designed to determine how much individuals would be willing to pay to have the option (the "option value") to enjoy viewing a natural resource they are not now using, such as a sea otter colony. Contingent valuation also could be used to determine how much people would be willing to pay to know that a sea otter colony exists (the "existence value") for the benefit of current and future generations, even though they themselves do not intend to see or enjoy the resource personally.⁵⁶

Citing extensive support for contingent valuation in economics literature, the court found that Interior "intelligently and cautiously" chose contingent valuation as "a best available procedure" for damage assessment and upheld contingent valuation as consistent with due process and CERCLA.⁵⁷

☐ *Other Challenges.* States and environmental groups also challenged the rules on several other grounds. The court upheld them in the face of these other challenges, but in a few cases put some additional judicial gloss on the rules.

1. *Discount Rate.* The court upheld the 10 percent discount rate (for converting the award for future damages to present value) in the face of an attack from the states and environmental groups.⁵⁸ In so doing, however, it held that this rate was legally acceptable since under another provision of the rules⁵⁹ the trustees may adjust their estimate of the expected future value of the resources to reflect uncertainties about possibly increasing future demand for the resources and resulting increases in the resources' value.⁶⁰

2. *Responsible Party Participation.* The court also upheld the rules' provisions allowing potentially responsible parties to participate in the damage assessment process.⁶¹ The court emphasized, however, Interior's commitment that a potentially responsible party "functions in a strictly ministerial role. The final choice of methodologies rests solely with the authorized [government] official."⁶²

3. *Other Issues.* The court rejected challenges to the rules based on arguments that they established unlawfully strict criteria for showing injuries, that the rules arbitrarily put a limit on assessment costs equal to the amount of damages, that they imposed unduly burdensome audit requirements on states, and that they misread CERCLA by failing to provide for punitive damages in the case of natural resource damage. On the latter issue, Interior noted in its brief that in light of the CERCLA savings clause,⁶³ punitive damages would continue to be available under other law, such as state common law.⁶⁴ The court did not disagree, but failed to address the issue of state punitive damage laws.

Colorado v. United States Department of the Interior: The Type A Regulations

In the challenge to the Type A simplified damage assessment rules, the court also remanded the regulations to Interior. The Court first held that contrary to the state and environmental petitioners' claim, Interior was under no immediate obligation to expand the scope of the Type A rules to cover additional types of environments other than coastal marine environments.⁶⁵

50. 880 F.2d at 459, 19 ELR at 21113. See CERCLA §§101(16), 107(a)(C), 42 U.S.C. §§9601(16), 9607(a)(C), ELR STAT. CERCLA 008, 025.

51. 880 F.2d at 461, 19 ELR at 21114.

52. *Id.*

53. 43 C.F.R. §11.84(b)(1).

54. *Id.* at §11.14(h) (emphasis added).

55. 880 F.2d at 461-62, 19 ELR at 21114-15.

56. For more on contingent valuation, see Cross, *supra* note 18, at 315-20, and Yang, *supra* note 18.

57. 880 F.2d at 476, 19 ELR at 21124.

58. 43 C.F.R. §11.84(e).

59. *Id.* at §11.84(d).

60. 880 F.2d at 464, 19 ELR at 21116.

61. See, e.g., 43 C.F.R. §11.32(d).

62. 880 F.2d at 467, 19 ELR at 21118 (quoting 51 Fed. Reg. at 27704).

63. CERCLA §114, 42 U.S.C. §9614, ELR STAT. CERCLA 041.

64. Brief of Respondents Department of the Interior et al. in *State of Ohio* case, at 121 (Nov. 21, 1988).

65. 880 F.2d at 486-490, 19 ELR at 21129-21132.

However, in light of the *Ohio* decision striking down the Type B rules upon which the Type A rules were based, and especially the determination that restoration costs are a basic measure of damages under CERCLA and the FWPCA, and that the market value-based hierarchy is unlawful, the court remanded the Type A rules so that they too would be made consistent with CERCLA and the FWPCA.⁶⁶ For example, the Type A rules were based exclusively on the hierarchy of "lost use" values and must be revised to take account of restoration and other costs as well.

Thus, both the Type A and the Type B rules have been remanded. The Interior Department has announced it will not appeal the D.C. Circuit's decisions, with Secretary Manuel Lujan stating that he wants to "get on with the business of providing public trustees with damage assessment procedures which they the potentially responsible parties and the public" can rely on.⁶⁷ The full D.C. Circuit recently unanimously rejected a request by industry intervenors to review the panel decision in the *Ohio* case, so at this point there is no reason to delay immediate revisions to the rules.⁶⁸

Interior now has the opportunity to reissue the regulations and to fulfill Congress' mandate to streamline the trustees' efforts to assess and recover for damages to natural resources from oil spills and hazardous substance releases. The new attention accorded to natural resource damages must be harnessed into action.

Where Do We Go From Here? An Agenda for Action

As noted earlier, there have been four overarching impediments to the success of the natural resource damage program. Because the CERCLA statute of limitations is approaching, it is imperative that actions be taken immediately to eliminate these impediments to a vigorous natural resource damage program.

Improving the Regulations

In light of the D.C. Circuit's remand of the Interior Department's rules, Interior Secretary Lujan should carry through on his promise "to get on with" the program by issuing new rules swiftly. Among other things, the Secretary obviously must eliminate the "lesser of" rule and provide that trustees can recover the cost of restoration *plus* lost use and other values. The addition of restoration and all other lost values of the resources is required, since the court has made it clear that restoration "is the basic measure of damages," but that *added* to restoration costs⁶⁹ is the "summing up of all reliably calculated use values,"⁷⁰

and compensation for "other factors in addition to use values."⁷¹ The Secretary also must eliminate the hierarchy of assessment methods, allowing the trustees to choose the methods best suited to the injuries and resources. Moreover, the rules will have to eliminate the "public/private ownership" distinction.

Aside from these changes, the Secretary should consider the experience gained from the *Exxon Valdez* and other damage assessments. He should update the rules to assure, for example, that the acceptance criteria for showing injury are not unacceptably rigid, that the role of responsible parties is better controlled, and that the rules are streamlined to assure swift, full trustee recovery. Finally, in light of Interior's reluctance to set a timetable for completing Type A rules applicable to all environments, Congress should establish a schedule for the Type A rules' completion.

Providing Assessment Money

Trustees should be provided the desperately needed "seed money" to assess natural resource damages from Superfund. Section 517 of the 1986 CERCLA amendments⁷² cut off the availability of the Superfund to finance damage assessments, and no money is being made available for assessments from the FWPCA §311(k) fund or other sources. Therefore, the trustees often decide not to prosecute claims, or they sign covenants not to sue polluters, based on paltry or virtually nonexistent knowledge of the damage done to natural resources at a site. At many sites with obvious damage to natural resources, no claims have been made due to lack of resources to conduct an assessment.

This lack of money also can encourage a subtle "blackmail" problem in which trustees may feel compelled to agree to only a very limited damage assessment, or only minimal damages, because of the trustees' weak factual record and resulting poor negotiating position. In the case of the recent Alaska spill, for example, the trustees initially have had to rely on Exxon to pay \$15 million for the assessment. When the responsible party is paying, it likely will argue that it should have a lot to say about how the damages are calculated.

Thus, CERCLA should be amended to allow the Superfund to be tapped for assessment costs. The fund also should be available, subject to the existing strict limitations in CERCLA §§111 and 112, for payment of damages at orphan sites where no solvent responsible party can be located. However, payment of assessment costs is clearly of the highest priority, so claims against polluters are not inappropriately settled or completely lost due to lack of information or because the statute of limitations expires. Similarly, the new oil spill legislation now pending should provide for damage assessment money to be provided to trustees "up front" from the oil spill fund.

66. *Id.* at 490-491, 19 ELR at 21132.

67. U.S. Department of the Interior News Release, "Interior Secretary Lujan Says Government Will Revise Natural Resource Damage Assessment Rules to Conform With Court Decision," August 10, 1989.

68. See 54 Fed. Reg. 39013-18 (Sept. 22, 1989) (Interior Department Advanced Notices of Proposed Rulemaking announcing Department's intent to move forward with rulemaking in the wake of the *Ohio* and *Colorado* decisions).

69. 880 F.2d at 450, 19 ELR at 21108 (under CERCLA and the FWPCA, "restoration is the basic measure of damages, but damages can exceed restoration costs" (emphasis added)).

70. *Id.* at 464, 19 ELR at 21116.

71. *Id.*

72. Pub. L. No. 99-499, 100 Stat. 1613 (1986). This section amended the Internal Revenue Code chapter on trust funds, and the prohibition is now codified at 26 U.S.C. §9507(c). See generally Atkeson et al., *An Annotated Legislative History of the Superfund Amendments and Reauthorization Act of 1986 (SARA)*, 16 ELR 10360, 10395 (1986).

Awakening the Trustees

Most state and federal trustees must be awakened from their slumber and educated about the natural resource damage program. The apathy of the Department of the Interior and most other state and federal trustees regarding the fulfillment of their public trust duties under CERCLA and the FWPCA must end. Interior should work with state government organizations and other federal agencies to inform all trustees of their authorities and responsibilities under the program. A formal national program to educate trustees about the program is essential. The National Wildlife Federation and others have proposed a National Center to undertake such a program in the future,⁷³ but in the meantime state and federal trustees and intergovernmental organizations must also take an active role in getting the word out to trustees about the natural resource damage program.

Involving the Public

Grassroots citizen organizations and national environmental groups must become more involved in pressuring state and federal trustees to vigorously prosecute natural resource damage claims. They should lobby the trustees, EPA, and the Justice Department to develop robust programs that will force responsible parties to pay for natural resource damages. Citizens also should directly and aggressively pursue the polluters to assure that full damages are collected, and to see that the environment is restored.

Citizens can use several legal mechanisms to assure that the public natural resources are protected, particularly if the government is asleep at the switch or is actively shirking its duties. These include citizen suits against unresponsive government officials, actions as "private attorneys general" against polluters, and active citizen participation in all phases of damage assessment and litigation, including settlements. Only with citizens looking over the polluters' and the government's shoulders can we be assured of environmental restoration.

Prodding EPA and the Justice Department Into Action

EPA and the Department of Justice must focus more heavily upon natural resource damages and must make trustees full partners in the Superfund program. EPA and Justice often have seemed to regard natural resource damages as an afterthought, a troublesome stumbling block that can complicate their cleanup negotiations, or as a bargaining chip, rather than as an opportunity to en-

sure that there is full restoration of the injured ecosystem. This can and must change.

The recent decision in the case of *In re Acushnet River and New Bedford Harbor: Proceedings Re Alleged PCB Pollution*⁷⁴ should encourage more trustee involvement in CERCLA settlements and cleanups. In that case, the court held that all CERCLA settlements with federal government-approved covenants not to sue polluters for natural resource damages must include provisions assuring that the responsible party will protect and restore the injured natural resources. In addition, at the urging of the intervening National Wildlife Federation, the court took the unusual step of rejecting a partial settlement, because it was not clear that the federal trustee had agreed to it, and because it failed to include a "reopener" assuring that the responsible party would bear the risk of paying for unknown natural resource damages discovered in the future. This decision should make it clear to EPA, Department of Justice, and all trustees that a full partnership between trustees and the agencies overseeing CERCLA cleanups is essential.

This message also is reinforced by the D.C. Circuit's statement in the *Ohio* decision that under CERCLA §122(j)(2) "a responsible party can settle only if it pays restoration costs."⁷⁵ Thus, as the *New Bedford Harbor* court held, restoration costs at a minimum must be recovered from responsible parties in settlements, and these costs can only be determined with full trustee participation in cleanup decisions and settlement negotiations. EPA and the Department of Justice should accustom themselves to this result, and should make sure that the trustees are full partners in the hazardous waste and oil spill cleanup process. CERCLA §104(b)(2)⁷⁶ specifically provides full trustee-EPA cooperation in investigating and conducting cleanup at CERCLA sites; these recent court decisions simply reinforce that point.

Conclusion

To date, the natural resource damage program has failed to live up to its potential. Interior has had to be dragged into court to ensure its compliance with the law, and other federal agencies also have lacked the will or resources or both to make the program work. Relatively few state agencies have made a serious effort to implement these important provisions. Environmentalists, Interior, EPA, the Department of Justice, the states, and Congress should take the steps outlined above to rejuvenate this languishing but potentially powerful weapon in the effort to protect and restore our natural environment.

74. 712 F. Supp. 1019, 19 ELR 21210 (D. Mass. 1989).

75. 880 F.2d at 449, 19 ELR at 21107.

76. 42 U.S.C. §9604(b)(2), ELR Stat. CERCLA 013.

73. See Hair, *NWF Takes Up Call for Natural Resources Protection*, 29 ENVIRONMENT, May 1987, at 9; Atkeson & Dower, *supra* note 18.

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Compensation for Natural Resource Injury: An Emerging Federal Framework

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***Abstract** This paper provides an overview of the emerging "Superfund" natural resource damage assessment and compensation framework and a review of several economic and legal issues that are likely to affect the ability of the framework to achieve its objectives. The Superfund Act as amended establishes a federal regulatory structure that provides a legal "legitimization" for the use of economic-based nonmarket valuation techniques in judicial proceedings involving natural resource injuries resulting from oil and hazardous waste spills and releases. While the regulations have the potential to foster more appropriate compensation as well as prospective incentives to limit damages to natural resources, several controversial elements, definitions, and assumptions built into the damage assessment regulations appear to have the potential to undermine the efficiency and equity of damage assessments. These issues reflect the difficulty of integrating economic concepts of natural resource value and their estimation into the legal environment.*

Introduction

Until quite recently, the most visible application of economic techniques for natural resource valuation was in the context of helping to guide policy decisions. For example, economic tools for measuring natural resource values have long been used (with varying degrees of accuracy and efficacy) to evaluate the social costs and benefits of federal water resources development proposals. In recent years economic tools also have been increasingly applied to determine the benefits of specific federal regulatory options. The passage of the Comprehensive Environmental Response, Compensation and Recovery Act in 1980 (CERCLA) placed the spotlight on compensation for injuries to natural resources as another application of these tools. While there is a history under federal and state statutory and common law of using economic analysis to value natural resource injuries (especially from oil spills), CERCLA formalized this process by establishing a federal regulatory structure that may eventually set the rules for how economic analysis will be factored into a wide range of judicial proceedings involving oil and hazardous waste spills and releases.

The federal regulations that will implement the emerging CERCLA natural resource compensation framework were promulgated on August 1, 1986. The

content and requirements of these regulations may have important implications for both the allocation of social resources and for the field of natural resource economics. The historical legal approach to compensation for injury to public natural resources has relied typically on diminution in market price, or, in cases involving nonmarket resources, on restoration or replacement cost as a basis for measuring natural resource damages. Because these measures often do not adequately reflect real economic loss resulting from injury to public resources, their use for determining damages has limited the effectiveness of the common law judicial system in achieving the desired allocation of public resources.

The new federal regulatory framework provides a legal "legitimization" for the use of economic-based nonmarket valuation in the courts. The new rules have introduced the newer, and more theoretically appropriate and accurate, nonmarket valuation methods based on willingness-to-pay as the basis for damage assessment. The regulatory framework thus provides an important new application for nonmarket valuation methods in the public policy context. Moreover, the regulations have the potential to set a substantial precedent for the use of economic concepts and valuation methodologies in court cases involving injury to public resources, whether or not the federal rules are invoked.

Increased reliance on economic-based valuation methods for estimating natural resource damages could result in more appropriate compensation as well as prospective incentives to limit damage to natural resources. Yet, the interaction between the theory of natural resource valuation and the practical constraints of an adversarial judicial system is bound to affect the ability of the compensation scheme to achieve appropriate damage awards. The federal rulemaking has attempted to integrate economic valuation methods into a generally conservative legal system that has developed over a long period of time. It represents a somewhat uneasy compromise between being fair to economics and full compensation while not opening the door to a complete revamping of the common law. The resulting thin line drawn by the rules does expand some traditional notions of natural resource damages, while at the same time limits its broader application.

The purpose of this paper is to provide an overview of the federal natural resource damage assessment and compensation framework and to highlight several economic and legal issues that are likely to affect the ability of the framework to achieve its objectives. By briefly reviewing CERCLA and its natural resource damage provisions as a whole, and by outlining the assessment regulations and identifying certain potential concerns, we hope to help provide a better understanding of the compensation process and foster a broad evaluation of the emerging framework. One important caveat concerning many points raised in this paper is particularly worth noting. The Type B damage assessment regulations, which lay out the general assessment process and the specific procedures for assessing damages in individual cases, have been challenged by several environmental groups, and state resource trustees in administrative appeals filed in the U.S. Court of Appeals for the District of Columbia.¹ Even if the regulations remain unchanged as a result of these challenges, various provisions of the CERCLA natural resource damage assessment framework may be subject to judicial review as individual cases are brought under the statute. Court decisions on various aspects of the framework could change their meaning and interpretation.

The Legal Structure

Statutory Framework

1. Overview of the Act. In response to public concern over releases of hazardous substances into the environment, Congress enacted the Comprehensive Environmental Response, Compensation and Liability Act² in 1980 to deal with the threats posed by abandoned hazardous wastes sites and releases of hazardous substances in general. The provisions of CERCLA were extended and strengthened by the Superfund Amendments and Reauthorization Act (SARA) passed on October 17, 1986.³ The Act as amended provides Federal and state governments with broad authorities to respond to releases of hazardous substances into the environment. CERCLA also provides a liability and compensation mechanism for recovery of governmental response costs from the parties responsible for hazardous substance releases. To ensure that money would be available to complete the job of cleaning up abandoned hazardous waste sites, CERCLA established a \$1.6 billion Hazardous Substance Response Fund financed primarily by excise taxes levied on crude oil and certain chemicals. (Under SARA, the name of the fund was changed to the "Hazardous Substance Superfund," and its size was expanded to \$8.5 billion.)

The basic liability and compensation provisions for response costs are set out in Section 107 of the Act. Liability is imposed on current and former owners and operators of polluting vessels or facilities, as well as those engaged in the generation, treatment, and disposal of hazardous substances⁴ for damages resulting from releases⁵ into the environment. The courts have interpreted these provisions as imposing strict, joint and several liability on these parties for hazardous substance releases.⁶ Essentially, this liability scheme can be used to force a "responsible party" to bear the full cost of cleaning up a hazardous waste release no matter how tenuous their connection to the release (or how many other parties contributed to the release) or how carefully they handled the offending wastes.

The Hazardous Substance Superfund⁷ was established to finance clean-ups in cases where the polluting parties are unknown or are unwilling or unable to provide recompense. The types of claims permissible against the Superfund include claims for payment of governmental response costs incurred under the Act's response authority provisions and other necessary response costs under the National Contingency Plan.⁸ Payment of claims by the Superfund transfers to the Fund the right of the claimant to sue the polluting parties.

An important but often overlooked component of CERCLA is the Act's natural resource damage provisions.⁹ While the problem of cleaning up abandoned hazardous wastes sites has garnered considerable publicity and a vast amount of litigation involving liability for response costs have occupied the courts, the potential significance of the natural resource damage provisions has generally escaped attention. However, these provisions have been called the Superfund "sleeper" and have the potential to greatly increase the amount of damages polluting parties may be held liable for under CERCLA.

2. Natural Resource Damage Provisions. The natural resource damage provisions authorize federal and state governments to recover compensatory damages from polluting parties for injuries to public natural resources which result from

discharges of oil or releases of hazardous substances pursuant to CERCLA and Section 311 of the Clean Water Act (33 U.S.C. §§1251-1376). These provisions reflect Congressional recognition that hazardous substance contamination of the environment may impose social costs which would not be fully redressed by the clean-up of waste sites and private causes of action brought under state common law. The CERCLA legislative history suggests Congress' intent to allow for compensatory natural resource damages following existing common law doctrines. Together, the response cost and natural resource damage compensation provisions of CERCLA form a mechanism to force responsible parties to provide redress for a significant portion of the social costs of their polluting activities.

Compensable natural resource damages are defined under Section 107 of CERCLA as damages for "injury to, destruction of, or loss of natural resources, including the reasonable costs of assessing such injury, destruction, or loss resulting from such a release."¹⁰ The Act specifies that in the case of such natural resource injury "liability shall be to the U.S. government and to any State for natural resources within the State or belonging to, managed by, controlled by, or appertaining to such State" and that "the President, or authorized representative of any State, shall act on behalf of the public as trustee of such natural resources, to recover for such damages."¹¹ Natural resources are defined very broadly to include land, fish, wildlife, biota, air, water, ground water, drinking water supplies, and other such resources.¹² The Act thus enables Federal agencies and state government trustees, who act as custodians for the public through protection and care of a wide range of public resources, to recover damages for injury to such resources caused by releases of oil or hazardous substances. CERCLA further specifies that "sums recoverable shall be available for use to restore, rehabilitate, or acquire the equivalent of such resources by the appropriate agencies of the Federal government or the state government, but the measure of such damages shall not be limited by the sums which can be used to restore or replace such resources."¹³

The Act contains certain restrictions on compensation for natural resource injury. No claim can be made for the recovery of natural resource damages unless the claim is presented within three years after the discovery of the loss and its connection with the release or the date of final promulgation of the natural resource regulations, whichever is later.¹⁴ The Act further limits the liabilities of responsible parties for natural resource damages to \$50 million.¹⁵

Under CERCLA, natural resource trustees were originally authorized to make claims against the Superfund for natural resource damages in cases involving resource injury caused by hazardous substances. However, a new provision added by SARA prohibits claims against the Superfund for natural resource damages.¹⁶ Trustees seeking natural resource damages thus must sue potentially responsible parties directly.

To assist trustees in bringing natural resource damage actions, Section 301(c) of CERCLA required the President to promulgate regulations for use in guiding the assessment of natural resource damages. These regulations are to include two different types of standardized procedures for assessing natural resource injury and placing a dollar amount on this injury: Type A or simplified assessment techniques for smaller releases; and Type B protocols that will include more detailed and extensive assessment methodologies for more major releases. Type A procedures are defined by the Act as "standard procedures for simplified assessments

requiring minimal field observation, including establishing measures of damages based on units of discharge or release, units or units of affected area." Type B procedures are specified by the Act to include "alternative protocols for conducting assessments in individual cases to determine the type and extent of short- and long-term injury, destruction, or loss." The Act specifies that these regulations "shall identify the best available procedures to determine such damages, including both direct and indirect injury, destruction or loss and shall take into consideration factors including, but not limited to, replacement value, use value, and ability of the ecosystem or resource to recover."¹⁷ CERCLA also provides that damage assessments developed using these regulations will create a rebuttable presumption of accuracy.

Natural resource trustees are not required to follow the assessment regulations in determining natural resource damages claims; however, a determination of damages conducted by any federal or state trustee in accordance with the assessment regulations "shall have the force and effect of a rebuttable presumption" on behalf of the trustee in any administrative or adjudicatory proceeding under CERCLA or Section 311 of the Clean Water Act.¹⁸ CERCLA's rebuttable presumption for natural resource damage claims provides leverage to trustees in proving damage claims if the regulations are followed, but exactly how and to what extent is unclear.

There is currently much confusion over how the rebuttable presumption will work in natural resource damage cases, as well as a significant debate within the legal profession concerning the exact force and effect of the tool in the CERCLA context. The Act itself and its legislative history are silent on these issues. It is helpful here to provide a basic definition for a legal presumption and to highlight its potential complexity in the CERCLA natural resource damage context, and to briefly outline the major issue in the legal debate.

A presumption is an evidentiary procedure that allows one to infer the existence of a presumed fact from a basic fact that has been established. Typically, a presumption applies to a single, reasonably well-defined basic fact and determines a single, reasonably well-defined presumed fact. For example, a common presumption used in drunk driving cases takes as the basic fact the level of alcohol in a driver's blood and derives the presumed fact that the driver is intoxicated. The situation under CERCLA is much more complicated, however. A trustee's determination of natural resource damages most likely will be the sum of many lesser, discrete damage determinations. A question arises as to whether the presumption in the CERCLA context applies to each of these lesser damage determinations that might be made in a particular case, or only to the total or final damage assessment. In this type of case, some of the basic facts used to infer the final presumption may actually be presumptions from previous determinations.

The crux of the legal debate surrounding the force and effect of the rebuttable presumption in the CERCLA natural resource damages context deals with whether the presumption shifts to defendants only the burden of going forward with evidence to rebut or meet the presumption, or both the burden of proof as well as the burden of going forward with evidence. The latter interpretation would give much more weight to trustee damage determinations. This issue likely will not be resolved until it is the subject of review by the courts in the context of a particular natural resource damage case. Some experts believe that the final out-

come will interpret the CERCLA rebuttable presumption heavily in favor of trustees.¹⁹

In summary, the CERCLA natural resource damage provisions create a potentially powerful new mechanism for the recovery of public damages resulting from natural resource injury caused by discharges of oil or releases of hazardous substances. By providing for damages from injury to a broad range of natural resources caused by many types of contaminants, and by requiring the development of a set of regulations to guide damage assessments bolstered by a rebuttable presumption of accuracy, the CERCLA natural resource damage provisions go beyond the scope of previous common law doctrines and statutes.²⁰

Regulatory Framework

1. Implementation. The President, in Executive Order No. 12316, delegated to the U.S. Department of the Interior (DOI) responsibility for promulgating the Type A and Type B natural resource damage assessment regulations. (The Executive Order also directed the U.S. Environmental Protection Agency (EPA) to promulgate procedures to guide trustees in bringing natural resource damage claims against the Superfund. As noted earlier, SARA disallowed the use of Superfund monies for natural resource damage claims.) However, the December 11, 1982 deadline imposed by the Act for promulgation of the assessment regulations passed without their publication. In order to force the rulemaking process, the state of Montana filed suit against DOI and EPA for failure to perform their respective duties. This suit was subsequently voluntarily withdrawn, but was followed by two new suits, one brought by the state of New Jersey and the other by the New Mexico Department of Health and the Environment.

The New Jersey suit was heard in the District Court of New Jersey.²¹ As a result of a finding in favor of the plaintiffs, DOI entered into a consent order whereby the agency agreed to a specific timetable for promulgation of the regulations. Under the consent order, DOI agreed to promulgate proposed rulemakings for Type B regulations by December 20, 1985 and proposed Type A regulations by April 5, 1986. The consent order further specified that final Type B and A regulations would be promulgated by April 22, 1986 and August 7, 1986, respectively. These deadlines were subsequently extended slightly by the court. A notice of proposed rulemaking for Type B regulations was published in the Federal Register on the court imposed deadline, and final Type B regulations were published on August 1, 1986.²² Proposed Type A regulations were published on May 6, 1986; final Type A regulations were published on March 20, 1987.²³ SARA requires the President to promulgate amended regulations for assessing natural resource damages that incorporate the new damage assessment provisions added by the Act. Proposed amendments to the assessment regulations were published by DOI in the Federal Register on April 17, 1987.²⁴

The Type A regulations deal exclusively with minor discharges of oil or releases of hazardous substances in coastal or marine environments. Specifically, they apply only to wildlife mortality and closure of recreational areas resulting from discharges or releases that occur in, or enter into, coastal or marine environments near the water surface or intertidal area, and that are of short duration. These assessment procedures make use of a computer model capable of mathe-

matically estimating damages to certain resources based on the type of discharge or release of specific contaminants and the specific receiving coastal or marine environment. The types of resource injuries considered by the model include: short-term lethal effects on lower trophic biota; direct and indirect lethal effects on fur seals, certain waterfowl and other shorebirds, seabirds, fish and shellfish; and the closure of fishing and hunting areas and public beaches.

The model is composed of interactive physical fates, biological effects, and economic damages submodels containing chemical, biological, and economic data bases, respectively. The physical fates submodel determines average concentration, transportation, and dispersion of oil or hazardous substances through the coastal or marine environment. Given input on the fate of the contaminants from the physical fates submodel, the biological effects submodel calculates the average loss in biomass by species category. Data on baseline biological resource conditions and beach uses are contained in the biological and economic submodel data bases, respectively. The commercial and recreational uses of biological resources are determined by historical patterns for each of these classes of uses. Public beach visitation rates are also based on historical patterns. In the case of fisheries damage, fish resources are allocated in the model between recreational and commercial harvests foregone. Quantification of resource services lost serve as data input into the economic damages submodel.

Dollar damages are calculated in the economic submodel using market and nonmarket prices for commercial use of fur seals, commercial and recreational fishing, hunting and birdwatching, and public beach use. Lost in-situ value for commercial fisheries is calculated as the change in the total value of landings (estimated using province-specific, ex-vessel prices) minus harvest costs. For all other resource injuries, nonmarket values based on willingness-to-pay (WTP) estimates derived in existing studies are used to calculate damages. For example, the lost value of recreational fisheries is based on province-specific marginal WTP estimates for sportfishing. The value of lost waterfowl and other birds are calculated using marginal WTP estimates for their consumptive and nonconsumptive uses. Beach days lost are valued using average WTP estimates obtained from existing studies of the value of recreational beach use. The regulations stipulate that these market and nonmarket values are applicable only if the discharge or release is not expected to significantly change recreational or commercial prices for these resource uses.

Due to the limitations of the Type A model, the regulations instruct the trustee to use the Type B procedures whenever the trustee has reason to believe that the types of potential resource injuries are significantly different than the types considered by the Type A model, or if any other model assumptions or conditions are violated. For example, in cases where potential injuries to wildlife species included in the model data bases only include sub-lethal, chronic effects, or if injury occurs to wildlife species not included in the model data bases, then the Type B procedures are to be used. The regulations also allow for parallel Type A and Type B assessments in cases where use of the Type A procedures may capture only part of overall resource damages resulting from a minor discharge or release into a coastal or marine environment. Thus, in cases involving multiple resource injuries resulting from the same discharge, a trustee could, for example, use the Type A procedures to assess damages for fish mortality, and use the Type B procedures to assess damages for injury to a mammalian species not included

in the Type A model data base. However, the rules do not allow for use of parallel assessments to determine damages for different types of impacts on service flows associated with the same resource. It should also be noted that the rules give the potentially responsible polluting party the right to request a Type B assessment even when the Type A procedures might be applicable, provided they can show that use of the Type A procedures may not be fully appropriate, and if they are willing to advance the assessment costs to the trustee.

The remainder of this paper focuses only on the Type B damage assessment procedures. We chose this focus because the major principles underlying both the Type A and Type B rules are set out by the latter rulemaking, and treatment of the more controversial elements of damage assessments, such as the inclusion of non-use values, are addressed by the Type B rules. Moreover, the Type A rules make use of market prices and unit values pulled from existing studies, while the Type B rules procedures set out specific methodologies for the use in estimating resource damage in individual cases. The Type B procedures are thus likely to produce more accurate estimates of economic welfare losses in individual cases than the Type A procedures.

2. *Overview of the Type B Regulations.* The Type B regulations set out the basic processes to be followed by Federal and state trustees for: 1) determining and documenting natural resource injury caused by releases of oil or hazardous substances; 2) quantifying the effects of this injury on the human uses of the services provided by these resources; and 3) determining natural resource damages. The regulations explain the procedural steps for trustees to follow and provide criteria for selecting methodologies to determine resource injury and damages. They do not, however, provide specific guidance for implementing the various methodologies. Additional information on the methodologies is provided by a set of accompanying Technical Information Documents.

Because trustees are authorized to recover the costs of performing the assessment from the responsible parties, the regulations mandate that the assessment process be performed at "reasonable cost." Costs are defined as reasonable when "1) the injury, quantification, and damage determination phases have a well-defined relationship to one another and are coordinated; 2) the anticipated increment of extra benefits, in terms of the precision or accuracy of estimates, obtained by using a more costly methodology for injury, quantification or damage determination outweigh the anticipated increment of extra costs of the more expensive procedure; and 3) the anticipated costs of performing the assessment are expected to be less than the anticipated damage amount."²⁵

The focus of this paper is on the provisions of the regulations that contain key economic decision points or that provide guidance for the use of economic methodologies to assess damages. These provisions include Subpart B—Pre-assessment Phase, Subpart C—Assessment Plan, and Subpart E—Type B Assessments.

a. *Subpart B—Pre-assessment Plan*—Subpart B of the rules sets out the procedural steps for initiating the damage assessment process and for preliminary analysis of potentially injured natural resources. Section 11.23 outlines the pre-assessment screen, which provides the criteria for determining whether the identified discharge or release justifies a natural resource damage assessment. The pre-assessment screen includes the first key economic decision point in the process.

The pre-assessment screen is designed to be a relatively quick "desk top" review of the existing data to determine whether the discharge or release warrants a natural resource damage assessment. Here the trustee is charged with qualitatively identifying the resources at risk and deriving preliminary assessment cost estimates based on a review of existing data using minimal fieldwork and previous trustee experience with similar accidents involving such resources. The screen requires that a decision to proceed with an assessment should be based on the following determinations by the trustee: 1) that the discharge or release is covered under the relevant sections of CERCLA or the Clean Water Act; 2) that the discharge or release has likely injured natural resources under the jurisdiction of the trustee; 3) that the quantity and concentrations of the contaminants released are sufficient to potentially cause resource injury; 4) that the data required to pursue an assessment are readily available or likely to be obtained at reasonable cost; and 5) that any planned or completed response action will not completely remedy the injury to the natural resources. The pre-assessment screen thus requires a preliminary determination by the trustee, based on existing data and minimal fieldwork, of the nature and extent of possible resource injury, and the human uses of the resources potentially affected. The rules discourage the early sampling of potentially injured natural resources at this stage unless it is absolutely necessary. The information gathered in the pre-assessment screen is to be used by the trustee to determine whether an assessment could be performed at reasonable cost and the likelihood that a damage action would be successful.

b. *Subpart C—Assessment Plan*—After an affirmative decision is made to proceed in the pre-assessment screen, but before initiating a damage assessment, the trustee must develop a detailed assessment plan in accordance with the procedures set forth by Subpart C of the regulations. Section 11.31 requires that the assessment plan identify and document all of the scientific and economic procedures and methodologies that are expected to be used in assessing the resource injury and determining damages. Documentation is required in sufficient detail to be able to make a determination of whether the proposed assessment approach is cost-effective. The regulations interpret the term "cost-effective" to mean "that when two or more activities provide the same level of benefits, the least cost activity providing that level of benefits will be selected."²⁶

The Economic Methodology Determination section of the proposed rules (Section 11.35) allows the trustee to use restoration or replacement costs, or diminution in use values as the basis for measuring natural resource damages, and provides guidance to the trustee for making the choice. This section specifies that "the authorized official shall select the lesser of 1) restoration or replacement costs or 2) diminution of use values as the measure of damages."²⁷ It further specifies that rough approximations of the costs and benefits of these alternative measures of damages should be calculated. The costs and benefits in this calculation are defined, respectively, as "the expected present value, if possible, of anticipated restoration or replacement costs, expressed in constant dollars, and separated into capital, operating, and maintenance costs, including the timing of the costs;" and "the expected present value, if possible, of anticipated use values gained through restoration or replacement, expressed in constant dollars, specified for the same base year as the cost estimate, and separated into recurring and non-recurring benefits, including the timing of the benefit."²⁸

The regulations further specify that the selection of an economic methodology

should rely upon existing data and studies, and that no new data collection or modelling is needed to complete the determination. They also stipulate that if the existing data is insufficient to perform the economic methodology determination, it may be postponed until the completion of the formal injury determination phase in Subpart E.²⁹

c. Subpart E—Type B Assessments—Subpart E of the regulations deals with the actual implementation of Type B assessments, and lays out the steps to be followed by trustees for choosing among and implementing alternative methodologies for each of the three major phases in the damages assessment process— injury determination, service reduction quantification, and damages estimation. The following discussion deals only with those parts of the Subpart dealing with the estimation of monetary damages.

Guidance to trustees for estimating damages based upon restoration or replacement costs and certain restrictions on what these measures may include is discussed in Section 11.81. When restoration or replacement costs are to be used, they must be based on the least-cost alternative restoration or replacement scheme that returns the resource services to their pre-injury, baseline condition. Further, the restoration or replacement alternative used to calculate damages must be technically feasible to undertake. The measure of damages calculated using restoration or replacement costs may also include any diminution in resource use value over the recovery period.³⁰

Criteria for the selection and implementation of use value methodologies is provided by Sections 11.83 and 11.84 of Subpart E. Key interpretations and definitions are also found here. The term "use value" is defined as "the value to the public of recreational or other public uses of the resource, as measured by changes in consumer surplus, any fees or other payments collectable by the government for a private party's use of the natural resource, and any economic rent accruing to a private party because the government does not charge a fee or price for use of the resource." The regulations also provide that, "In instances where the Federal or State agency acting as trustee is the majority operator or controller of a for- or not-for-profit enterprise, and the injury to the natural resource results in a loss to such an enterprise, that portion of the lost income from this enterprise . . . may be included as a measure of damages."³¹ Damages, however, can only be measured by the diminution in value of baseline "committed uses" of natural resource services over the period it takes for the injured resource to recover naturally. In addition, these baseline "committed uses" must be reasonable probable; purely speculative uses of the injured resource are precluded from consideration.³² A committed use of natural resource services is defined as "a current public use, or a planned public use of a natural resource for which there is a documented legal, administrative, budgetary, or a financial commitment before the discharge of oil or release of a hazardous substance is detected."³³

The specific methodologies that may be used by trustees to estimate damages for both market and nonmarket natural resource services, and the conditions under which they may be used to estimate certain resource damages are identified in Section 11.83. Guidance for selection of economic methodologies in this part prescribes a hierarchy among valuation methods, with one group of methodologies for resources (or resources similar to those injured) that are traded in markets, and another set of methodologies for nonmarket resources. An evaluation of these

methodologies that includes more specific information on their use is provided by an accompanying Technical Information Document.³⁴

In the case of a resource for which a well-defined market exists, the regulations stipulate that the trustee must make a determination as to whether the specific market is reasonably competitive before choosing a valuation methodology. If the market for such a resource is determined to be reasonably competitive, the trustee is instructed to first turn to the market price methodology for determining damages, which is based on the diminution in market price for the injured resource. If the trustee determines that the market price methodology is not appropriate for valuing a particular resource, the regulations provide that the "appraisal" methodology be employed to value the resource if sufficient information exists. This methodology simply uses the difference between the before-injury and after-injury appraisal values for the resource in question. Trustees are instructed to turn to the "Uniform Appraisal Standards for Federal Land Acquisitions" for guidance in making such resource value appraisals.³⁵

If the trustee determines that neither the market price nor the appraisal methodologies are appropriate, the regulations provide for the use of nonmarket valuation methodologies for measuring the use value of natural resource services. For nonmarket resources, the regulations allow the trustee discretion in the use of methodologies that estimate use value measures of damages based on estimates of willingness-to-pay (WTP).³⁶ For injured resources which are used as inputs into the production of products associated with well-defined market prices, the regulations specify that the Factor Income methodology may be employed to estimate the economic rent attributable to the resource as a measure of damages. Alternatively, for natural resources which provide consumer utility, the regulations specify the Travel Cost, Hedonic Pricing, and the Contingent Valuation (CV) methods as acceptable approaches for measuring damages. Regional unit values derived from existing studies may also be used if these values are based on WTP and closely resemble the specific recreational or other experience to which they are applied to estimate damages.³⁷ The regulations also allow, in addition to the specific methodologies listed, the use of any other valuation methodology that cost-effectively measures use values based on willingness-to-pay.³⁸

While the regulations allow trustees complete discretion in the choice of valuation approaches for measuring nonmarket resource damages based on reductions in use value, certain restrictions are placed on the use of CV to measure damages based upon option and existence values. Section 11.83 (d)(5) explains that CV "can determine use values and explicitly determine option and existence value," but provides that "the use of the CV methodology to explicitly estimate option and existence values should be used only if the authorized official determines that no other use values can be determined." While DOI acknowledged that option and existence values would ordinarily be additive to use value, they noted that Section 301(c) of CERCLA mentions only use values, and not non-use (intrinsic) values.

Guidance is also provided on various smaller issues related to the implementation of the valuation methodologies. These issues include the handling of possible double counting problems, the treatment of uncertainty in damage determination, and discounting costs and benefits over time. The regulations specify that double counting of resource benefits should be avoided, but offer little guidance except to say that resource damages should be based on the residual resource

injury after incorporating the effects (or anticipated effects) of response actions on resource services.³⁹ With regard to the treatment of uncertainties in damage determination, the regulations state that when considerable uncertainties exist concerning the assumptions made when implementing valuation methodologies, trustees should consider alternative assumptions and document their effects on the calculation of costs and benefits.⁴⁰ (The regulations are broad enough to allow the inclusion of probability estimates of the likelihood of occurrence for all parameter estimates to account for uncertainty.) For discounting costs and benefits over time (including past and future), the regulations mandate the use of a 10% real rate of discount as specified by the Office of Management and Budget.⁴¹

Preliminary Evaluation

In the ideal, the natural resource damage assessment process under CERCLA should establish a framework to accomplish two basic and important purposes. In an aggregate sense, the regulations should compensate the public for injuries to their natural resources from oil or hazardous waste spills and releases. Specifically, the scheme should make the public whole, so that the public is as well-off after natural resource injury as they were before the injury. The law should also seek to redistribute a specific subset of the costs of certain types of industrial or commercial activities: those non-health related external economic costs that fall on the public as a result of "improper" disposal or handling of oil and hazardous wastes.⁴² In this sense, compensation, in combination with the other provisions of CERCLA (as well as private rights of action under state common law) would act to internalize the social costs associated with past and future waste disposal practices. CERCLA assumes that the disposer is always in the position of being able to reduce risks most cheaply and thus bears the full responsibility of insuring against, and compensating for, public natural resource injury. In order for the CERCLA natural resource assessment provisions to achieve an efficient allocation of social resources, the system has to generate reasonably accurate estimates of the true economic value of injured natural resources and to do so while incurring the least costs possible.

Given the nascent nature of state or federal attempts to utilize the damage assessment scheme, it is difficult to forecast how closely the damage assessment framework outlined in the first section of this paper will hit this mark. Many elements of the assessment process will be modified and more fully defined by the court system as cases are heard and evaluated. However, there are several controversial elements, definitions, and assumptions built into the damage assessment regulations that, assuming they are upheld by the courts, appear to have the potential to undermine the equity and efficiency of damage assessments. As currently written, the regulations appear to suggest that many natural resource injuries may go undervalued. These issues, as will be discussed below, are quite varied, but share one common characteristic. They all reflect, in part, the difficulty of integrating economic concepts of natural resource value (and their estimation) into the legal environment.

Natural Resource Use Values

The Type B rules define the "use value" of a natural resource in terms of the public's willingness-to-pay to use a resource, and the rules allow for diminution

in use value to serve as the basis for estimating damages. Thus, natural resource damages may be reflected by reductions in consumer surplus and economic rents accruing to resource users. Although the regulations adopt a rather formal economic concept of resource value, they retain a "common law" bias towards the use of market prices to reflect use values. The rules specify that in situations where injured resources are traded in competitive markets, diminution in market price should serve as the reduction in use value for purposes of damage estimation. Only in cases where injured resources are not associated with observable market prices do the regulations allow for the application of the more economic-based approaches for estimating changes in use values.

Because market prices do not directly indicate the net benefits provided by goods, they do not provide adequate measures of welfare changes. While DOI explicitly recognized that diminution in market price may not fully reflect the change in social welfare associated with injury to market resources, they argued that market prices are widely recognized by the courts as a reasonable basis for estimating damages and represent the most cost-effective approach. While the use of diminution in market price for measuring damages may in some instances be reasonable, in many cases reliance on market prices may seriously undervalue resource injury. For example, market resources such as wetlands often provide bundles of nonmarket goods and services to society, the value of which are not fully reflected in the market price of the land.

Natural Resource Intrinsic Values

The regulatory definition of economic use value discussed above appears to include both direct consumptive (e.g. hunting) and non-consumptive (e.g. bird-watching) values of natural resources, but treats intrinsic values such as option and existence values somewhat differently. The rules do acknowledge and explicitly discuss intrinsic values; however, they stipulate that these values can be estimated and used as the basis for a damage claim only if the trustee is unable to estimate direct use values. The regulations also limit economic damages only to those damages that can be associated with "committed" not "speculative" uses of the resource, perhaps ruling out the consideration of option and existence values in all but a few situations. The proposed rules originally included a classification of resources, called "special resources," which may have mitigated the anti-intrinsic value bias of the final rules. Special resources were defined by the proposed regulations as "those natural resources committed to a specific use by law before the discharge of oil or release of hazardous substance . . . [including] resources set aside primarily to preserve wildlife habitat or other unique or sensitive environments."⁴³ Compensation for "special resources" would have been based on replacement or restoration costs rather than lost use value.⁴⁴ This would have allowed the trustee to treat resources with low use value but high intrinsic value as special cases. The exemption for such resources articulated in the proposed rule, however, was dropped in the final rule.

The debate among various interested parties concerning intrinsic values is the result of differences in perspective and philosophy. Some of these are more easily identified and discussed than others

First is the issue of whether such values are true economic values. The answer

here is somewhat a matter of philosophy; an environmentalist might say yes, an industrial polluter might say no. Yet the evidence would seem to support a positive response. It is difficult to explain the high level of social resources that are devoted to protecting wilderness areas and endangered species, the creation of national parks and marine sanctuaries, and the whole of our nation's environmental protection efforts, if option and existence values were not some part of the value we accord those programs. Further, the growing body of economic literature on the subject of intrinsic values, while not strictly in accord, does provide considerable weight at least on a conceptual level, as well as some empirical evidence for these values.⁴⁵

Second is the question as to whether intrinsic values fall within the traditional legal concepts of economic value as defined under common law theories of damage. The case law involving natural resource damage cases is not very helpful here. We know of no single case where option and existence values formed an explicit basis for a damage claim. While some states have included values representing these concepts in estimating natural resource damage assessments, we are not aware of any that have been the subject of court scrutiny; most are settled out of court and thus do not provide much in the way of precedent.⁴⁶ However, a legal parallel may exist in personal injury cases. Courts have long held that in such cases compensation may be made for both direct economic losses (such as lost income, medical expenses, etc.) as well as "non-pecuniary" damages including pain and suffering, loss of consortium, and mental anguish over the loss of a loved one.⁴⁷

Although not a perfect fit, intrinsic values have many of the same characteristics as the non-pecuniary damages in personal injury cases. Most notably, they both represent kinds of effects that we perceive to be real but have a very hard time putting into dollar terms. There is an important difference between speculative damages (those that require a stretch of one's imagination to believe) and damages that are uncertain as to their value. While courts may be comfortable with the notion of pain and suffering as a very real and believable effect of personal injury, they continue to grapple with how best to express those values in dollar terms. This uncertainty may not be the basis for excluding the consideration of "non-use" values, but may lead to widely varying outcomes for very similar cases.

Finally, the uncertainty as to how best to handle intrinsic values leads to a third element of the controversy over their inclusion in natural resource damage assessments. While it may be theoretically possible to measure option and existence values through other economic methods, the technique with the most promise and that has been applied most often is Contingent Valuation. The question of whether one can accurately measure individuals' valuation of any commodity through preference revealing surveys continues to divide the economics community and is often dismissed out-of-hand by non-economists. Some might argue that if the rebuttable presumption provides substantial leverage to damage assessments, then it may be unwise to allow for the use a valuation technique whose efficacy for estimating intrinsic values is still a matter of debate within the economics profession. (It should be noted that a trustee could estimate intrinsic values and add these to estimated use values to calculate resource damages, but the resulting assessment would not be afforded the rebuttable presumption of accuracy in legal proceedings.)

It is beyond the scope of this paper to venture into the Contingent Valuation

debate except to note that there appears to be developing a consensus on the conditions that need to be met in order for a CV study to be credible, and an improved understanding of the limits and biases of the technique in its general application.⁴⁸ Courts have extensive experience with judging the credibility of alternative approaches to measuring economic damages, and a rather strong argument can be made that the option should be available to public trustees under the assessment rules subject to review and consideration of the judicial system.

There are undoubtedly other factors that carry weight in the intrinsic value debate. Once one is willing to admit that such values do exist under certain circumstances and that they are permissible under the law, the entire issue would appear to collapse into a series of questions concerning reasonableness and certainty that courts have to deal with all the time to some degree. This would argue for more explicit recognition of the potential for such values in the regulations and the flexibility for the trustee to attempt to estimate such damages if they feel a credible case can be made.

Real Versus Perceived Injury

The CERCLA natural resource damage provisions imply that natural resource trustees should be compensated for lost or altered human uses of public natural resources services resulting from injuries to these resources caused by releases of oil or hazardous substances. The regulations mirror this causal chain and set out a process in which an injury to a public natural resource resulting from a release of oil or hazardous substance is quantified, the effect of this resource injury on public uses of resource services is determined, and an economic value is attached to changes in public uses of resource services. The rules thus require that a resource injury be "measurable" in order for it to be part of a damage assessment. While trustees are required to demonstrate the relationship between pollutants and the resource injury, at the same time, the rules provide for the application of economic valuation tools in the damage assessment phase that do not necessarily require estimation of measurable injury. Economists value damages on the basis of changes in consumer and producer behavior by isolating individuals' responses to their perceptions of new conditions and resource characteristics. For an economist, perceived damages are real damages if they result in changes to consumer utility or producer production capabilities, regardless of measurable physical injury to the natural resources in question.

It is not clear whether the authors of the regulations were aware of this potential for conflict. Yet, given the bias of the rules towards the demonstration of physical harm before the award of damages, the potential is very real. This is particularly so given the chronic, sub-acute nature of many of the environmental injuries that are likely to occur from hazardous waste releases. A wetland area containing above background levels of a particular pollutant (but below a state or federal standard) has experienced an economic injury if certain birdwatchers make fewer trips to the wetland. This is so even if there is no physical injury or risk of injury to the biological system. The rules appear to accept this proposition but at the same time require a substantial demonstration of physical harm. Given what appear to be rather high burdens of proof concerning physical and biological harm in the regulations, it is not difficult to imagine a bias towards natural resource

compensation only in those cases where clear evidence of measurable injury is available.

Public Versus Private Damages

The regulations provide for the assessment of damages to publicly owned resources, but explicitly exclude compensation for injury to privately owned resources. The justification for this bifurcation of damage categories is the definition of resources covered by the Act which is interpreted by DOI to exclude damages that might be recoverable under private rights of action for injury to privately owned resources. This distinction between private and public resources has already generated tremendous confusion and controversy. Several key points may help focus this debate if not provide ready resolutions. To help frame the following discussion, we refer to "private damages" as those private losses which result from injury to privately owned resources and define "public damages" as the aggregation of producer and consumer losses resulting from injury to publicly owned resources.

First, the distinction between public and private damages may seem somewhat arbitrary to an economist. If a hazardous waste release has altered the characteristic of a natural resource that serves as an input to the production of a recreational experience (utility function) or commercial product (production function), the economic damages are given by the willingness-to-pay (or sell) of recreationists or producers and consumers to avoid (accept) the additional cost of adjusting to the altered input. Whether the natural resource is privately or publicly owned is inconsequential at least on this level of analysis. However, accepting this distinction between public and private resources defined by the Act, economists would take the view that damages resulting from injury to publicly owned resources are represented by the aggregation of losses to all parties who use the resource.

In a strict legal setting, however, using the lost economic rents accruing to commercial harvestors of an injured animal species, for example, to place an economic value on that species, may suggest that private damages which are not permissible under the Act are at stake, regardless of the possible public trusteeship of the injured animals. The regulations adopt, at least on the surface, the economic view of public natural resource damages which holds that aggregate private losses to individuals who use public resources in production or consumption represent the lost value of these resources. However, there appears to be an increasing tendency to interpret the rules to limit the use of private income losses to individuals who use public resources in commercial production to approximate diminished public use values. That is, while there appears to be a consensus that losses in consumer value to users of a public resource (e.g. users of a public beach) represent compensable public loss, considerable confusion exists as to whether reductions in income experienced by users of public resources for commercial enterprises (e.g. commercial fishing) are compensable. To the extent that the courts do not accept the economist's approach to estimating value based on both consumer surplus and economic rent, it is possible that resource value represented by economic rents may go uncompensated under the rules.⁴⁹

Second is the issue of who is in the least-cost position for bringing successful natural resource damage claims. If the Act or the rules limit the use by a public trustee of private losses as an approximation of public damage, private parties would be forced to bring individual suits under state common law to seek compensation. Given the subtlety of many of the injuries from hazardous waste spills and the expense and complexity of proper economic damage assessments, the conditions under which a private party could mount a successful case may be limited. A further complication results from damages to natural resources that do not obey property lines or political boundaries. It is not clear how injuries to private parties from contaminated air would be handled under a strict interpretation of private versus public resources. The risk of too narrowly defining public versus private damages is excessively large litigation and other transaction costs (such as duplicative assessments) to achieve fair compensation. A more cost-effective solution might allow for consolidation of public and private damage claims when the trustee can take advantage of cost economies-of-scale. Of course, allowing for consolidation of public and private claims would raise a host of theoretical and practical questions and problems. For example, would state or federal trustees be in the position to determine the validity of private claims? If so, could trustees collect and distribute damage awards to private claimants? How would this be accomplished?

Finally, the last point raises the issue of who gets the award. As the rules currently read, a public trustee claiming damages based on losses to public users has to use the award to restore, rehabilitate, or acquire comparable natural resources. Individual users would not receive compensation for losses incurred after the release, but before the restoration, even though such losses would be included in the assessment. From an economic point of view, the resource allocation implications of such a distributional outcome are minimal. The legal questions are more interesting. For example, would public users have standing to bring suit under state tort law against the state or the responsible party for damages incurred but for which they receive no compensation? The answer is unclear, but there may be some potential for double payments for the same injury to the extent that the public user is viewed by the courts as having a cause-of-action independent of the trustee's claim over the injured resource.

The debate over public versus private resources is not only a question of ownership. It involves distinctions between ownership, private versus public injuries, and income versus value losses. The net effect is uncertain pending resolution by the courts.

The final assessment of the public versus private resource issue is an empirical one and has to await some practical experience with the process. It may be that the assessment process conducted by a public trustee will provide potential private parties with all the information and analysis they will need to bring compensation actions under state common law. On the other hand, the incentives for any one injured party to undertake the necessary studies to support a tort action on their behalf are sufficiently small to assume that few private actions will be brought in the absence of an organized group of plaintiffs or readily identifiable and easily valued damages (such as fish kills). It is worth asking the question whether society's best interests are served by encouraging a large number of relatively small, but still expensive, legal actions.

Conclusion

The emerging compensation framework for natural resource damages attempts to integrate the economics and law of natural resource valuation into a single comprehensive package. The ability of the framework to achieve the dual goals of fair compensation and the efficient allocation of social resources is a function of how carefully the perspectives and limits of economic valuation are coordinated with the constraints imposed by the legal structure in which these assessments will be judged. We have singled out four current issues concerning the application of natural resource economics to the CERCLA assessment process that appear to have the potential to skew the compensation formula towards under-compensation. Others may well be equally important. For example, the reliance in the regulations on a ten percent discount rate is a double-edged sword, perhaps greatly under-valuing future losses but over-valuing past damages.

We do not have a crystal ball that offers a clear picture of how the assessment process will actually be implemented in practice. Many of the issues raised here as well as many technical elements of the DOI regulations await final resolution in the courts. Nevertheless, we have tried to provide some hints as to likely outcomes. The magnitude of the possible effects cannot be predicted, but a qualitative assessment can be constructed.

Our sense is that the tendency will be toward awards that represent something less than the full economic value of natural resource injuries. We believe the assessment regulations as they stand foster this outcome. However, whether or not the regulations contain an inherent bias towards undercompensation is debatable. Moreover, if one accepts our preliminary conclusion, the question then arises as to whether the perceived bias in the regulations results from an inherent bias towards undercompensation in CERCLA itself or results primarily from a conservative interpretation of the CERCLA natural resource damage provisions by DOI. The latter appears to be the prevailing view among the environmental organizations and state trustees who are currently suing DOI over the Type B rules. This view also appears to be shared by others, including members of Congress. Senator Max Baucus (D-Mont.), speaking in support of passage of SARA on the Senate floor, stated that "the rules to date strongly discourage natural resource damage claims from ever being brought and would severely reduce recoverable damages in those few cases in which they were sought."⁵⁰

References

1. See, e.g., *National Wildlife Federation v. U.S. Department of Interior*, No. 87-1266 (D.C. Cir. June 18, 1987).
2. 42 U.S.C. §§9601-9657 (hereinafter cited as "CERCLA").
3. P.L. 99-499.
4. CERCLA §101(14) defines "hazardous substance" primarily by referring to designations made under a variety of other environmental statutes. These hazardous substances include 696 substances (see 48 Fed. Reg. 23552) as well as any additional substances designated by EPA pursuant to §102 of CERCLA.
5. CERCLA §101(22). "Release" is broadly defined but excludes exposures resulting from specified nuclear materials, workplace emissions, most engine exhausts, fertilizer applications and "federally permitted releases." (See §101(10))
6. Reed, P. D., "CERCLA Litigation Update: The Emerging Law of Generator Liability," 14 *Envtl. L. Rep. (Envtl. L. Inst.)* 10024 (1984).

7. CERCLA §221.
8. CERCLA §111(a).
9. The CERCLA natural resource damage provisions are contained in three separate sections of the Act: §107, §111 and §301.
10. CERCLA §107(a)(4)(C).
11. CERCLA §107(f).
12. CERCLA §101(16).
13. CERCLA §107(f).
14. SARA §113(b) codified at CERCLA §113(g)(1).
15. CERCLA §107(c)(1)(C).
16. SARA §517 codified at Internal Revenue Code §9507(c).
17. CERCLA §301(c)(2).
18. CERCLA §111(h)(2).
19. See, e.g. Menefee, M. "Recovery for Natural Resource Damages Under Superfund: The Role of the Rebuttable Presumption," 12 *Envtl. L. Rep. (Envtl. L. Inst.)* 15057 (1982).
20. The provisions of various Federal Laws relating to natural resource damage compensation are reviewed in: Yang, E., R. C. Dower, and M. Menefee, *The Use of Economic Analysis in Valuing Natural Resource Damages*, U.S. Department of Commerce, Washington, DC 1984. A general discussion of common law principles for valuing natural resource damages may be found in: Dower, R. C. and Paul F. Scodari, "Economics and the Law: Compensation for Damages to Natural Resources" Presented Paper at the Workshop on Economic Evaluation of Losses to Fish, Wildlife and Other Environmental Resources, held in Monterey, Ca., November 11, 1986.
21. State of New Jersey v. Ruckelshaus, Civil Action No. 84-1668 (D.C.N.J. 1984).
22. 51 Fed. Reg. 27674 (August 1, 1986) (hereinafter cited as "Regulations").
23. 52 Fed. Reg. 9042 (March 20, 1987).
24. 52 Fed. Reg. 12886 (April 17, 1987).
25. Regulations §11.14(ee).
26. Regulations §11.14(j).
27. Regulations §11.35(a)(2).
28. Regulations §11.35(e)(3)(i) and (ii).
29. Regulations §11.35(e)(1) and (2).
30. Regulations §11.81(a)-(f).
31. Regulations §11.83(b)(1) and (2).
32. Regulations §11.84(b)(2).
33. Regulations §11.14(h).
34. Desvousges, W. H. 1985. *Type B technical information document: techniques to measure damages to natural resources*. Draft report prepared for the CERCLA 301 Project, U.S. Department of Interior, September 1985.
35. Regulations §11.83(c)(1) and (2).
36. In earlier versions of the final rule, DOI included both willingness-to-pay and willingness-to-sell (WTS) as appropriate measures of resource value, noting that economic theory gave greater support to the latter in the case of compensation to public resources. The final rule, however, discards the concept of WTS as difficult to measure empirically and subject to greater uncertainty.
37. Regulations §11.83(d)(1)-(6).
38. Regulations §11.83(d)(7).
39. Regulations §11.84(c).
40. Regulations §11.84(d).
41. Regulations §11.84(e).
42. For an economic analysis of compensation for health impacts see, Viscusi, W. K. 1983. Alternative approaches to valuing health impacts of accidents: liability law and prospective valuations. *Law and contemporary problems*, 46:49-68.

43. 50 Fed. Reg. 52126, §11.14(pp).
44. The special resources classification would have negated the "lesser of restoration or replacement costs, or diminution of use values" decision rule that DOI argued was a common law principle of natural resource damages. The special resources classification would have also negated the economics of damage assessment.
45. See, for example: Desvousges, W. H., J. K. Smith and McGivney, M. P. 1983. *A comparison of alternative approaches for estimating recreation and related benefits of water quality improvements* Wash., D.C. U.S. EPA; and Walsh, R. G., Loomis, J. B., and Gillman, R. S. 1981 Valuing option, existence and bequest demands for wilderness. *Land Economics* 60, (May).
46. The historical treatment of natural resource damages in courts and a review of past cases, as well as a discussion of state assessment schemes that consider intrinsic values, can be found in Yang, E., R. C. Dower, and Menefee, M. *The use of economic analysis in valuing natural resource damages*. Wash., D.C.: U.S. Department of Commerce.
47. A general treatment of damage categories for tort actions is found in Prosser, W. C., and Wade, J. W. 1979 *Torts 2nd—restatement of the law*, St. Paul: American Law Institute.
48. A current overview of contingent valuation methods is found in Cummings, R. O., Brookshire, D. S. and Schulze, W. 1986 *Valuing public goods: the contingent valuation method*, Totowa: Rowman & Allanheld.
49. For example, if private commercial users of public resources do not have standing under state common law for injury to public resources, exclusion of this type of value loss from state and federal damage cases would result in undercompensation.
50. Cong. Rec. (October 3, 1986) S 14929.