POLICY DEVOLUTION AND ENVIRONMENTAL LAW: EXPLORING THE TRANSITION TO SUSTAINABLE DEVELOPMENT

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I. INTRODUCTION

Advocates of a strong national role in the administration of environmental policies have long argued that federal agencies must play a major role in ensuring federal policies are implemented. In contrast, advocates of policy devolution in environmental and other areas urge federal policy makers to give much more authority and autonomy to state officials. But this debate has not had a major impact on environmental policy. Despite the promises of the Republican Congress in 1995 to return power to states and to the people, little devolution has occurred. One way to attempt to respond to these two competing theories of how to structure policy making is to try and sort out, environmental statute-by-statute and program-by-program, what functions can best be performed by federal agencies, and what can best be done at the state level. I argue that while such a sorting out of functions can be of some value, it is more useful to think about how to foster the transition from traditional environmental law to the idea of sustainable development. The paper begins with a review of the debate over federalism. It then turns to a discussion of definitions of sustainable development, arguments for sustainable development as the conceptual and theoretical basis for environmental policy making, and implications for the structure of environmental policy on local, state, and federal governmental bodies and the ecological and political importance of policy devolution.

II. THE ENVIRONMENTAL FEDERALISM DEBATE

U.S. environmental law is built on a complex system of shared authority and cooperative agreements between the federal government and the states, largely in response to the complexity of environmental programs, the tremendous numbers of sources of pollution to be regulated, the desire to permit some tailoring of regulation to local conditions, and the inherent authority of states to regulate environmental conditions.

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The federal government's primary function is to establish policy, to develop national standards, to ensure that states enforce the laws and regulations in a way consonant with national standards, and provide some funding of compliance costs. Most federal environmental statutes authorize states to issue permits and to enforce regulations if their programs and standards are approved by the EPA. States have the primary responsibility to grant permits, to inspect facilities, and to initiate enforcement actions against violators. Under most environmental laws, federal programs preempt state regulatory efforts, then states may be given back authority to operate federally-approved programs. Some environmental laws give authority to states to implement regulatory programs, and impose sanctions if they fail to do so. Another approach is to create a voluntary program and offer states financial incentives to participate in them. Environmental laws may include multiple approaches, and the structure of environmental regulation is complex. The formal division of labor, and the actual working relationships between federal and state officials play a critical role in shaping environmental policy.[1]

The federal-state division of responsibility reflected in most environmental laws and programs is based on at least three major arguments rooted in American federalism and in the peculiar nature of environmental policy. First, advocates of federal regulation argued that state efforts were insufficient or nonexistent, and a strong federal role was required. State legislatures have been so closely identified with extractive and polluting industries, and the influence of these economic interests have been so great in state governments, that a strong federal role in environmental policy making has been promoted and defended as essential in countering the power of economic interests. Most environmental advocates have been skeptical of state governments, and have believed that federal laws and agencies are indispensable in protecting natural resources and checking pollution. Federal agencies are believed to be insulated enough from resource-depleting communities to ensure preservationist values are pursued. When agencies fail to protect resources or reduce pollution, the solution is to replace them with more ambitious regulators and to strengthen the regulatory authority of federal officials.[2] A number of studies have compared states according to their commitment to environmental protection and found significant variation in expenditures, legal authority, methodologies to determine environmental quality, reporting

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[1] DENISE SCHEBERLE, FEDERALISM AND ENVIRONMENTAL POLICY 13-14 (1997).

[2] Donald Snow, *Introduction*, *in* THE NEXT WEST 1, 5-6 (John A. Baden & Donald Snow eds., 1997).

requirements, enforcement actions, and in the environmental standards they are authorized to set under federal law.[3]

Second, since pollution often crosses state boundaries, national policy making efforts are required. State officials will be unwilling to impose restrictions on sources that produce pollution for neighboring states. They may be so anxious to attract new industries to their states that there will inevitably be a "race to the bottom" that will provide little protection to residents of some states from environmental risks.[4] This competition to attract industries has become a major concern of states, but it may create incentives to ignore or suppress environmental goals and can only be prevented, advocates argue, by nationwide standards.[5] For others, breathing clean air and drinking clean water ought to be understood as national rights, guaranteed to all citizens, regardless of where they live. Giving states authority to implement and enforce regulations permits some tailoring of regulatory programs to local conditions while ensuring that national standards are achieved. States may be unwilling to devise solutions to problems that cross state boundaries since costs are borne by some states while the benefits accrue to others. They may be tempted to export their environmental problems to others, rather than placing regulatory restrictions on local industries. Or they may establish such high standards for receiving environmental contaminants that they are shipped elsewhere, allowing state officials to claim environmental protection credentials by simply exporting problems.[6]

A third rationale for a strong federal environmental policy making role is the need for expertise and the economies of scale from centralizing research and analytic efforts. Having 50 separate state agencies conducting research on the environmental and health effects of various pollutants and formulating regulatory strategies is inefficient and duplicative. EPA's role as overseer of states permits it to share information with states about others' successes and failures and accumulate knowledge about what policies are most promising, while allowing for some policy experimentation among states. The EPA and other policy makers, as well as scholars, have argued that this kind of partnership ensures an optimal use of national resources.[7]

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[3] Barry G. Rabe, *Power to the States: The Promise and Pitfalls of Decentralization, in* ENVIRONMENTAL POLICY IN THE 1990s 31, 31-52 (Norman Vig & Michael Kraft eds., 1998).

[4] David Schoenbrod, *Why States, Not EPA, Should Set Pollution Standards,* 4 REGULATION 18 (1996).

[5] WILLIAM R. LOWRY, THE DIMENSIONS OF FEDERALISM: STATE GOVERNMENTS AND POLLUTION CONTROL POLICIES (1992).

[6] Rabe, *supra* note 3, at 44-45.

[7] SCHEBERLE, *supra* note 1, at 12-15.

This system of environmental federalism has been widely criticized in the United States for being too expensive, too intrusive, too cumbersome and bureaucratic, as well as ineffective and unable to improve environmental quality in many areas. Advocates of devolution of environmental policy to states, in particular, typically argue that the current structure is cumbersome and inefficient, accountability is muddled, environmental goals are not achieved in a timely manner, and that it prohibits the kind of legal and political innovations needed to make environmental regulation more effective. One of the most important challenges to the prevailing model of environmental law and regulation comes from theories of federalism and the increasing interest, prompted by Republican efforts in the 1970s and 1980s and embraced more broadly in the 1990s by some Democrats, to devolve more policy making power to states. Devolution theory calls for increased policy authority and discretion to be delegated to state governments in order to improve the efficiency of public policies, ensure they effectively resolve specific problems, and foster political accountability. Devolution may also go beyond states to give different communities the opportunity to strike their own balance among the competing policy objectives such as economic growth and reducing environmental risks. Devolution is also championed as a way to engage the public in problem solving and gain their commitment to making changes in behavior. Devolution has been a major theme of welfare and other social policies,[8] and is also championed as a way to promote more participatory policy making and enhance the role of citizens in decisions that affect their health, quality of life, and standard of living.[9]

Devolution theory calls for increased policy authority and discretion to be delegated to state governments in order to improve the efficiency of public policies, ensure they effectively resolve specific problems, and foster political accountability. Devolution also gives different communities the opportunity to strike their own balance among the competing policy objectives of economic growth and reducing environmental risks.[10] Devolution to regulated industries promises to reduce the cost of regulation, create incentives for sources of pollution to find the most efficient and effective means of reducing emissions, encourage reductions that go beyond minimum mandates, and allow for flexibility in business decision making. Devolution to citizens is championed as a way to get the public involved in regulatory initiatives that will change the behavior of citizens. Reducing emissions through energy conservation and increased use of

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[8] GARY BRYNER, POLITICS AND PUBLIC MORALITY (1998).

[9] PUBLIC POLICY FOR DEMOCRACY (Helen Ingram & Steven Rathgeb Smith, eds., 1993).

[10] JOHN DEWITT, CIVIC ENVIRONMENTALISM 16 (1994).

mass transit, for example, require major commitments on the part of citizens to change their behavior, and that commitment cannot simply be mandated from the top down. Other forms of participatory policy making have been proposed to respond to the demands of citizens for a role in decisions that affect their health and quality of life.

Advocates of devolution argue that the current federal regulatory structure is plagued by burdensome procedures and a cumbersome chain of command. The combination of environmental statutes, EPA regulations, and guidance documents result in an impenetrable pyramid of paperwork, planning, and reports. A tremendous amount of effort at all levels of governments is required to manage this process. Compliance with these requirements often replaces energy and resources that could be used to actually reduce pollution and improve environmental quality. Accountability is difficult to identify since so many policy makers compete and jostle for influence, that citizens do not know who to hold accountable when environmental goals are not achieved. Federal officials lay claim to credit for issuing ambitious environmental goals, while state and local officials bear the brunt of criticism for imposing regulatory burdens. The EPA seeks vainly to develop and impose national requirements on conditions that vary widely throughout the nation.[11]

Critics have identified a host of problems with centralized, command and control regulation: it has not only failed to remedy many environmental problems and threats, but it has engendered significant opposition because of the restraints on freedom it imposes, the costs and burdens of compliance, and the apparent ease by which some businesses are able to escape liability and responsibility for their actions.[12] There are real limits to the power of government to promote and ensure the preservation of air, water, land, and other resources. Government agencies alone cannot accomplish these environmental goals, but must be combined with clear and effective economic incentives and with a widely held ethic of care for the land and resources on which all life is so dependent. But the dominant role the federal government plays in environmental policy making focuses too much attention on Washington, and fails to encourage more local efforts.[13]

Other critics of the current structure of regulatory federalism argue that some state and local governments had a long tradition of ambitious environmental regulation and enacted ambitious pollution control legislation well before Congress or the executive branch acted. The first clean air laws in the United States were enacted by cities in the 1880s,

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[11] Schoenbrod, *supra* note 4, at 21.

[12] OFFICE OF TECHNOLOGY ASSESSMENT, 101ST CONGRESS, ENVIRONMENTAL POLICY TOOLS (1995).

[13] Snow, *supra* note 2, at 6.

some 75 years before the first federal program aimed at air pollution.[14] Many states passed water pollution laws in the 1920 and 30s, and by 1948, every state had an environmental protection agency.[15] While it is true that many federal initiatives for air and water pollution predated the 1970 Earth Day, when the modern era of environmental regulation began, states are not newcomers to environmental regulation. Nor is federal regulation a clear success story. Federal environmental policy has been, in many areas, problematic, and has threatened environmental quality. Federal subsidies for road building in national forests, grazing on public lands, the development of fossil fuels, and the emptying of rivers and streams into reservoirs for irrigation, for example, have taken a tremendous toll on natural systems and resources and have encouraged waste, unsustainable consumption, and pollution.[16] One of the consequences of environmental federalism has been to place limitations on more aggressive state regulations. A major impetus for federal air pollution regulation, for example, was a concern by the auto industry that states would impose different emission standards on new vehicles; this fear of having to meet a maze of state regulatory requirements prompted Detroit to lobby for federal regulation of new vehicle emissions.[17] Another example, from the mid-1990s, is the development of federal emission standards for hazardous emissions from coke ovens that were less stringent than those devised in some states, such as Pennsylvania, where environmental advocates had pushed for and won more ambitious limits.[18]

One way of responding to this debate over policy devolution is to try to sort out federal/local roles in environmental policy on a statute-by-statute basis. In the case of air pollution, for example, some regulatory goals require efforts that go beyond the capacity of individual states. The Clean Air Act provides for regional efforts to deal with the long-range transport of ozone pollution from motor vehicles and with haze in national parks and wilderness areas. Pollution problems that cross state

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[14] GARY C. BRYNER, BLUE SKIES, GREEN POLITICS: THE CLEAN AIR ACT OF 1990 AND ITS IMPLEMENTATION 98 (2d ed. 1995).

[15] J. CLARENCE DAVIES & JAN MAZUREK, POLLUTION CONTROL IN THE UNITED STATES 39 (1998).

[16] DAVID M. ROODMAN, WORLDWATCH INSTITUTE, WORLDWATCH PAPER 133, PAYING THE PIPER: SUBSIDIES, POLITICS, AND THE ENVIRONMENT (1996).

[17] Schoenbrod, *supra* note 4, at 19.

[18] During the negotiations, representatives of GASP, the Group Against Smog and Pollution, a grassroots advocacy group, argued that Pennsylvania standards they had pushed for were stronger than those produced in the regulatory negotiations for the new federal standard. In order to gain support for the standards from all steel companies, participants in the negotiations accepted a less stringent standard than the one in place in Pennsylvania. For a brief history of this negotiation, *see* BRYNER, *supra* note 14, at 213-17.

boundaries and involve interstate transfers can be similarly addressed by several states working together, under the EPA's umbrella. The EPA can maintain responsibility for emission standards for products that are sold in national and international markets, such as motor vehicles.[19] In other areas of implementation, such as permitting, inspection, enforcement, and monitoring, however, the EPA could cut back significantly what it does and help direct political accountability to state and local governments for local environmental quality. It could provide technical assistance, draft model state environmental laws, and disseminate more information about environmental problems and conditions and about innovative policy efforts.[20] The EPA could take on fewer tasks, and then perform those functions more expeditiously.

The debate over policy devolution is difficult to resolve in ways that provide clear guidance for what specific policies should be pursued at what level of government. Devolution is not without risks. Political boundaries often conflict with the extension of ecosystems and environmental effects spill over political borders. Urban air pollution problems, for example, are a function of local sources as well as those that are transported long distances. Policy devolution in one area, such as the formulation of local air pollution clean up programs, as is currently provided for by law, must be combined with regional and national programs to deal with the transport of air pollution and emissions from motor vehicles. The goal of giving communities the choice of what mix of risk reduction and economic growth strategies to pursue conflicts with the expectations of a national commitment to protect the health of all Americans, regardless of where they live. There may be some backsliding in some states as more autonomy is delegated to them, and polluting industries may find ways to exercise their political clout more ambitiously in local governments in ways that reduce their regulatory obligations. Proponents of less environmental regulation, of unbridled economic growth and consumption may use devolution arguments to pursue their anti-government agenda. But, in the long run, a more ambitious, pollution-preventing approach to regulation requires more participation and involvement by those whose behaviors are targeted for change, and state and local-level government forums are required for citizens, industry officials, and policy makers to work closely together. Any losses in short-run regulatory stringency (if that is an accurate description of current regulatory efforts) will likely be offset by more fundamental, long-term gains.

Despite these problems there is significant support for devolution in environmental policy making. There is clearly some role in environmen-

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19 DAVIES & MAZUREK, *supra* note 15, at 45-46.

20 Rabe, *supra* note 3; *see also* Schoenbrod, *supra* note 4.

tal policy making for all levels of government. International commitments require national legislation, but state and local governments can also contribute to implementation of these agreements. Interstate commerce and pollution flows also require at least a multi-state response. Beyond that, there is a compelling case for allowing states to tailor the implementation of national goals to meet differing ecological, economic, social, and political differences.[21] Economic theories suggest that decentralization of decisionmaking "increases social well-being as compared with a centralized solution requiring more uniform level of public services across all jurisdictions" because of the resultant freedom of people to choose for themselves how to balance competing concerns.[22] Competition among businesses and among states is essential in encouraging innovation, experimentation, and improved policy making. Progressives have also joined the call for devolution, arguing that shifts in power to states can be harnessed to enact better public policies and also nourishes democracy and the opening up of politics to groups that have had little success, at least recently, in shaping national policies.[23]

Nevertheless, Congressional leaders have largely abandoned, with a few exceptions such as in welfare reform, the promises made in 1994 and 1995 to deliver a smaller federal government and devolve more power to states.[24] Instead, legislation to strengthen the federal role in taxing Internet commerce, property rights, electric industry deregulation, telecommunications, and a host of other areas demonstrate strong Congressional interest in maintaining and even expanding federal power.[25] Members of Congress appear to be much more interested in responding to the demands of business that they be given one set of federal standards to meet, rather than 50 different state requirements. The globalization of the economy and the emphasis on uniform standards provides strong pressure for increased federal policy making rather than policy devolution.[26] The exception of welfare policy seems to prove the rule: in areas where there is strong industry interest in uniform standards, including environmental policy making, there is little devolution; in areas

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21 WESTERN GOVERNOR'S ASSOCIATION, ENLIBRA: A NEW SHARED DOCTRINE OF ENVIRONMENTAL MANAGEMENT, *available at* http://www.westgov.org/wga/initiatives/enlibra/default.htm.

22 OATES, WALLACE, THINKING ABOUT ENVIRONMENTAL FEDERALISM, RESOURCES, Winter 199814, *available at* http://www.rff.org/resources_archive/pdf_files/130.pdf.

23 Michael H. Shuman, *Going Local: Devolution for Progressives*, THE NATION, Oct. 12, 1998, at 11-15.

24 *See* Gary C. Bryner, Politics and Public Morality: The Great American Welfare Reform Debate (1998).

25 Eliza Newlin Carney, *Power Grab*, NATIONAL JOURNAL, April 11, 1998, 798-801.

26 *Id.* at 801.

where industry has little interest, like welfare, Congress has responded to state demands for more flexibility and discretion.

III. Rethinking Environmental Regulation: Sustainable Development

An alternative approach to sorting out the debate over policy devolution and national regulatory programs is to consider what kinds of changes are needed in environmental laws and policies in order to encourage the transition from the current command and control approach to the idea of sustainable development. However, the next generation of environmental laws and regulatory programs, if they are to be more efficient and effective than their predecessors in preventing pollution, integrating economic and environmental values, and promoting sustainability, will still need to address the arguments made by proponents of devolution. The balance of this paper examines the definition of sustainable development, reviews the case for reshaping environmental regulation toward that goal, and explores the implications of the theory of sustainable development for policy devolution.

A. Defining Sustainable Development

The idea of sustainability has well-developed roots in environmental and natural resource policy. Sustainability has long been a standard for assessing the yield of natural resources. For example, it has been a goal of forest management for decades as land managers have sought to ensure that renewable resources are used no faster than they are replenished and can be used indefinitely.[27] In the 1970s, scholars broadened the notion to examine the extent to which economic activity, resource use, and pollution was consistent with the planet's carrying capacity.[28] The World Conservation Strategy proposed the concept of sustainable development in 1980.[29] But the idea of sustainable development gained real international prominence and attention with the publication in 1987 of the World Commission on Environment and Development's *Our Common Future* report, which urged all nations to commit to the idea of sustainable development, defined as "development that meets the need of the present without compromising the ability of future generations to meet their own needs."[30] The idea of sustainable development was an

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27 Tyler Miller, Jr., Living in the Environment 618-19 (1996).

28 The Sustainable Society (Dennis Pirages, ed., Praeger 1977).

29 The Earthscan Reader in Sustainable Development (John Kirby et al. eds., 1995) (*citing* International Union for the Conservation of Nature et al, A World Conservation Strategy: Living Resource Conservation for Sustainable Development.)

30 World Commission on Environment and Development 43 (1997).

essential underpinning of the 1992 United Nations Conference on Environment and Development (UNCED). The term was included in nearly half of the 27 articles that made up the Rio Declaration, a statement of broad principles to guide economic development, and was the basis for Agenda 21, a detailed plan of action aimed at implementing the idea of sustainable development.[31]

The UNCED documents never provided a clear definition of sustainable development. According to one count, there are some 70 competing definitions of the term.[32] The President's Council on Sustainable Development (PCSD) was created by the Clinton administration in 1993. Its purpose was to bring together representatives from environmental groups, industry, and government to advise the president "on matters involving sustainable development," defined as "economic growth that will benefit present and future generations without detrimentally affecting the resources or biological systems of the planet."[33] The Council's "vision statement" argues that a "sustainable United States will have a growing economy that provides equitable opportunities for satisfying livelihoods and a safe, healthy, high quality of life for current and future generations."[34]

Sustainable development links the wealthy and poor countries that all share the challenge of making their economies ecologically sustainable and reflective of the needs of the poor among them and those of future generations. It promises to find a path to reconciling the stubborn conflicts between environmental protection and economic growth, equality and efficiency, and the different agendas of the North (the developed nations) and the South (the less developed world). Sustainable development, as reflected in Agenda 21 and other documents, represent important statements concerning emerging global expectations. Part of their strength comes from the way in which they represent cooperative efforts on the part of participating countries that it is in everyone's interest to protect the global environment and promote environmentally sustainable economic growth. But the global environmental agreements in place are built on the expectation that the wealthy world will provide major new sources of funding to accomplish these goals, and that expectation has not been realized. The tension between the developing and developed nations is considerable, rooted in the history of colonialism, economic

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[31] For discussions of the Rio Summit, *see* ADAM ROGERS, THE EARTH SUMMIT (1993).

[32] Kirby et al., *supra* note 29, at 1.

[33] Exec. Order No. 12,852 (June 29, 1993), *amended* 42 U.S.C. 4321 (July 19, 1993).

[34] THE PRESIDENT'S COUNCIL ON SUSTAINABLE DEVELOPMENT, SUSTAINABLE DEVELOPMENT: NEW CONSENSUS FOR THE PROSPERITY, OPPORTUNITY AND A HEALTHY ENVIRONMENT FOR THE FUTURE iv (1996).

exploitation, military adventurism, nationalism, and other factors. This tension has become more pronounced as the debate over addressing global environmental problems has evolved during the past two decades.

Those in the South fear that their aspirations of economic growth, reduced poverty and starvation, and improved health and education are now to be sacrificed in the name of environmental preservation. They worry that global efforts fashioned by wealthy nations will prevent them from harvesting their natural resources and expanding their industrial base. They believe that their dreams of an improved life will give way to a global effort to reverse the excesses of the wealthy nations that have precipitated environmental threats. The agreements in place are not enough to secure our environmental future, and new agreements will need to be negotiated for decades into the future. If commitments already made are not kept, future agreements will be more difficult to produce, and the goals of the environmental agreements in place will not be realized.[35]

In terms of U.S. domestic policy, sustainable development is also a concept with great potential for encouraging the integration of environmental, economic, and other goals that promises to achieve those goals more effectively and efficiency than if pursued in isolation. The President's Commission on Sustainable Development proposed a framework to guide public and private efforts in pursuit of the idea of sustainable development that addresses environmental quality and natural resource preservation, equity, economic growth, community and civic engagement, education, and international responsibility. The commission proposes six broad principles: (1) making environmental regulation more effective and efficient, (2) increasing the amount of information available and access to it concerning sustainable development, (3) encouraging community planning, reducing sprawl, and creation of jobs and economic opportunities, (4) developing an ethic of stewardship to guide human interaction with natural systems, (5) expanding access to family planning and reproductive health services, increasing equity for women, and reducing illegal immigration, and (6) fostering U.S. leadership in international efforts to promote democracy, scientific research, and sustainable development. Table 1, below, lays out these goals in more detail.

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[35] These arguments are developed in Gary C. Bryner, *Agenda 21*, *in* THE GLOBAL ENVIRONMENT 157-89 (Norman J. Vig & Regina Axelrod eds., 1999).

TABLE 1: GOALS AND INDICATORS OF SUSTAINABILITY

Goals	Indicators
Ensure that every person enjoys the benefits of clean air, clean water, and a healthy environment at home, at work, and at play.	Decreased numbers of persons living in areas that fail to meet air quality and drinking water standards, reduced releases of toxic chemicals, and decreased deaths and illnesses due to environment-related exposures
Sustain a healthy U.S. economy that grows sufficiently to create meaningful jobs, reduce poverty, and provide the opportunity for a high quality of life for all in an increasingly competitive world.	Increases in per capita GDP and NDP, wages, quality and number of jobs, higher per capita savings and investment rates, increased productivity, decreased number of people living below poverty level, development of new economic measures reflecting resource use and pollution.
Ensure that all Americans are afforded justice and have the opportunity to achieve economic, environmental, and social well-being.	Decrease in the income differences between top and bottom of population, development of measures of disproportional environmental burden on minorities and access to critical social services, and increased education.
Use, conserve, protect, and restore natural resources—land, air, water, and biodiversity—in ways that help ensure long-term social, economic, environmental benefits for ourselves and future generations.	Increase in the health of ecosystems such as forests, wetlands, surface waters, topsoil, grasslands, surface waters, and coastal lands; decreased number of threatened and endangered species; decreased release of toxins and excess nutrients that threaten ecosystems; reduced greenhouse and ozone-depleting gases.
Create a widely held ethic of stewardship that strongly encourages individuals, institutions, and corporations to take full responsibility for the economic, environmental, and social consequences of their actions.	Increased efficiency of material use; increased source reduction, reuse, recovery, and recycling; reduced energy use per unit of output; and decreased rate of use of fisheries, forests, soil, and groundwater.
Encourage people to work together to create healthy communities where natural and historic resources are preserved, jobs are available, sprawl is contained, neighborhoods are secure, education is lifelong, transportation and health care are accessible, and all citizens have opportunities to improve the quality of their lives.	Increased per capita income and employment, decreased violent crime rates, increased urban green areas, increased investment in children, decreased traffic congestion and increased use of mass transit, increased library use and access to the internet and other sources of information, decreased number of homeless, and decreased infant mortality rate.

TABLE 1, CONTINUED

Goals	Indicators
Create full opportunity for citizens, businesses, and communities to participate in and influence the natural resource, environmental, and economic decisions that affect them.	Increased voting rates, citizen engagement and public trust, increased participation in professional and service organizations, and use of civic collaborations, partnerships, and planning.
Move toward stabilization of the U.S. population.	Reduced population growth rate, increased educational opportunity and income equality for women, decreased number of teenage and unintended pregnancies, decreased illegal immigration.
Take a leadership role in the development and implementation of global sustainable development policies, standards of conduct, and trade and foreign policies, that further the achievement of sustainability.	Increased level of foreign aid for sustainable development, increased U.S. exports or transfers of cost-effective and environmentally sound technologies to developing countries, increased research on global environmental problems.
Ensure that all Americans have equal access to education and lifelong learning opportunities that will prepare them for meaningful work, a high quality of life, and an understanding of the concepts involved in sustainable development.	Increased access to government information, public and private research, and right-to-know information; increased availability of teaching materials on sustainability; increased commitment to sustainable development curricula; improved skill performance on standardized tests; and increased high school graduation rates and college or vocational training.

Source: THE PRESIDENT'S COUNCIL ON SUSTAINABLE DEVELOPMENT, SUSTAINABLE AMERICA 14-23 (1996).

This chart of the goals of sustainability offers a number of criteria to guide policy making. In the first area of improving environmental regulation, for example, the report indicates that environmental regulations need to give more flexibility to industry so they can reduce their costs and still hold them accountable for achieving public health and environmental objectives. Companies should voluntarily accept responsibility for the design, production, use, and disposal of products and their environmental consequences throughout products' life cycles. Regulations should use emissions trading, deposit/refund systems, taxes, and other market incentives to create incentives for compliance. Public and private institutions should work more closely together to integrate economic development, environmental quality, and social equity and fairness. Policy makers and corporate managers both need to create a setting that en-

courages the development of innovative technologies that increase employment and wealth and also protect human health and the environment. The report cites several examples of streamlining administrative requirements and reducing compliance costs through pollution prevention and changes in production technologies. Collaborative and consensus-oriented processes that bring together environmental and other community groups, industry officials, and government representatives have improved flexibility, accountability, cost savings, and achievement of environmental goals. Encouraging companies to take responsibility for all environmental aspects of their products promises to make more efficient use of resource, produce less waste, and save money. Finally, the council suggests the creation of a national commission to identify tax and subsidy policies that are inconsistent with sustainable development.[36] The council established task forces to write reports on additional topics such as energy and transportation, eco-efficiency, sustainable agriculture, and population and consumption.[37]

There is ongoing debate over how to define and implement the goal of sustainability and apply it in contexts such as developing fossil fuels and other nonrenewable resources. For some, sustainability means that development and growth continue with some balancing of economic and environmental values, while others give primacy to ecological health and place severe constraints on economic activity.[38] Much of the debate over sustainability is captured by two views of the concept. A weak or thin form of sustainable development, and the view embraced by the Clinton administration and many other proponents of sustainability in the U.S., is that economic and environmental concerns can and must be balanced. In the past, economic growth has been given priority and seen as paramount; now it must be refined and balanced by environmental sensitivity. But fundamental changes are not required: current technologies and patterns of production and consumption are acceptable as long as they are tempered by environmental/resource considerations and we can largely continue to do what we have done in the past as long as we are more "sensitive" to environmental conditions. Similarly, the overall value of the natural and economic capital for future generations will be undiminished by the current generation. The goal is to ensure the same level of

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[36] PRESIDENT'S COUNCIL ON SUSTAINABLE DEVELOPMENT, BUILDING ON CONSENSUS: A PROJECT REPORT ON SUSTAINABLE AMERICA 26-55 (1997)(hereinafter BUILDING ON CONSENSUS).

[37] The President's Council on Sustainable Development issued task force reports entitled Sustainable Agriculture, Population and Consumption, Energy and Transportation, and Eco-Efficiency, *available at* http://clinton2.nara.gov/PCSD/Publications/ [last visited 1998].

[38] For a thoughtful critique and defense of sustainability, *see* THOMAS PROUGH ET AL., THE LOCAL POLITICS OF GLOBAL SUSTAINABILITY (2000).

resources while permitting some substitution of natural resources for an equivalent amount of capital.[39]

In contrast, a strong or thick form of sustainable development holds that environmental preservation is the paramount value. It places a major constraint on economics; only economic activity that is consistent with the fundamental criterion of sustainability is acceptable. The current distribution of critical natural capital must be maintained; it cannot simply be exchanged for increased cash. Industrial activities, energy production, transportation, and consumption must be fundamentally transformed to avoid ecological disruptions and protect regenerative processes. Ecological survival simply outweighs economic growth as the primary public priority.[40] A second feature of this thick notion of development is its integration of ecological protection and economic activity with social equity and political empowerment. Sustainable development here gives priority to reducing poverty and helping the poor gain some measure of self-sufficiency through a more equitable distribution of resources. A third element is political participation, a key ingredient in ensuring that decisions affecting economic and environmental conditions be made more inclusive.[41]

Sustainability emphasizes the interaction of ecological, economic, social, cultural, and other values, so that no one set of values, such as environmental or economic factors, can alone determine policy. The methodology of sustainability builds on the idea of ecosystem services, but goes beyond to include several other additional criteria for assessing policy choices, including pollution prevention rather than treating emissions, sustainable yield of renewable resources, the precautionary principle and preservation of ecological values in the face of uncertainty, true-cost pricing that internalizes environmental costs in market exchanges, the development of economic indicators and measures that reflect depletion of natural resources, considerations of equity and distribution, and preservation of ecological conditions and options for future generations. Sustainability focuses on comprehensive solutions that reflect the interconnections of ecology. It respects the maxim, "everything is connected to everything else," that is at the heart of ecology.

An important feature of sustainability is its integration of ecological protection and economic activity with social equity and political empow-

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[39] These distinctions are developed more fully in GARY C. BRYNER, GAIA'S WAGER: ENVIRONMENTAL MOVEMENTS AND THE CHALLENGE OF SUSTAINABILITY (2001).

[40] For an exploration of these views from an economist's perspective, *see* TODD SANDLER: GLOBAL CHALLENGES (1997); for a broader ecological and political debate over sustainability, *see* BUILDING SUSTAINABLE SOCIETIES (Dennis Pirages ed., 1996).

[41] *See* William Lafferty, *The Politics of Sustainable Development: Global Norms for National Implementation*, 5 ENTVL. POLITICS 185, 185-208 (1996).

erment. Political participation is a key ingredient in ensuring that decisions affecting economic and environmental conditions be made more inclusive. Sustainability is not an ecological concept alone, but also one of social justice, inclusion, fairness, community well being, and political engagement. These social and political values are important and valued in their own right as well as because they contribute to ecological protection. It requires fairness in the distribution of benefits and burdens, a perpetual resource base and ecological services, and a social system that secures the interests of all persons. Sustainability is bound up with notions of strong democracy, participation, community, and those social characteristics are fostered through a scale of personal interaction. So too is a commitment to a land ethic. As Aldo Leopold defined the land ethic, sounding much like a proponent of sustainable communities, "An ethic, ecologically, is a limitation on freedom of action in the struggle for existence. . ..All ethics so far evolved rest upon a single premise: that the individual is a member of a community of interdependent parts. . ..The land ethic simply enlarges the boundaries of the community to include soils, water, plants, and animals, or collectively: the land."[42]

Table 2 suggests one way of synthesizing various ideas about sustainability into three primary categories: ecology, economics, and equity. Ecological sustainability is the primary value as it makes possible life itself. Ecological principles emphasize the importance of human beings living in harmony with and preserving ecosystem functions, integrating regulatory efforts rather than regulating pollution affecting environmental media such as air and water separately, and acting conservatively in the face of uncertainty. Economic imperatives require that prices reflect the true costs of production so that consumers and producers will have accurate information as they make decisions, companies produce less waste and pollution, and economic indicators better reflect ecological conditions. Equity emphasizes the way in which sustainability is intertwined with political and governmental renewal and encourages the participation of all citizens and empowers them to identify problems, set priorities, and design and implement solutions.

TABLE 2: THE THREE ES OF SUSTAINABILITY

Ecological integrity and services
- Recognize the interconnectedness of natural systems and human society
- Maintain ecological integrity and protect key ecosystem services
- Preserve biodiversity and the world's genetic library
- Ensure sustainable yield of renewable resources
- Preserve and regenerate natural capital base on which life depends
- Precautionary principle
  - Err on the side of protection of ecosystems in uncertainty

[42] ALDO LEOPOLD, A SAND COUNTY ALMANAC 238-239 (1966).

Shift burden of proof to show safety and sustainability
Integrate pollution reduction regulation across environmental media and sectors

Economic activity
Ensure true-cost prices that internalize environmental costs through taxes and fees
Promote pollution prevention through product design
Encourage life cycle, cradle-to grave responsibility for manufacturers of products
Create incentives through marketable rights such as emissions trading
Reduce subsidies that have harmful environmental consequences
Value economically natural resources and ecosystem functions
Devise economic indicators and measures that reflect depletion of natural resources
Develop broader economic measures of sustainability such as Genuine Progress Indicators
Foster appropriate, ecologically constrained technology

Equity
Promote equal participation of all members of a community in decision making
Encourage social capital and collective capacity to solve problems
Intergenerational equity—meet present needs and ensure future needs can be met as well
Pursue environmental justice in impacts of benefits and burdens of economic activity
Seek intra-generational equity to ensure resources are fairly distributed
Reduce poverty because of resultant pressure on short-term resource exploitation

While each of these three elements of sustainability deserve detailed discussion, space here only permits an examination of the third element. Equity is an essential element of sustainability. A strong sense of political efficacy encourages people to become involved in devising solutions to environmental problems. A robust commitment to community motivates people to reduce adverse impacts they impose on others and contribute to a shared quality of life. The kinds of changes that are required by sustainability require motivation and commitment that are more likely to come from people who feel a sense of responsibility and accountability for how their actions affect the quality of life of others. The changes also require engagement and empowerment, so that participants devise solutions for which they feel ownership and with which they are willing to comply. Sustainability requires a spirited, vibrant politics where engaged citizens, responsible corporations, effective governmental bodies, and committed nongovernmental organizations, work together.

B. Ecological Sustainability and Devolution

Despite global agreements that appeal to sustainability, the concept seems more likely to serve as a framework for policy making at the local level, and the most thriving examples of sustainability seem to be in that

context. The Clinton administration did little during its second term to push the agenda of sustainable development. It has subsequently been absent from congressional and Bush administration debates over energy and other environmental-related issues. There has been little apparent commitment to pursuing the idea of sustainability at the national level of government through effective laws and policies.

A national commitment to sustainability is an essential goal. But devolution and sustainability are a promising policy approach not only because there is currently a vacuum in national leadership but also because sustainability has such a strong participatory component. Sustainability can be effectively intertwined with community-based, collaborative decision making as a process for making sustainable policies. Collaboration seeks to avoid the conflict, litigation, and other problems that have plagued other planning processes, and provide a forum for government officials from different levels of government and overlapping jurisdictions to work together. Various forms of collaborative processes are likely to be used by communities as they develop plans and policies for making economic activity more sustainable.

Dale Jamieson has argued that, at the local level, sustainability works in the negative: we can agree when local land practices are not sustainable:

> *In many specific contexts the language of sustainability can be made more useful by focusing on what is unsustainable rather than on a positive definition of sustainability. Often people who would initially disagree about what sustainability is can agree about when something is unsustainable. Ranchers and environmentalists (for example) may agree that eroded, denuded land is unsustainable, even if they disagree about what it would be like for the land to be sustainable.*[43]

Principles of sustainability often underlie the expectations of community-based decision making. Proponents argue that successful collaborative processes involve the interests or stakeholders who are most affected by decisions; empower local environmental protection groups to advocate for broad environmental values in local decisions; ensure that all interests have adequate resources to represent their views and participate effectively; allow agencies to facilitate participation among stakeholders and develop plans responsive to their concerns, within the constraints of national laws and policies; reduce conflict among stakeholders; generate opportunities to find innovative and low cost solutions, and promote

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[43] Dale Jamieson, *Sustainability and Beyond*, NAT'L RESOURCES LAW CENTER PUBLIC LAND POLICY DISCUSSION PAPER SERIES (PL02) 12 (1996).

partnerships between agencies and stakeholders that promote implementation and foster problem solving and learning by experience.[44]

There are significant challenges involved in devising effective collaborative efforts. The processes may exclude national stakeholders' views and weaken national environmental commitments. They fragment decision making and reduce the power of national planning efforts. Critics warn they inevitably benefit industry interests that are typically better funded than conservation groups and they fail to encourage agencies to make the often difficult decisions mandated by environmental laws. Collaborative efforts must respond to the concern that the efforts de-legitimize the conflict that is sometimes required to move away from unsustainable use of resources and toward their preservation and co-opt the strength of environmentalism as a force rooted in broad public support. Such efforts may increase the costs and time required to make decisions, and win-win solutions will not always be possible as natural resources become increasingly scarce and preservation values fundamentally collide with commodity interests.[45] Part of the evolution of sustainable policy making will be the development of new ways of bringing members of a community together to devise plans that will meet sustainability goals and will generate strong commitments to comply with the difficult choices to be made. While each landscape is different, lessons from one area can be shared with others. Open and inclusive processes that encourage broad participation, initiatives that capitalize on a sense of place and landscape, and agreements that clearly meet or exceed the protections required in natural resource laws are some of the keys to constructive collaboration.[46] Consensus-based decision making suggests the following general principles that can guide policy making:

- Recognize the importance of place-based decision making and a land ethic
- Ensure the participation of all affected interests
- Integrate overlapping government jurisdictions
- Develop partnerships for designing and implementing solutions
- Learn from experience and engage in intelligent trial-and-error

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[44] For a helpful overview and assessment of the functioning of consensus-based groups, *see* Douglas S. Kenney, *Arguing About Consensus: Examining the Case Against Western Watershed Initiatives and Other Collaborative Groups Active in Natural Resource Management*, NAT'L RESOURCES LAW CENTER (2000).

[45] For a discussion of the challenges facing collaborative efforts and how they might be addressed, *see* JULIA M. WONDOLLECH & STEVEN L. YAFFEE, MAKING COLLABORATION WORK: LESSONS FROM INNOVATION IN NATURAL RESOURCE MANAGEMENT (2000); RONALD D. BRUNNER ET AL., FINDING COMMON GROUND: GOVERNANCE AND NATURAL RESOURCES IN THE WEST (2002).

[46] BARB CESTERO, BEYOND THE HUNDREDTH MEETING: A FIELD GUIDE TO COLLABORATIVE CONSERVATION ON THE WEST'S PUBLIC LANDS (1999).

- Employ adaptive management techniques and approaches.

Sustainability and collaboration are reinforced by the Western Governors Association and others who have embraced principles of balance and stewardship in environmental policy making that is reflected in a concept labeled "enlibra." Enlibra, a hybrid term from latin words, is a set of principles aimed at promoting solutions to natural resource conflicts that avoid litigation, torn communities, and natural resource wars.[47] The governors endorsed the idea as governing principles in 1997 and have held two summits in the West in order to encourage use of enlibra in addressing problems of population growth, developing natural resources, providing for economic growth in new service industries, adjusting to the globalization of markets and competitiveness, controlling more diverse and diffused sources of pollution, changing land use patterns, and new technologies.[48] Enlibra builds on collaborative efforts the governors developed in the 1990s that are reflected in the Park City Principles for Water Management, the High Plains Partnership, the Grand Canyon Visibility Transport Commission, the Oregon Plan for Salmon and Watersheds, the Texas Regional Water Supply Planning Process, Trails and Recreational Access for Alaska, and the Wyoming Open Lands Initiative. Enlibra embraces the following eight principles:

- National standards, neighborhood solutions—assign responsibilities at the right level, give flexibility to non-federal governments, and provide accountability
- Collaboration, not polarization—use collaborative processes to break down barriers and find solutions
- Reward results, not programs—move to a performance-based system that encourages problem solving, not just compliance with programs
- Science for facts, process for priorities—separate subjective choices from objective data gathering and seek agreement on facts and uncertainties before framing choices
- Markets before mandates—pursue market-based approaches and economic incentives whenever appropriate
- Change a heart, change a nation—support environmental understanding and education about stewardship

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[47] Richard Halvey & Karen Deike, *Unleashing Enlibra*, ENVTL. FORUM 21, 21-31 (Sept.-Oct. 2002).

[48] WESTERN GOVERNORS' ASS'N & WHITE HOUSE COUNCIL ON ENVIRONMENTAL QUALITY, ENVIRONMENTAL SUMMIT ON THE WEST II (Apr. 24-26, 2002) *at* http://www.westgov.org/wga/press/pr_4-25-02_roundup.htm (last visited November 21, 2002)

- Recognition of benefits and costs—make sure all decisions affecting infrastructure, development, and environment are fully informed by life-cycle costs and economic externalities
- Solutions transcend political boundaries—use appropriate geographic boundaries to identify the full range of affected interests and facilitate solutions to environmental problems.[49]

The Bush administration has also endorsed similar principles. EPA administrator Christie Whitman's National Environmental Performance Partnership System emphasizes collaboration between federal and state governments in setting priorities and defining roles. Interior Secretary Gale Norton's "4 Cs"—"communication, cooperation, and consultation in the service of conservation"—are another reflection of these principles.[50] They are rooted in a decades-long effort to redefine federalism and refine the relationship between federal, state, and local governments in natural resources and other policy making arenas that have been given labels like cooperative federalism, new federalism, and policy devolution.[51]

Proponents of these principles of collaboration and conservation will need to be responsive to the fears of environmentalists that devolution to state and local policy making will weaken compliance with national environmental standards and require battles for conservation that were won at the national level to be re-fought in each state. An important strength of the environmental movement lies in its ability to tap into broad public interest in protecting the environment and in the aggressive use of the courts to ensure national laws are implemented faithfully, and that they are disadvantaged in other forums[maybe two sentences would be better here]. The participation of environmentalists in policy making efforts sponsored by the administration, western governors, and others will likely require a strong commitment to the principles of balance and fairness.

C. Sustainability and State, Local, and Regional Government

A variety of local, state, and regional efforts in managing economic development, community growth, energy production and use, protection of ecosystems, preservation of fisheries, and in creating incentives for environmental stewardship also contribute to the growing interest in eco-

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[49] WESTERN GOVERNORS' ASS'N, POLICY RESOLUTION 99-013: PRINCIPLES FOR ENVIRONMENTAL MANAGEMENT IN THE WEST, *at* www.westgov.org/wga/policy/99/990113.htm. (last visited June 2002).

[50] WESTERN GOVERNORS' ASS'N, *supra* note 49; *see also* Rebecca Watson, *Keynote Address*, COALBED METHANE CONFERENCE IN THE INTERMOUNTAIN WEST 107 (Natural Resources Law Center, July 2002).

[51] *See* SCHEBERLE, *supra* note 1.

logical sustainability in local government. The Joint Center for Sustainable Communities, established by the National Association of Counties and the U.S. Conference of Mayors, for example, provides local elected officials with advice, technical assistance, information, and financial support for sustainable community. The Center provides leadership training, peer exchange programs, information on policy tools, and an advertising and education campaign and conference workshops. The Metropolitan Approaches Working Group collects information on how cities, counties, business groups, citizens, and others can facilitate cooperative efforts that cross local government boundaries.

Communities in the Pacific Northwest, have been actively pursuing sustainable development policies. The region has undergone dramatic economic growth over the past few decades and its economic base has been transformed. Metropolitan areas have aggressively developed policies to control urban sprawl and develop mass transit. Timber and ranching businesses in the region have emphasized stewardship and responsibility for sustainable use of resources.[52] Other communities have also pursued sustainable development initiatives. The East-West/Gateway Coordinating Council in St. Louis has developed a twenty-year transportation plan that integrates transportation decisions with economic, environmental, and community goals such as supporting mobility for low income residents and ensuring that development along rail lines is based on sustainability principles. Some communities have formed sustainable development forums to bring community members together to formulate plans. Non-profit organizations throughout the nation formed the Sustainable Communities Network to share information on demonstration projects and conduct outreach programs.[53]

Many U.S. cities have joined the International Council for Local Environmental Initiatives' (ICLEI) Cities for Climate Protection program, and have put in place action plans to protect the global climate and reduce local air pollution. Many have embraced the goal of a 20 percent reduction in carbon dioxide emissions, and several major cities have reduced emissions by as much as 15 percent since 1995. Most of the progress is being made in retrofitting municipal buildings, community energy efficiency programs, and waste management initiatives.[54] ICLEI has established a global program to assist local governments in pursuing sustainable development as suggested in the Earth Summit's Agenda 21 report. The first effort, Model Communities, focused on community planning. A second program established Local Agenda 21 networks to

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[52] BUILDING ON CONSENSUS, *supra* note 36, at 10-11.

[53] *Id.* at 13.

[54] INT'L COUNCIL FOR LOCAL ENVIRONMENTAL INITIATIVES, LOCAL AGENDA 21, INITIATIVES NO. 17 (Nov. 1997).

report on the implementing, monitoring, and reporting of Agenda 21 programs. While it is too early to be able to assess the impact of these initiatives on local and global environments, they represent important efforts to gain binding commitments for participation in the kinds of efforts envisioned in Agenda 21.

Other initiatives related to the goals of sustainable development implicate a more decentralized policy structure. Extended Product Responsibility (EPR), for example, is based on the idea that real progress in sustainable development requires an integrated assessment of all stages of economic activity and that all those involved in the life cycle of a product—[should be a dash]designers, suppliers, manufacturers, distributors, users, and disposers—[should be a dash]to share responsibility for the environmental effects of the products. EPR in the United States is much broader in scope than "extended producer responsibility" programs in other countries that emphasize the responsibility of manufacturers for ultimate disposal of their products. Government agencies establish performance standards and ensure accountability for achieving those standards, and businesses are then free to choose how to implement them. EPR is largely a voluntary program in the United States; companies have pursued it in order to attract green consumers, make more efficient use of resources, avoid regulatory requirements, and achieve their own sustainability goals. Under EPR, companies find new ways to organize production and distribution to minimize wastes, treat wastes as assets, devise new ways of thinking about product delivery, and seek feed-back from customers in redesigning products. A number of U.S. companies, including DuPont, Ford Motor, and Georgia-Pacific, have used EPR principles to transform the way they produce their products.[55]

Another example, eco-Industrial parks, are communities of businesses that cooperate with each other and with their surrounding communities by sharing resources such as information, water, energy, infrastructure, and in so doing create jobs, improve environmental quality, and promote equity and other social goals. Northhampton County, Virginia, is one of the first areas to establish a sustainable technologies industrial park and about 15 other communities had established such parks by 1997. These parks begin with strong community participation that focuses on creating jobs, protecting the environment, and preserving the social values of the community; state and federal agencies provide technical expertise and resources to develop sites and attract businesses. Experiments range from zero-emissions eco-industrial parks, where all facilities in an area are committed to the goal of zero emissions, to virtual eco-industrial parks that are networks of related companies. These parks promise to increase rates of return through synergies, economies of scale,

[55] BUILDING ON CONSENSUS, *supra* note 36, at 24-25.

and reduced risk and liability, but more pilot projects are needed to convince businesses that these benefits will be realized.[56]

State and local governments are taking a number of actions in the face of federal policy makers to make progress in devising strategies to move the nation from fossil fuels to renewable energy, and integrate energy and climate protection policies. These efforts are also an important step in the direction toward ecological sustainability. Illinois, for instance, has created a state government energy cabinet to coordinate policies affecting energy production and use, the state's clean energy trust fund, and leading alternative fuels and energy efficiency research and demonstration programs. New York's commitment to purchase 20 percent of its power from renewable sources is the most ambitious program yet among the nearly dozen similar state initiatives. At least ten states require utilities to meet goals mandated by the state for producing electricity from renewable sources (renewable portfolio standards).[57] Bills have been introduced in 2001 and 2002 in the New York City Council that would require power plants operating in the city to reduce carbon dioxide emissions by 20 percent within five years.[58] In Washington, city and state programs emphasize the intersection of energy and climate change policy and include major commitments to reduce energy use and improve efficiency.

States are playing leading roles in addressing the threat of climate change. The California state assembly passed a bill in February 2002 that ordered the state's Air Resources Board to adopt regulations for achieving the "maximum feasible reduction" of CO2 emitted by passenger vehicles and light trucks, and the legislation was signed by the governor several months later.[59] At least four states have developed or are designing greenhouse gas registries: California, New Hampshire, New Jersey, and Wisconsin. All are voluntary programs that encourage companies to reduce emissions. Massachusetts and New Hampshire were the first states to require power plants to reduce their carbon dioxide emissions. Massachusetts has set carbon dioxide caps for six power plants; the plants must reduce CO2 by 10% from 1990 levels by 2004-06. They can meet that requirement a number of ways, including installation of control technologies, fuel switching, swapping CO2 reduction credits from other

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[56] *Id.* at 27-29.

[57] ENERGY INFO. ADMIN., U.S. DEP'T OF ENERGY, ANN. ENERGY OUTLOOK 2001 WITH PROJECTIONS TO 2020 12, *at* www.gcrio.org/OnLnDoc/pdf/aco2001.pdf (2000) (last visited October 2002).

[58] *NYC Council Seeks Cut in Power Plant CO2 Emissions*, PLANET ARK, *at* http://www.planetark.org/avantgo/dailynewsstory.cfm?newsid=14303 (last visited Jan. 31, 2002).

[59] *California Plans Cuts in Vehicle CO2 Emissions,* ENVTL. NEWS SERV., *at* http://ens-new.com/ens/feb2002/2002-02-01-06.asp (last visited Feb. 1, 2002).

plants, and investing in off-system reductions. Pennsylvania and Oregon have enacted "Climate Action Plans" for reducing greenhouse gas emissions by state agencies. In Oregon, carbon dioxide emissions from new power plants must be at least 17% below the most efficient natural-gas fired plant. Sources can meet through technologies or purchasing CO2 offsets from the Oregon Climate Trust, which sponsors CO2 mitigation projects. New Jersey's goal of reducing greenhouse gas (GHG) emissions by 3.5% below 1990 levels by 2005 is to be achieved through a comprehensive energy strategy, including the creation of a Greenhouse Gas Registry to facilitate trading of greenhouse gas emission reduction credits. A market in these credits is aimed at producing the cheapest reductions in emissions by allowing polluters to either reduce their emissions or pay others who have cut theirs beyond the amount required.[60]

New York City; Salt Lake City, Memphis, Philadelphia, Los Angeles, Miami Beach, and Chicago, have set goals for reducing their emissions of carbon dioxide. Salt Lake City has committed to reduce GHG emissions from city government by 7 percent within four years, and emissions from the entire city by that amount by 2012, by converting most of its motor vehicle fleet to alternative fuel vehicles, reducing waste sent to landfills, improving the energy efficiency of city offices, and protecting open spaces.[61] Chicago officials announced in November 2001 the city would join the Chicago Climate Exchange, a voluntary GHG emissions trading market that will begin operating in 2003. The Chicago Climate Exchange includes companies and cities that have set voluntary limits on GHG emissions and buy and sell credits in order to meet their emission reduction goals. The exchange is in the design stage and will be tested on a regional basis in 2003 and then implemented nationwide. Other entities participating include Agriliance (agricultural producers, local and regional cooperatives), BP, Cinergy (Midwest electric and gas utility), Ducks Unlimited, Dupont, Exelon (energy company), International Paper, Iowa Farm Bureau Federation, Manitoba Hydro, National Council of Farmer Cooperatives, PG&E National Energy Group, Suncor Energy, Swiss Re (reinsurance company), The Nature Conservancy, Waste Energy Co., and ZAPCO.[62]

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[60] *Greenhouse Gas State Registry,* N.E. STATES FOR COORDINATED AIR USE MANAGEMENT, *at* http://www.nescaum.org/Greenhouse/registry/state_matrix.html. (last visited October 2002).

[61] Amy Joi Bryson, *Rocky Vows Cleaner Air for S.L*, DESERET NEWS, Feb. 7, 2002, at B2.

[62] Carbon Trading Market Expands to Chicago, Mexico City, ENVTL. NEWS SERV., at http://ens-news.com/ens/nov2001/2001L-11-13-02.html (last visited September 2002).

D. EPA Environmental Management Innovations and Sustainability

The U.S. EPA has undertaken a number of partnership efforts with industry to encourage efficiency and conservation and reduce emissions in response to criticism that complex, detailed, federal mandates have discouraged states from developing innovative solutions to environmental problems. While these initiatives are not expressly aimed at contributing to the shift toward sustainable development, they rest on many of the same underlying premises and values and provide a base on which more ambitious efforts can be built. As voluntary programs: the EPA provides technical assistance and relief from some regulatory requirements for firms that make binding commitments. Among the most important EPA initiatives are:

- "Green Lights," a program that assists companies in installing energy-saving lighting;
- "Waste Wise," which helps companies find ways to reduce the generation of solid wastes;
- "Climate wise," a joint EPA-Department of Energy effort to help companies reduce their emissions of greenhouse gases;
- "Pesticide Environmental Stewardship Program," an EPA-Agriculture Department-Food and Drug Administration program to reduce pesticide use;
- "Project XL," an effort by the EPA and states that permits companies to substitute company-devised plans for established regulations as long as results give more protection to the environment, involve local citizens in formulating and monitoring plans, and contribute to worker safety and environmental justice;
- The "33/50 Program," where EPA officials worked with industries to reduce emissions of chemicals by 33 percent by 1992 and 50 percent by 1995 (both goals were achieved a year ahead of schedule for some 1,300 participating companies according to the U.S. EPA, Office of Pollution Prevention and Toxics, 1998); and
- The "National Environmental Goals Project," an effort to develop ten-year goals for achieving the environmental and public health improvements promised in U.S. laws and international agreements by identifying the challenges to be addressed, who is responsible for taking what actions, and targets to be achieved by the year 2005.[63]

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[63] NATIONAL PERFORMANCE REVIEW, COMMON SENSE GOVERNMENT: THIRD REPORT OF THE NATIONAL PERFORMANCE REVIEW 43 (1995); U.S. ENVIRONMENTAL PROTECTION AGENCY, OFFICE OF POLLUTION PREVENTION & TOXICS, 33/50 SUCCESS STORIES, *at* www.epa.gov/opptintr/3350 (1998).

While these are promising alternatives to traditional regulatory programs that deserve experimentation, rigid federal requirements in environmental laws, as the EPA has itself acknowledged, make it difficult for states to develop innovative programs.[64] In fact, many of the most promising innovations in environmental policy have come from states, including pollution prevention programs, integration of regulatory programs for the different media in which pollutants are found, the use of economic incentives such as refundable taxes on beverage containers and preferential pricing of recycled goods, emissions trading to reduce the cost of reducing pollution, and disclosure of information.[65] These innovations, if they include clear goals that secure environment quality, accurate monitoring of progress in achieving those goals, and effective sanctions for noncompliance, promise to reduce significantly the cost of achieving environmental objective and promote higher expectations that are central to sustainability.

Giving more flexibility to regulated industries promises to reduce the cost of regulation, create incentives for sources of pollution to find the most efficient and effective means of reducing emissions, encourage reductions that go beyond minimum mandates, and allow for flexibility in business decision making. Market-based innovations such as emissions trading set caps on pollution levels but then allow companies to find the most cost-effective ways to achieve them.[66] Environmental Management Systems place responsibility for improving environmental quality on corporate managers, who are more likely to have the best information available about industrial processes and effective control measures than are government regulators, and focus on corporate achievement of environmental goals rather than compliance with technology-based standards.[67]

Just as important as creating more powerful incentives for managers to prevent pollution is the promise that devolution is championed as a way to get the public involved in regulatory initiatives that will change the behavior of citizens. Reducing emissions through energy conservation and increased use of mass transit, for example, require major commitments on the part of citizens to change their behavior, and that commitment cannot simply be mandated from the top down. As environmental regulation evolves from pollution control to pollution preven-

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[64] U.S. ENVIRONMENTAL PROTECTION AGENCY, *National Environmental Goals Project* (1997), *at* www.epa.gov/ooaujeng/notebook/negphtm.

[65] *See* Rabe, *supra* note 3, at 33-40.

[66] For more on emissions trading, *see* Gary C. Bryner, *Market Incentives in Air Pollution Control,* FLASHPOINTS IN ENVIRONMENTAL POLICY MAKING 85-108 (Sheldon Kamieniecki, George A. Gonzalez, and Robert O. Vos, eds., 1997).

[67] See Cary Goglianese and Jennifer Nash, *Policy Options for Improving Environmental Management in the Private Sector*, 44 ENVT 10-23 (November 2002).

tion and changes in the way in which pollution is produced, the involvement of industries and citizens becomes more and more critical. Rather than trying to control end-of pipe emissions, sustainability seeks to change pollution-producing behavior and requires the active participation of producers and consumers in the design and implementation of efforts to reduce pollution and conserve resources.

IV. The Ecological Political Importance of Devolution

The United States, and Congress in particular, has not embraced the idea of sustainable development more aggressively because policy makers are still mired in the debates started three decades ago about how to improve the existing scheme of environmental law and regulation, and the enduring American conflict over the size and scope of the Federal government. Criticism of the EPA has been widespread among the Republican leaders of Congress. House Republican leaders such as former Speaker Newt Gingrich (Ga) and Majority Whip Tom DeLay (Tx) regularly railed against the EPA and environmental regulation as they took control of the Congress in 1995 and sought to roll back the provisions of many environmental laws.[68] The debate since then has progressed little. Congress continues to debate energy, transportation, and other environmental issues with little commitment to the idea of sustainable development, stewardship over natural resources, and U.S. responsibility for solving the environmental problems to which it is a major contributor. Energy bills passed by the House in 2001 and the Senate in 2002, for example, were largely efforts to subsidize and encourage the development of new energy sources, with only relatively little attention aimed at moving energy production and consumption to more sustainable patterns.[69]

The political conflict over environmental law and regulation has been so divisive and time consuming that it has precluded the nation from moving toward the next generation of environmental laws that would incorporate the idea of sustainable development.[70] Rather than make regulatory programs more effective, the Bush administration and Republicans in Congress continue the decades-old debate over how to reduce the costs of complying with them by changing the process by which agencies issue regulations, the criteria by which they assess risks and balance costs and benefits, and the role of private property rights. It

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[68] *Regulation: House Expected to OK Moratorium Today*, Greenwire, Feb. 24, 1995.

[69] Gary C. Bryner, *The National Energy Policy: Assessing Energy Policy Choices*, 73 U. Colo. L. Rev. 341, 341-412 (2002).

[70] For more on the idea of the transition from regulation to sustainability, see Toward Sustainable Communities Transition and Transformations in Environmental Policy3-42 (Daniel A. Mazmanian and Michael E. Kraft, eds., 1999).

is difficult to move to a more ambitious agenda of sustainable development when regulatory relief is the primary environmental policy goal. Sustainable development, like any other major policy commitment, ultimately requires the support of Congress and strong, effective legislation, and the greatest failure to engage in the idea of sustainable development has been here. Leaders of both parties in Congress have virtually ignored the idea of sustainable development and the United States' commitments made at the Rio Earth Summit. For them, sustainable development is simply a problem for other countries to worry about.[71] The hostility of the Bush administration and many congressional leaders have to international commitments, along with their opposition to environmental regulation, combine to create a major barrier to pursuing the idea of sustainable development in the United States. Congress continues to debate the question of whether there should be more or less environmental regulation. Rather than asking more fundamental questions about how to balance and integrate economic growth and ecological sustainability, policy makers are mired in efforts to defend or attack the regulatory system that has been in place since the 1970s. As a result, there is no strong commitment to sustainable development, and the nation is far from having in place a strategy that integrates sustainability into environmental, social, and economic activities.[72] State and local governments play a critical role in that strategy in engaging citizens and industry in transforming economic activity.

There is strong support for policy devolution from political theories that emphasize participation and civic engagement. Communitarians, for example, have criticized the political expectations underlying the dominant model of regulation and the broader contemporary liberalism of which it is a part because it does not take into account the "moral and political obligations that we commonly recognize, even prize."[73] Liberal individualism fails to recognize and encourage the political obligations people have to each other, fails to see people as "mutually indebted and morally engaged" because "strong notions of community or membership" are a threat to the priority given to individual rights. Liberalism, communitarian critics argue, cannot "secure the liberty it promises, because it cannot sustain the kind of political community and civic engagement that liberty requires."[74] Liberalism provides a weak basis for environmental law because of its impoverished sense of responsibility:

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[71] *See* Gary C. Bryner, *The United States: 'Sorry – Not Our Problem', in* IMPLEMENTING SUSTAINABLE DEVELOPMENT: STRATEGIES AND INITIATIVES IN HIGH CONSUMPTION SOCIETIES 273 (William M. Lafferty & James Meadowcroft eds., 2000).

[72] *See* John Dernbach, *U.S. Adherence to Its Agenda 21 Commitments: A Five-Year Review*, 27 ENVTL. L. REP. 10504 (1997).

[73] MICHAEL SANDEL, DEMOCRACY'S DISCONTENT 13 (1996).

[74] *Id.* at 24.

Our "legal and political vocabularies deal handily with rights-bearing individuals" but seem unable to deal effectively with environmental degradation.[75] Liberalism "impedes creative long-range thinking about our most pressing public problems."[76] Its intertwining with capitalism and the constant drive for expansion, growth, and consumption, critics argue, doom it when it must deal with scarcity, limits, and pollution.[77] Liberalism has been an attractive alternative to socialism and conservatism because it promises unlimited growth, individual freedom, and unconstrained consumption. But those assumptions and values are no longer tenable in light of pollution, environmental damage, and loss of biodiversity and natural resources, and must be replaced, critics argue, with alternative forms of governance that liberate human potential and preserve the biosphere, rather than simply pursue economic growth.[78]

Central to communitarianism is a fundamental revolution in the idea of public participation. Public involvement in the New Deal model of policy making is limited and constrained. Public hearing and comment periods are provided so citizens can voice their support for or opposition to policy options government agencies are considering or specific proposals they have decided on. But agencies are not required to take these comments into account in making decisions, and the decisions about what alternatives to put on the policy agenda, the selection of the alternative to be pursued, and how policies will be implemented are not negotiated with citizens but decided for them. In contrast, communitarianism engages the public directly in policy formulation, and those policies are a result of an open political process rather than one tightly managed by technocrats or political elites. Real public participation empowers people to make tradeoffs, set priorities, and determine the public interest as they govern themselves.

Other proponents of strong democracy emphasize the interaction of environmental and other public problems and the role of citizen participation in remedying them. Insensitivity to ecological constraints and efforts to dominate and exploit nature are intertwined with efforts by humans to dominate and exploit each other. Social domination and hierarchies are barriers to ecological health and preservation. The state itself is a barrier to an ecological society because of its hierarchical, anti-participatory nature, and must be abolished and replaced with human-scaled communities which free them to find technological and behavioral solutions to environmental problems. When individuals are liberated from

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[75] MARY ANN GLENDON, RIGHTS TALK 120 (1991).

[76] *Id.* at 171.

[77] *See* MATTHEW ALAN CAHN, ENVIRONMENTAL DECEPTIONS: THE TENSION BETWEEN LIBERALISM AND ENVIRONMENTAL POLICYMAKING IN THE UNITED STATES (1995).

[78] *See generally,* IMMANUEL WALLERSTEIN, AFTER LIBERALISM (1995).

the artificial structures that constrain them, they will be free to learn how to live in harmony with nature.[79] The solution to environmental problems often requires changes in behavior by all members of a community. People are more likely to comply with decisions and agreements they have played a role in formulating. Those who have information and the power to affect decisions will participate in policy making and their participation gives them ownership in the commitments made. People affected by decisions that balance expenditures on pollution control or limits on economic development with other values become responsible themselves for weighing those competing concerns and making the tradeoffs, rather than having them imposed by others.[80]

Solving environmental problems and building democratic capacity are intertwined. Promoting democratic participation and decision making are just as important as resolving the environmental challenges. Because the environmental and public health stakes are often so high, there is a great incentive to participate and to build democratic decision making capacity. The agenda is much broader than reducing pollution, but reaches into other areas of public concern in empowering people to solve problems and pursue values such as of justice, fairness, and equity, while also enhancing their freedom and ability to govern themselves.[81] Proponents of "strong democracy" argue that citizens and political officials must engage in a public dialogue. Rather than discussions with the public over a few, highly contentious issues such as the citing of hazardous waste facilities, the public plays a central role in the broad range of public issues and determine for themselves where the public interest lies. The role of the political community is to transform self-interested individuals into citizens who also seek public goods. Democratic discourse is essential, where conflicts are resolved through public discussions and decision-making. Forums must be created to provide information and to provide access to scientific and technical information so that citizens can challenge claims made by different participants, to ensure that citizens determine policy outcomes and are not limited to just expressing their views, and to provide continual, enduring opportunities to revise decisions as new information is developed and circumstances change. Public participation not only produces remedies to public problems but also builds democratic capacity and self-governance.[82]

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[79] *See generally,* MURRAY BOOKCHIN, REMAKING SOCIETY: PATHWAYS TO A GREEN FUTURE (1989).

[80] *See generally* BRUCE A. WILLIAMS & ALBERT A. MATHENY, DEMOCRACY, DIALOGUE, AND ENVIRONMENTAL DISPUTES: THE CONTESTED LANGUAGES OF SOCIAL REGULATION 24-30 (1996).

[81] For a study of the evolution of these ideas, *see* JAMES MORONE, THE DEMOCRATIC WISH (1990).

[82] *See generally,* Benjamin Barber, Strong Democracy (1984).

V. Conclusion

The idea of sustainable development makes a persuasive case, rooted in empirical observations as well as theoretical arguments, that environmental regulatory process needs to engage more effectively the public and industry in pursuing environmental goals. Giving states increased authority and responsibility to fashion regulatory programs and encourage innovation and experimentation is an essential element of the rethinking of regulation that is taking place that is central in the transition to policies that are firmly embedded in the idea of sustainability.

One of the central questions in environmental policy making is whether the changes that will be required in order to preserve the biosphere and use natural resources sustainably can occur through traditional legal approaches, policy-making models, and ways of thinking, or whether these changes require new paradigms, approaches, and political structures. Some argue that current legal and political conceptual frameworks are sufficient and incremental changes can produce the kinds of adjustments necessary. But incrementalism assumes that ecological change and the evolution of ecological risks are linear and that change is sufficiently slow and that gradual policy adjustment and accommodation are sufficient. A major challenge to begin now to pursue incremental changes, learn from our experience and make mid-course adjustments, keep moving in the direction of sustainability, and build our capacity to make more effective policies, so that as political demands create the will to pursue changes, we are in position to embrace more ambitious policies that will ensure ecologically sustainable economic activity.

LAKE TAHOE CLARITY AND TAKINGS JURISPRUDENCE: THE SUPREME COURT ADVANCES LAND USE PLANNING IN *TAHOE-SIERRA*

*Jordan C. Kahn**

I. INTRODUCTION

The Tahoe Regional Planning Agency ("TRPA") is the government entity charged with regulating the part of the world that Mark Twain called "the fairest picture the whole earth affords."[1] Since its inception pursuant to the Compact Clause of the Constitution,[2] TRPA has repeatedly been accused of violating the Fifth Amendment's prohibition against taking property without just compensation for its regulations governing development in the Lake Tahoe Region.[3] In April 2002, the U.S. Supreme Court decided *Tahoe-Sierra Preservation Council v. TRPA* ("Tahoe-Sierra"),[4] a longstanding battle over the constitutionality of a temporary planning moratorium used to preserve the status quo while TRPA undertook a comprehensive planning effort. The six-justice majority ruled in favor of TRPA, finding that the 32-month development freeze was constitutionally sound and, therefore, TRPA did not have to pay affected landowners. The decision extends well beyond Lake Tahoe, advancing rational planning and environmental protection nation-wide.

The recent TRPA victory is a welcome addition to the chaotic precedent that comprises modern takings jurisprudence. Ever since the Fifth Amendment was interpreted to require compensation for regulations

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1 MARK TWAIN, ROUGHING IT 187 (Penguin Books 1981) (1872).

2 U.S. CONST., Art. I, § 10, cl. 3. TRPA is one of several "Compact creatures" through which two or more states regulate a shared natural resource. Another is the Columbia River Gorge Commission, authorized by the Columbia River Gorge National Scenic Area Act, 16 U.S.C. § 544 (1986).

3 The Takings Clause reads as follows: "nor shall private property be taken for public use, without just compensation." U.S. Const., Amend. V. This protection was "designed to bar Government from forcing some people alone to bear the burdens which, in all fairness and justice, should be borne by the public as a whole." Armstrong v. United States, 364 U.S. 40, 49 (1960).

4 Tahoe-Sierra Pres. Counsel v. TRPA, 535 U.S. 302, 122 S.Ct. 1465 (2002) [hereinafter *Tahoe-Sierra*] (This article refers to *Tahoe v. Sierra* in the unofficial reporter because the pagination in the official reporter is not yet available.)

eighty years ago,[5] the decisions have been inconsistent at best. In recent times, the Supreme Court's regulatory takings cases have invariably restricted the ability of government to protect resources without triggering the constitutional obligation to compensate.[6] The new moratorium decision is the second TRPA takings challenge heard by the Supreme Court in the past five years. As set forth in this article after a brief background on TRPA, both cases contribute significantly to regulatory takings law. In 1997's *Suitum v. TRPA*,[7] the Court was presented with TRPA's transferable development rights ("TDR") program. The majority ruled on procedural grounds and sidestepped the broader constitutional issue concerning TDRs. Fortunately, the High Court avoided making law that would have substantially curtailed the ability of government to regulate the environment for the benefit of all without having to pay an affected few.

Tahoe-Sierra, hailed as the "environmental case of the decade,"[8] stands in sharp contrast to *Suitum*. The majority not only addresses head-on the constitutionality of moratoria, but creates takings law that will facilitate efficient resource planning across the county. With respect to the evolving regulatory takings doctrine, *Tahoe-Sierra* marks a "turning of the tide,"[9] which "restores needed balance to the judicial takings analysis."[10]

II. Background

There is no place on earth like Lake Tahoe.[11] Surrounded by the majestic peaks of the Sierra Nevada mountain range, the large (191

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[5] Pennsylvania Coal v. Mahon, 260 U.S. 393, 415 (1922) (Justice Holmes' famous explanation that "while property may be regulated to a certain extent, if a regulation goes 'too far' it will be recognized as a taking.")

[6] "The [*Tahoe-Sierra*] decision represents the first clear-cut win for the government side in a land use of environmental takings case before the high court in 15 years." John D. Echeverria, *A Turning of the Tide: The Tahoe-Sierra Regulatory Takings Decision*, 32 ELR 11235, 11235 (2002).

[7] Suitum v. TRPA, 520 U.S. 725 (1997).

[8] *Nina Totenberg, National Public Radio, Morning Edition,* April 25, 2002.

[9] *See* Echeverria, *supra* note 6.

[10] Richard Lazarus, *Celebrating Tahoe-Sierra*, Litigating Regulatory Takings Claims, Georgetown Environmental Law & Policy Institute (Berkeley, CA, Oct. 10-11 2002), on file with author.

[11] The two most similar geological formations are Crater Lake in Oregon and Lake Baikal in Russia. *See Tahoe-Sierra*, 122 S.Ct. at 1471, n. 2 *citing* S. Rep. No. 91-510, pp. 3-4 (1969). Crater Lake is located within a National Park and, therefore, is immune from the development pressures present at Lake Tahoe. *See* National Park Service, <<www.nps.gov>>. However, Lake Baikal – the world's largest, deepest, and oldest freshwater lake – faces environmental challenges commensurate with its dimensions, which dwarf Lake Tahoe in virtually every comparison, including: surface area (Baikal's 31,471 km^2 to Tahoe's 499 km^2), volume (Baikal's 23,000 km^3 to Tahoe's

square miles) and deep (average depth 1,027 feet) alpine lake is renowned for its spectacular water quality.[12] The sweeping views of inspiring mountains and forested landscapes are magnified exponentially when reflected in the "noble sheet of blue water."[13] On his first visit to Lake Tahoe, Mark Twain compared the perspectives: "Both pictures were sublime, both were beautiful; but that in the lake had a bewildering richness about it that enchanted the eye and held it with the stronger fascination."[14] Unfortunately, rapid development in the Lake Tahoe basin since the 1950s has yielded a corresponding decrease in water clarity. As recognized by the California Supreme Court over thirty years ago, "the region's natural wealth contains the virus of its ultimate impoverishment."[15]

California and Nevada realized that an unprecedented approach was required by the threat of unregulated development at Lake Tahoe.[16] The states agreed to the Tahoe Regional Planning Compact, which was approved by Congress in 1969.[17] The Compact states that, "to maintain an equilibrium between the region's natural endowment and its man-made environment . . . an areawide planning agency with power to adopt and enforce a regional plan of resource conservation and orderly development" is needed at Lake Tahoe.[18] TRPA survived early legal challenges to its constitutionality,[19] but was unable to set up an effective regulatory regime because the 1969 Compact was inherently flawed. For instance, projects in the Tahoe Region would be automatically approved unless a

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156 km^3), or deepest point (Baikal's 1,637 m to Tahoe's 505 m). *See* Tahoe-Baikal Institute, <<http://www.tahoebaikal.org./lakeinfo/>>. Baikal faces environmental challenges, including point-source pollution from a government-owned factory, not experienced at Lake Tahoe. An international exchange program, the Tahoe-Baikal Institute ("TBI") was created in 1992 to expose students from both countries to the conservation approaches at both lakes. *See id.* at <<http://www.tahoebaikal.org./about/>>.

12 *See* DOUGLAS H. STRONG, TAHOE: AN ENVIRONMENTAL HISTORY 1 (1984).

13 TWAIN, *supra* note 1, at 187.

14 *Id.* at 195.

15 People ex rel. Younger v. County of El Dorado, 5 Cal.3d 480, 485, 487 P.2d 1193 (1971).

16 Perhaps the single-most important event for making the states realize the problem of unregulated development was the construction of the Tahoe Keys in the City of South Lake Tahoe. In the early 1960s, developers drained and filled a large marsh adjacent to Lake Tahoe's south shore to create strips of development, each with lake access. The environmental consequences have been severe, including a rapid increase in untreated sediment entering Tahoe and a tremendous loss of fish spawning habitat.

17 *See* Pub. L. 91-148, 83 Stat. 380 (1969) [hereinafter *1969 Compact*].

18 *1969 Compact*, Art. I(c).

19 People ex rel. Younger, 5 Cal. 3d 480 (rejecting argument that the 1969 Compact was unconstitutional because it improperly imposed improper taxes on local governments and unlawfully delegated legislative power to an administrative agency, among other arguments).

majority of TRPA's Governing Board members voted otherwise.[20] Other significant deficiencies included the lack of specific environmental targets and the absence of requirements for environmental documentation.[21] Despite the inadequacies of the 1969 Compact, the genesis of TRPA represents a giant step towards controlling growth and preserving the spectacular natural resource shared by Nevada and California.[22]

A. The Threat of Eutrophication

TRPA from the outset realized that Lake Tahoe's greatest threat is the increased sediment loading as a result of development interfering with natural snow runoff patterns. The placement of impervious coverage onto environmentally sensitive areas causes more sediment to enter the Lake Tahoe. In a process known as eutrophication, the nitrogen and phosphorous in the sediment stimulates algal growth, turning the Lake's famous cobalt blue to a lackluster green,[23] thereby decreasing overall environmental health. Wetlands adjacent to the Lake and along mountain streams are critical because, once covered, these properties cease to function as natural sediment filters.[24] Moreover, given the geography of the basin, sediment that enters Lake Tahoe will stay there for a "very, very long time."[25] As a result of unrestrained development, "[t]he Lake lost about one half-meter of clarity between the early 1970s and the 1980s threatening both 'economic and ecological collapse' in the Tahoe Basin."[26]

To focus development away from sensitive lands, TRPA in 1972 adopted an ordinance that incorporated the system of land classification named for its inventor Robert G. Bailey.[27] The Bailey System carves the Tahoe Region into land capability districts based on steepness and flood

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20 *1969 Compact*, Art. VI (k).

21 *See* GARY A. OWEN, TAHOE REGIONAL PLANNING AGENCY, CALIFORNIA ENVIRONMENTAL LAW, § 64.04[6].

22 As a bi-state entity, TRPA confronts numerous jurisdictional anomalies. For instance, lakefront property owners in Nevada own in fee up to the low water mark (N.R.S. § 321.595 (1979)) while lakefront property owners in California own only to the high water mark (State v. Superior Court, 29 Cal. 3d 240, 625 P.2d 256 (1981)).

23 *See* Tahoe-Sierra Pres. Council v. TRPA, 34 F.Supp.2d 1226, 1231 (D. Nev. 1999) [hereinafter *Tahoe-Sierra*] (Judge Reed describing the process of "eutrophication").

24 *See id.* at 1231 ("When SEZ lands are filled in and paved over, they cease to perform their natural function.")

25 *Id.* ("Estimates are that, should the lake turn green, it could take over 700 years for it to return to a natural state, if that were ever possible at all.")

26 Richard J. Lazarus, *Litigating Suitum v. Tahoe Regional Planning Agency in the United States Supreme Court*, 12 J.LAND USE & ENVTL. L. 179, 187 (1997), *citing* Respondent's Brief at 3, Suitum v. TRPA, No. 96-243 (1997).

27 *See* TRPA Ordinance No. 4 (1972), on file at TRPA.

hazard, among other indicators.[28] Those most capable of development were designated as Class 7 and those least supportive were assigned Class 1.[29] The Bailey System designates as Class 1b or stream environment zone ("SEZ") the most environmentally sensitive lands in the basin. TRPA's early identification of these fragile areas represents a major accomplishment towards protecting the "jewel of the Sierra" for future generations.

B. The 1980 Compact and 1981-1984 Moratorium

In 1980, Congress approved a new Compact that provided TRPA with significantly clarified direction and heightened regulatory authority.[30] Perhaps the most important aspect of the 1980 Compact was the use of "environmental threshold carrying capacities" ("thresholds")."[31] This innovative planning device set forth environmental standards to be achieved for different resources, such as air and water.[32] The 1980 Compact directed TRPA to adopt these thresholds and, within one year thereafter, produce a comprehensive regional plan to ensure that the thresholds are attained.[33] To prevent the degradation of sensitive lands from adversely affecting Lake Tahoe while working on the thresholds, TRPA adopted Ordinance 81-5. This regulation "temporarily prohibit[ed] most residential and all commercial construction on land capability districts 1, 2, 3 and SEZs until a new regional plan was developed."[34] TRPA's nine thresholds were adopted on August 26, 1982, but the plan was not finalized on that date in 1983. Concerned about its authority to permit development in the Tahoe Region, TRPA adopted Ordinance 83-21 which "completely suspended all project review and approvals, including the acceptance of new proposals, for a period of ninety days."[35] Because TRPA did not yet have its plan in place on November 26, 1983, the blanket moratorium was extended informally.

C. The 1984 and 1987 Regional Plans

The moratorium ended when TRPA adopted its regional plan on April 26, 1984. In order to attain the thresholds, this plan prohibited

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[28] *See* ROBERT G. BAILEY, U.S. FOREST SERVICE, U.S. DEPT. OF AGRICULTURE, LAND-CAPABILITY CLASSIFICATION OF THE LAKE TAHOE BASIN, CALIFORNIA-NEVADA, A GUIDE FOR PLANNING (1974), on file at TRPA.

[29] *See id.*

[30] *See* Pub. L. 96-551, 94 Stat. 3233 (1980) Cal. Gov. Code §§ 66800 *et seq.*, N.R.S. §§ 277.200 *et seq.*, *available at* www.trpa.org [hereinafter *1980 Compact*].

[31] *1980 Compact*, Art. I(b).

[32] TRPA has thresholds for water quality, air quality, noise, recreation, soils, vegetation, wildlife, fisheries and scenic quality.

[33] *See 1980 Compact*, Arts. V(1)(b), (c)

[34] *Tahoe-Sierra*, 34 F.Supp.2d at 1233.

[35] *Id.* at 1235.

development on lands with Bailey land districts 1, 2, and 3 in all but the rarest of circumstances.[36] Nevertheless, the 1984 Plan was perceived as deficient and its adoption was met with swift legal challenges from the State of California and the League to Save Lake Tahoe.[37] The Plan never took effect; Judge Garcia of the Eastern District of California ordered an injunction to prevent implementation while all stakeholders (including affected property owners) negotiated a settlement.[38] During this time, development was severely restricted in the Tahoe Region. The injunction was lifted in 1987 after TRPA adopted its 1987 Regional Plan, the result of an unprecedented consensus building process. Like its 1984 counterpart, the 1987 Plan prohibited the placement of coverage on sensitive lands.[39] However, the 1987 Plan redefined those parcels designated as sensitive by adopting a more sophisticated structure to overlay the Bailey System, the Individual Parcel Evaluation System ("IPES").

IPES is a point priority system that ranks vacant lots in the Tahoe Region eligible for single-family residences according to their suitability for development.[40] Vacant parcels in the Tahoe Region were "IPESed" in the late 1980s, *i.e.* scored by an interdisciplinary team of scientists based on factors relating to the capability for development. The more capable parcels received higher scores, and those scoring above 725 were immediately developable; those beneath must await TRPA's annual review to determine whether to lower the line.[41] IPES operates on the premise that buyout agencies, namely the U.S. Forest Service and the California Tahoe Conservancy, will purchase sensitive lands and remove them from the inventory of developable parcels in Tahoe. The IPES line only lowers if a certain, pre-determined number of lots having scores beneath the line have their development potential eliminated.[42] The annual

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36 *See id.* at 1236

37 *See id.*

38 *See* California ex rel. Van de Kamp v. TRPA, 1984 WL 6591 (E.D. Cal. 1984), *aff'd* 766 F.2d 1308 (9th Cir. 1985).

39 *See* TRPA Code of Ordinances ("Code") § 20.4.A (1987), *available at* www.trpa.org (prohibiting additional land coverage or other permanent land disturbance in stream environment zones).

40 *See* Chapter 37, TRPA Code.

41 *See* TRPA Code § 37.8.C.

42 IPES contains what is known as the "vacant lot equation" – a specific formula to determine whether the line can be lowered. The numerator is "the number of parcels having scores below the level defining the top ranked parcels" and the denominator is "the number of parcels in that jurisdiction that were identified as sensitive by TRPA on January 1, 1866." TRPA Code § 37.8.C(1)(e). The denominator, a fixed figure was adopted by TRPA in 1990. The numerator changes every year based on the amount of purchased lots in each jurisdiction, and the fraction is evaluated annually by TRPA. The IPES line can only drop if the vacant lot equation equals a predetermined percentage: 20% in California and 33% in Nevada. *See Id.*

analysis is performed independently for each of the four counties.[43] Although SEZ lots are given an automatic zero in the IPES scoring system for administrative convenience,[44] they cannot be developed owing to their status as the most sensitive in the basin.[45] IPES has met with legal challenges,[46] which continue to this day.[47]

Another important aspect of the 1987 Regional Plan involves the use of transferable development rights ("TDRs"). TRPA provides certain properties with TDRs to be either utilized or sold on the open market.[48] Two such TDRs, impervious land coverage and residential development rights, attach to all vacant lots in the Tahoe Region regardless of whether or not they can be developed. Every such parcel – even those designated as SEZ – has one development right (a conceptual ability to construct a single-family residence)[49] and a specific allotment of

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[43] The IPES line has dropped to virtually the bottom of the inventory in Nevada (Washoe and Douglas Counties) but has yet to move in California. Although the line is expected to drop in the near future for El Dorado, the prognosis is less sanguine for Placer County. *See* TRPA staff reports, on file at TRPA.

[44] *See* TRPA Code § 37.4.A(3) ("Parcels containing no area outside of an SEZ or SEZ setback shall receive a total score of zero.")

[45] *See* TRPA Code § 20.4. Although there are several exceptions to the SEZ coverage prohibition, they will apply in only the rarest of circumstances. *See* TRPA Code § 20.4.B.

[46] *See* TRPA v. Kelly, 855 P.2d 1027 (Nev. 1993) (Nevada Supreme Court rejecting a facial takings challenge to IPES).

[47] On September 18, 2002, the Ninth Circuit heard oral arguments on a challenge to the IPES system mounted by the Tahoe-Sierra Preservation Counsel ("TSPC") in 2000. TSPC, representing owners of SEZ lots and other parcels below the IPES line, argued that the system effected a taking for which "just compensation" was warranted. U.S. Const., Art. V. TRPA successfully had the case dismissed in the Eastern District of California. Judge Karlton in July 2000 found that the lawsuit was barred by the statute of limitations because IPES was adopted in 1987, the parcels received their IPES score in the late 1980s, and the vacant lot equation denominator was in place by 1990. *See* Tahoe-Sierra Pres. Council v. TRPA, No. CIV S-00-50 LKK DAD, July 28, 2000, Order Granting TRPA's Motion to Dismiss at 12, 14, 18 (E.D. Cal. 2000) [hereinafter *Tahoe-Sierra*], on file at TRPA. The Ninth Circuit originally set oral arguments fro September 2001, but postponed review of the appeal pending action by the Supreme Court after certiorari was granted the original TSPC lawsuit. At the September 2002 oral arguments, the panel – including Judge Reinhardt – asked informed questions focusing on whether IPES lends itself to creating timely challenges each year when TRPA performs the ministerial act of calculating the vacant lot equation and determining whether to lower the IPES line in each jurisdiction. A decision is expected in the upcoming months. *See infra* notes 116, 163.

[48] The TRPA Code establishes five types of TDRs: Coverage; Residential Development Rights; Residential Allocations; Commercial Floor Area; and Tourist Accommodation Units.

[49] A single-family home can only be constructed on a vacant parcel in the Tahoe Region if a residential development right is combined with another TDR, the government-issued residential allocation. Just as a sperm and egg combine to create the zygote, the development right and allocation combine to create a present ability to

coverage.[50] Owners of parcels that are ineligible for development can sell their development right to another property anywhere in the Tahoe Region. Unlike development rights, coverage may only be transferred within the nine scientifically-derived "hydrologic zones" within the Tahoe basin.[51] The concept behind the TDR program is to engage market forces to facilitate a shift in development away from environmentally sensitive lands towards those more capable of supporting development. Another important function of TDRs is to provide economic value to those property owners in the Tahoe Region without the present ability to build a home. As stated by the Supreme Court, TRPA "addresses the potential sharpness of its restrictions by granting property owners TDR's that may be sold to owners of parcels eligible for construction."[52]

III. *SUITUM v. TRPA*

In 1972, Bernadette Suitum purchased a vacant parcel in Incline Village, Nevada.[53] The lot was subsequently designated SEZ and she was prevented by TRPA's regulations from building a home on her property. TRPA denied Ms. Suitum's application for a building permit,[54] as TRPA's regulations prohibit the placement of impervious coverage on her SEZ parcel.[55] Ms. Suitum mounted an "as applied" challenge to TRPA's regulations seeking just compensation under the Fifth Amendment, claiming that TRPA's SEZ coverage restriction deprived her of "all reasonable and economically viable use" of her property.[56] Her lawsuit made it all the way to the U.S. Supreme Court, although the majority opinion dealt exclusively with the procedural hurdle of "ripeness." Justice Scalia, however, wrote a concurring opinion that would consider the value of Suitum's TDRs only in determining whether the compensation was sufficient, suggesting that TRPA's SEZ regulations effect a categorical regulatory taking. *Suitum* is more important for its avoidance of this

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build. All property owners in the Tahoe Region are eligible to receive allocations from their county, although a lottery system is typically employed when demand outstrips supply.

50 The amount of "base coverage" attributed to each vacant parcel corresponds to its Bailey coefficient. *See* TRPA Code § 20.3.A. The most capable properties are given base allowable coverage in the amount of thirty percent of their total area while SEZ parcels have only one percent. *See id.*

51 Hydrologic zones prevent the concentration of coverage in certain portions of the Tahoe Region. Given the drastically different real estate markets around Tahoe, prices for coverage differ dramatically amongst hyrdrologic zone. For instance, coverage fetches approximately $25 per sq. ft. in Incline Village and only $5 per sq. ft. in the City of South Lake Tahoe. TRPA staff reports, on file at TRPA.

52 *Suitum*, 520 U.S. at 730.

53 *See id.* at 730.

54 *See id.* at 731.

55 *See* TRPA Code § 20.4.

56 *Suitum*, 520 U.S. at 731.

dangerous precedent advocated by the concurring justices than for its narrow ripeness holding.

A. The Majority Opinion

One of TRPA's defenses throughout the *Suitum* litigation was that her challenge was not "ripe" for review. Article III of the U.S. Constitution requires that federal courts only consider controversies that are sufficiently ready for judicial resolution.[57] TRPA argued that as a prerequisite to bringing suit, Ms. Suitum had to realize the TDRs that belonged to her SEZ lot. The actual value of her TDRs remained unknown prior to and during her challenge because she refused to participate in TRPA's TDR program, which she considered an "idle and futile" exercise.[58] At trial, TRPA set forth evidence of a robust market for the TDRs.[59] The District of Nevada and Ninth Circuit agreed with TRPA that the TDRs were valuable and that Ms. Suitum did not have a ripe takings challenge unless and until their actual value was known:

> Without an application for the transfer of development rights there would be no way to know the regulation's full economic impact of the degree of their interference with [Suitum's] reasonable investment-backed expectations, and without action on a transfer application there would be no final decision from [the agency] regarding the application of the regulation[s] to the property at issue.[60]

Writing for the majority, Justice Souter reversed the lower court holdings and found that Ms. Suitum need not realize her TDRs prior to challenging TRPA.[61] An agency must make all of its discretionary decisions prior to a challenge being ripe for review,[62] and TRPA did not retain any discretion with respect to Suitum's TDRs.[63] While the valuation of Suitum's TDRs would certainly be relevant in the proceedings, this could be accomplished through testimony from a qualified appraiser.[64] Finally, the Supreme Court found that the issues presented by Suitum's constitutional challenge were "fit[ ]" for "judicial decision" because she

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[57] *See e.g.*, Abbott Laboratories v. Gardner, 387 U.S. 136 (1967).

[58] *Suitum*, 520 U.S. at 732.

[59] *See id.*

[60] *Suitum*, 505 U.S. at 733, *quoting* Suitum v. TRPA, 80 F.3rd 359, 362-363 (9th Cir. 1996). *See also* Suitum v. TRPA, March 30, 1994, Order, Judge Reed, CV-N-91-040-ECR (D. Nev).

[61] *See Suitum*, 520 U.S. at 744.

[62] *See* Williamson County Regional Planning Comm'n v. Hamilton Bank of Johnson City, 473 U.S. 172 (1985); McDonald, Sommer & Frates v. Yolo County, 477 U.S. 340 (1986).

[63] *See Suitum*, 520 U.S. at 739-40 ("The parties agree on the particular TDR's to which Suitum is entitled, and no discretionary decision must be made by any agency official for her to obtain them or to offer them for sale.")

[64] *See id.* at 742.

was merely seeking compensation and not attempting to invalidate TRPA's SEZ regulations.[65] The case was remanded back to the District Court, but the parties settled before trial.[66] The Supreme Court had "no occasion" to rule on the broader implications of TDRs and takings law.[67]

B. The Scalia Concurrence

The *Suitum* outcome was highly anticipated by land use lawyers because the Supreme Court was expected to clarify the role of TDRs in the planning process.[68] Suitum, and her pro property-rights counsel,[69] sought a ruling in which TRPA had to compensate because its SEZ regulations prevented her from using her property (*i.e.* developing a home thereon). This position was based on *Lucas v. S. Carolina Coastal Comm'n*.[70] There, in 1992, the Supreme Court considered beachfront property deprived of economically viable use by state action protecting against erosion and held that such regulations require automatic compensation – without regard to the purposes of the regulation.[71] Although SEZ lots in the Tahoe Region cannot be developed, unlike the affected property in *Lucas*, they contain valuable TDRs that can be transferred for use on properties deemed capable of supporting development. TRPA defended its SEZ regulations arguing that these TDRs provide un-developable properties with significant value, thereby avoiding a "categorical" taking designation pursuant to *Lucas*.[72] Given the use of TDRs by planning entities around the United States,[73] whether TDRs are sufficient to preclude a taking presented a critical, unresolved issue in the area of land use planning.

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65 *Id.* at 744, *quoting Abbot Laboratories*, 387 U.S. at 147-148.

66 TRPA paid Ms. Suitum $600,000 to settle the lawsuit.

67 *Suitum*, 520 U.S. at 728.

68 The author remembers taking a Land Use Planning course at the University of Colorado School of Law in the Spring of 1997. Adjunct Professor Madeline Mason was an attorney for Boulder County, which employs a sophisticated TDR program. She informed the class that the decision was expected to clarify the viability of TDR programs, thereby affect planning nation-wide.

69 Ms. Suitum was represented by Pacific Legal Foundation, which was keenly aware of the agenda advancement opportunities presented by *Suitum*. *See* Lazarus, *supra* note 26, at 196-200.

70 Lucas v. S. Carolina Coastal Comm'n, 505 U.S. 1003 (1992).

71 *See id.* at 1019. In a *Lucas* situation, the character of the government action is only relevant to the extent that the regulation at issue cannot effect a taking for prohibiting a use that was already impermissible under "background principles of the State's law of property and nuisance." *Id.* at 1029.

72 *See* Lazarus, *supra* note 26, at 203-204.

73 The more well-known TDR programs in the United States include: Montgomery County, Maryland; Boulder County, Colorado; City of Malibu, California; and the New Jersey Pinelands Program.

Although the procedural posture of *Suitum* prevented the Supreme Court from adjudicating the merits,[74] Justice Scalia (joined by Justices Thomas and O'Connor) issued a separate opinion answering the question left unresolved by the majority.[75] According to the concurring justices, the value of TDRs is relevant only for the limited purpose of calculating just compensation.[76] If a regulation results in a taking, the government is constitutionally mandated to provide market value as just compensation; TDRs may partially or completely satisfy the constitutional requirement. The notion that property rendered useless by regulation cannot be "taken" so long as it is given TDRs was dismissed as a "clever, albeit transparent" attempt to circumvent the Fifth Amendment and pay less than just compensation.[77]

C. *The Precedent*

Suitum narrowly holds that property owners need not realize the value from their TDRs before bringing a takings claim given the ability of appraisers to approximate those values.[78] Although this ruling was adverse to TRPA, the precedent is quite limited. The position advocated by the concurring justices, however, would have dramatically altered regulatory takings jurisprudence to the detriment of TRPA, government, and ultimately the environment. There are many problems with holding that TDRs are relevant only for compensation purposes, most notably that it directly contradicts the Supreme Court's 1978 decision *Penn Central v. City of New York*.[79] There, New York's Landmark Preservation Law prevented the plaintiff from building atop Grand Central Terminal, although the property was provided with valuable TDRs.[80] The Supreme Court found that no taking had occurred, by balancing three factors: (1) the economic impact of the regulation; (2) the existence of reasonable, investment-backed expectations; and (3) the character of government ac-

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[74] "Because the lower courts dismissed Suitum's complaint on ripeness grounds, the threshold question of ripeness is the only legal issue before the Court." Lazarus, *Litigating Suitum*, *supra* note 26, at 194.

[75] *See* Suitum v. TRPA, 520 U.S. 745 (1997) (Scalia, J., concurring).

[76] *See id.* at 747 (Scalia, J., concurring) ("Just as a cash payment from the government would not relate to whether the regulation 'goes too far' (*i.e.*, restricts use of the land so severely as to constitute a taking), but rather to whether there has been adequate compensation for the taking; and just as a chit or coupon from the government, redeemable by and hence marketable to third parties, would relate not to the question of taking but to the question of compensation; so also *the marketable TDR*, a peculiar type of chit which enables a third party not to get cash from the government but to use his land in ways the government would otherwise not permit, *relates not to taking but to compensation.*") (emphasis added).

[77] *Id.* at 748 (Scalia, J., concurring).

[78] *Id.* at 728-729.

[79] *See* Penn Central Transp. Corp. v. City of New York, 438 U.S. 104, 124 (1978)

[80] *See id.* at 104.

tion.[81] The "economic impact" factor considered the loss in value attributable to the height restriction, but also the value added by the TDRs.[82] The *Suitum* concurrence would have reversed that aspect of *Penn Central*, thereby significantly undermining the precedent.

The most dangerous aspect of the *Suitum* concurrence is the three justices' desire to focus the takings inquiry exclusively on "use" and ignore the remaining "value" of regulated property. *Lucas* is cryptic in its automatic compensation requirement for regulations that render property devoid of "economically beneficial or productive use,"[83] begging the question of whether property that retains value can qualify as a *per se* taking. In *Suitum*, the District Court found that the subject SEZ property retained significant value (with or without TDRs),[84] even though TRPA regulations prevented Ms. Suitum from constructing a residence on her SEZ property.[85] Under a *Penn Central* analysis, the remaining value of the regulated property, including TDRs, is relevant in evaluating the "economic impact" factor.[86] The concurring justices felt that a deprivation of use – ostensibly Suitum's inability to develop a home – should trigger *Lucas'* automatic compensation requirement. Such a holding would have elevated *Lucas*, potentially rendering irrelevant the character of the government action behind the regulation any time a property owner cannot use his or her property as desired. Given the government's obligation to protect natural resources, the more flexible and encompassing *Penn Central* test should be implicated when regulations prohibit some uses but affected properties retain significant value.

Fortunately, the extreme view of the concurrence was not endorsed by a majority of the Supreme Court.[87] *Suitum* left open the possibility that regulated property deprived of use but retaining value would not be considered a taking. This contentious use/value aspect of takings law would be revisited five years later when the justices considered another challenge to TRPA's planning for the protection of Lake Tahoe. The

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81 *See id.* at 124.

82 *See id.* at 137. *See also* Lazarus, *supra* note 26, at 205.

83 *Lucas*, 505 U.S. at 1015.

84 *See Suitum*, 520 U.S. at 732. "[T]he uncontroverted evidence before the trial court is that [Ms. Suitum's] TDRs possess substantial market value — as high as $56,000. There is also uncontradicted evidence at trial that the land itself retained a market value of approximately $16,000 because neighbors would be interested in expanding the size of their lots surrounding their existing homes." Lazarus, *supra* note 26, at 202, *citing* Suitum v. TRPA, No CV-N-91-040-ECR (D. Nev. Filed Mar. 30, 1994).

85 *See* TRPA Code § 20.4.

86 *Penn Central*, 438 U.S. at 137; *See also* Lazarus, *supra* note 26, at 205.

87 This outcome was not happenstance. TRPA's legal team, especially Georgetown Law Professor Richard Lazarus, effectively minimized the precedential effect of an adverse ruling through forethought and strategy. *See* Lazarus, *supra* note 26, at 199-205.

moratorium case presented a situation where a regulation temporarily prohibits use but the affected property retains both present value and future use. In 2002, a majority of justices found that such a limited use prohibition does not automatically require compensation,[88] confining *Lucas* and elevating *Penn Central* in the process.

IV. *TAHOE-SIERRA*: THE DISTRICT OF NEVADA

If TRPA has a nemesis, it is the property rights organization known as the Tahoe-Sierra Preservation Council ("TSPC").[89] The organization is made up of hundreds of present and former property owners in the Lake Tahoe. The parcels owned by TSPC members are in California and Nevada and have been designated at some time by TRPA as environmentally sensitive. Although SEZ parcels are well represented, TSPC also includes those beneath the IPES line (or with land classifications 1, 2, and 3 under the Bailey System). TSPC first sued TRPA and both states in 1984 seeking just compensation under the Takings Clause. California and Nevada quickly dismissed themselves because the Eleventh Amendment immunizes them from money damages.[90] TRPA was unable to extricate itself, as the Supreme Court in 1979 expressly concluded that TRPA does not share in the states' sovereign immunity.[91] In its amended pleadings, TSPC sought compensation from TRPA for the restrictions on development alleged to constitute a taking for three distinct time periods:

- *1981-1984*: when TRPA instituted a basin-wide development moratorium on sensitive parcels while it prepared a regional plan;
- *1984 -1987*: when development was restricted pursuant to a court-ordered injunction; and
- *After 1987*: challenging the development restrictions contained in the 1987 Regional Plan.

Years of litigation ensued, with three decisions by the Ninth Circuit on procedural aspects of the case, such as whether TSPC's causes of ac-

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88 *Tahoe-Sierra*, 535 U.S. 302, 122 S.Ct. 1465 (2002).

89 The Tahoe Sierra Preservation Council is "[d]edicated to preserving property rights . . . while preserving Lake Tahoe's spectacular beauty and unique qualities." Tahoe Sierra Preservation Council letterhead, on file with author.

90 *See* U.S. Const., Amend. XI; *Ex parte Young*, 209 U.S. 123 (1908).

91 Lake Country Estates, Inc. v. TRPA, 440 U.S. 391 (1979). It should be noted that the Supreme Court's conclusion that TRPA does not share in the states' sovereign immunity is based on an analysis of the 1969 Compact. *See id.* at 402. It is entirely possible that the Supreme Court would reach the opposite conclusion using the 1980 Compact, as the 1969 version set up a locally-dominated Governing Board while TRPA currently has a majority of statewide representatives. *See 1980 Compact*, Arts. III(a)(1)(B), (a)(2)(B).

tion were ripe for adjudication.[92] The liability phase was finally tried in 1998 before Judge Reed of the District of Nevada. TSPC mounted a "facial" challenge against the 1981 moratorium, 1984-1987 injunction, and 1987 Regional Plan, alleging that the "mere enactment of the regulations constituted a taking."[93] For this reason, TSPC did not present evidence as to the impact on individual property values – a decision that would prove to be ill-advised.[94] In early 1999, Judge Reed issued an opinion that found TRPA's regulation did effect a taking of the plaintiffs' property, but only during the 32-month planning moratorium.[95] The District Court's rationale for each time period is set out below.

A. The 1981-1984 Moratorium

The District of Nevada held TRPA liable for a temporary categorical taking under *Lucas*. Although evidence established that TSPC properties "did retain some value" during the moratorium, Judge Reed nevertheless found that the TRPA moratorium operated to deprive plaintiffs of all economically viable use of their property.[96] The absence of a "competitive market" for un-buildable lots in the Tahoe Region during the moratorium compelled the finding that plaintiffs were denied economically viable use of their property for 32 months pursuant to Ninth Circuit precedent.[97] Although some uses were allowed during the moratorium, Judge Reed found it "doubtful" that they were economically viable.[98] Reed's opinion claimed to have been supported by the 1987 Supreme Court decision *First English Evangelical Lutheran Church v. County of Los Angeles*.[99] There the Court held that government cannot avoid takings liability by repealing a regulation found to require compensation; the remedy in such situations is to compensate property owners for the time that the regulation was in effect for the temporary taking.[100]

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92 *See* Tahoe-Sierra Pres. Council v. TRPA, 911 F.2d 1331 (9th Cir. 1990); Tahoe-Sierra Pres. Council v. TRPA, 938 F.2d 153 (9th Cir. 1991); Tahoe-Sierra Pres. Council v. TRPA, 34 F.3d 753 (9th Cir. 1994).

93 *Tahoe-Sierra*, 122 S.Ct. at 1476.

94 *See Tahoe-Sierra*, 34 F.Supp.2d at 1241 ("Since the burden is on the plaintiffs to show that a taking occurred (and since that burden is especially heavy in a facial challenge such as this), the fact that they agreed not to introduce this type of evidence works against them. The fact that it is a facial challenge does not mean that all evidence relating to individual plaintiffs is irrelevant at this stage.") It should be noted that, in a case involving hundreds of plaintiffs, providing plaintiff-specific economic impact evidence is no simple task.

95 Tahoe-Sierra v. TRPA, 34 F.Supp.2d 1226 (D. Nev. 1999).

96 *Id.* at 1242.

97 Del Monte Dunes v. City of Monterey, 95 F.3d 1422, 1432-33 (9th Cir. 1996).

98 *Tahoe-Sierra*, 34 F.Supp.2d at 1243.

99 *See* First English Lutheran Church v. County of Los Angeles, 482 U.S. 304 (1987).

100 *See id.*

Consequently, the District Court found that because a *Lucas* taking occurred between 1981 and 1984, TRPA was automatically obligated to compensate plaintiffs for the temporary inability to develop their property.

In his opinion, Judge Reed also conducted an alternate analysis. Assuming that the regulated property retained some economically viable use, the applicable framework would not have been *Lucas* but instead the *Penn Central* framework through which courts determine takings liability by balancing the following factors: (1) the economic impact of the regulation; (2) the extent of interference with reasonable, investment-backed expectations;[101] and (3) the character of government action.[102] Judge Reed found that each of these factors favored TRPA not being held liable. TSPC did not present any specific evidence that their properties were devalued as a result of the moratorium;[103] TRPA's evidence demonstrated that plaintiffs "did not have reasonable, investment-backed expectations that they would be able to build single-family homes on their land" during the time period at issue;[104] and, finally, the character of TRPA's action strongly weighed against requiring compensation because the moratorium was a reasonable and commendable interim approach to combat the greatest threat to Lake Tahoe's water quality.[105] Nevertheless, Judge Reed felt compelled by *Lucas* and *First English* to find TRPA liable for a categorical temporary taking between 1981 and 1984.[106]

B. The 1984-1987 Injunction

Judge Reed held that TRPA was not responsible for the development prohibition between 1984 and 1987 because the causation necessary

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101 The Supreme Court's 2001 regulatory takings decision dealt with this *Penn Central* factor. Palazzolo v. Rhode Island, 533 U.S. 606 (2001), rejected the government's position that that pre-acquisition notice of the challenged regulation automatically defeats a takings claim. Justice O'Connor wrote a separate concurrence explaining that notice is considered under *Penn Central*'s reasonable, investment-backed expectations factor. *Palazzolo*, 533 U.S. at 632 (O'Connor, J., concurring).

102 *See* Penn Central Transp. Corp v. City of New York, 438 U.S. 104, 124 (1978)

103 *See Tahoe-Sierra*, 34 F.Supp.2d at 1241.

104 *Id.*

105 *Id.* at 1241-1242. Judge Reed placed a disproportionate emphasis on the character of government action factor. *See id.* at 1242 ("Since the *Penn Central* test is essentially a balancing test . . . and since the interest in protecting Lake Tahoe is so strong, any test that takes that interest into account would result in victory for the defendants." [Citations omitted]) Judge Reed's attachment of greater significance to one of the three *Penn Central* factors does not seem consistent with Supreme Court's recent explanation that the balancing should take "all the relevant circumstances" into account. *See Tahoe-Sierra* 122 S.Ct. at 1486, citing *Palazzolo*, 533 U.S. at 636 (O'Connor, J., concurring).

106 *See Tahoe-Sierra*, 34 F.Supp.2d at 1242-1243.

to find TRPA liable for a taking was lacking.[107] The harm to TSPC resulted from a court-ordered injunction (and was not attributable to actions of TRPA). TSPC alleged that TRPA was liable because the lawsuit and injunction were reasonably foreseeable consequences of the 1984 Plan. The District Court disagreed, as "the lack of a casual connection between the alleged wrongdoing and the purported harm compels the conclusion that TRPA may not be held liable for the effects of the injunction."[108] Further, TSPC's attempt to establish that TRPA was somehow responsible for the injunction was expressly rejected by Judge Reed:

> TRPA was reasonable and acted in good faith in attempting to comply with the Compact. There is no evidence whatsoever to support the plaintiffs' theory that TRPA secretly wanted an injunction against all construction in the Basin, and deliberately passed a deficient regional plan in order to provoke a lawsuit and, subsequently, an injunction.[109]

C. The 1987 Regional Plan

TSPC amended its Complaint in 1991 to seek just compensation for the alleged taking effectuated by the development restrictions contained in TRPA's 1987 Plan. TRPA successfully dismissed the challenge to the 1987 Plan as being barred by the applicable statute of limitations.[110] Constitutional challenges – including takings – must be filed within one year in California and two years in Nevada.[111] TSPC has portrayed this ruling as being overly harsh, as though the 1987 Plan was not reachable due to a

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[107] *See id.* at 1245-1248.

[108] Tahoe-Sierra Pres. Council v. TRPA, 216 F.3d. 764, 785 (9th Cir. 2000) [hereinafter *Tahoe-Sierra*].

[109] *Tahoe-Sierra*, 34 F.Supp.2d at 1248.

[110] There is actually an entire saga concerning the "applicable" statute of limitations. TRPA initially moved to dismiss arguing that the cause of action was barred by the Compact's 60-day statute of limitations. 1980 Compact, Art. VI(j)(4). On appeal, the Ninth Circuit clarified that the appropriate statute of limitations was one year in California and two years in Nevada, because TSPC's takings challenge was brought pursuant to 42 U.S.C. § 1983. *See Tahoe-Sierra*, 34 F.3d at 753, 756. The Ninth Circuit then held that since TRPA had not pled any statute of limitations other than the 60-day period, TSPC's claim was timely. *See id.* On remand, Judge Reed ruled that because TRPA's Answer (filed subsequent to the Ninth Circuit's decision) contained the one-year/ two-year statute of limitations and TSPC's challenge to the 1987 Plan was not made until 1991, the cause of action was not timely. *See Tahoe-Sierra*, 992 F.Supp. at 1220-1221 (D. Nev. 1998). This holding was affirmed by the Ninth Circuit, which referred to its prior statute of limitations decision as "clearly erroneous." *Tahoe-Sierra*, 216 F.3d at 789.

[111] An allegation of infringement of a constitutional right must be brought pursuant to 42 U.S.C. § 1983. *See* Azul-Pacifico, Inc. v. City of Los Angeles, 973 F.2d 704, 705 (9th Cir. 1992). Federal courts apply the state's statute of limitations for claims brought pursuant to 42 U.S.C. § 1983. *See* Wilson v. Garcia, 471 U.S. 261, 278 (1985). The statute of limitations for § 1983 claims is one year in California and two years in

procedural technicality. Although the statute of limitations does prevent TSPC from challenging the regulations currently in existence, TSPC actively participated in the consensus process that resulted in the 1987 Plan. In a point later noted by the Supreme Court, TSPC acknowledged its participation in its 1991 Amended Complaint:

> [T]hrough its authorized representatives, [TSPC] actively participated in the entire TRPA regional planning process leading to the adoption of the 1984 Regional Plan at issue in this action, and attended and expressed its views and concerns, orally and in writing, at each public hearing held by the Defendant TRPA in connection with the consideration of the 1984 Regional Plan at issue herein, as well as in connection with the adoption of Ordinance 81-5 and the Revised 1987 Regional Plan addressed herein.[112]

It remains unclear as to why TSPC did not timely challenge the development restrictions contained in the 1987 Plan. Minutes from the meetings leading up to its adoption reveal that the proposed SEZ prohibition was vigorously debated amongst the stakeholders, including TSPC.[113] Although TSPC vigorously objected the proposed SEZ regulations during the consensus process,[114] its complaint was not timely amended to challenge those restrictions after the 1987 Regional Plan was adopted.[115] TSPC was likely pleased with other aspects of the 1987 Plan, as the regulatory system endows all properties in the Tahoe Region with TDRs and provides for the development of all vacant parcels other than those designated as wholly SEZ. Many of the properties initially deemed as too sensitive for development have been already developed and others must wait for the IPES line to drop.[116] Perhaps, on balance, TSPC decided that it could live with the 1987 Plan, including the prohibition on SEZ development.

Nevada. *See* Johnson v. California, 207 F.3d 650, 653 (9th Cir. 2000); Perez v. Seevers, 869 F.2d 425, 426 (9th Cir. 1989)

112 *Tahoe-Sierra*, 122 S.Ct. at 1489 n. 35, *citing* Joint Appendix at 24.

113 *See* Minutes, TRPA Consensus Building Workshops, October 3, 17, 23, 1985, April 4, 1986, on file at TRPA.

114 *See id.*

115 *See Tahoe-Sierra*, 992 F.Supp. at 1220-1221; *Tahoe-Sierra*, 216 F.3d at 789.

116 TSPC sued TRPA in 2000, seeking just compensation because the IPES line had not dropped in California. In its complaint, TSPC explained its expectancy that the line would have dropped already in California, as it has in Nevada. However, the number of environmentally sensitive parcels that had to be purchased for the IPES line to drop was set by TRPA in 1990. Judge Karlton of the Eastern District ruled for TRPA, finding TSPC's causes of action to be time-barred because its takings claim under IPES arose in 1990. *See Tahoe-Sierra*, No. CIV S-00-50 LKK DAD, July 28, 2000, Order Granting TRPA's Motion to Dismiss (E.D. Cal. 2000), on file at TRPA. This ruling is currently on appeal before the Ninth Circuit. *See also supra* note 47, *infra* note 163.

V. *TAHOE-SIERRA*: THE NINTH CIRCUIT

The District Court was never able to conduct a trial on damages. Before a dollar value for which TRPA was liable could be determined, both TRPA and TSPC cross-appealed to the Ninth Circuit. TRPA sought to reverse Judge Reed's ruling regarding the moratorium and TSPC sought a reversal of the holding that TRPA was not liable for either the injunction or the 1987 Plan. Although TRPA appealed the District Court's ruling that the moratoria constituted a *Lucas* taking, TSPC did not appeal the alternate finding that under *Penn Central* TRPA would not have been liable. This tactical decision would prevent TSPC from challenging the District Court's *Penn Central* finding as the case progressed through the federal court system.[117]

A. The Reinhardt Opinion

The Ninth Circuit handed TRPA an all-out victory in its decision rendered on June 15, 2000.[118] TSPC's challenges to the 1984-1987 injunction and the 1987 Regional Plan were dismissed on causation and statute of limitations grounds, respectively.[119] However, the finding that TRPA was liable during the 1981-1984 moratorium was reversed and TRPA held not liable for its 32-month development freeze. Although the affected properties were deprived of economically viable use during that timeframe, the moratorium did not effect a *Lucas* taking because the plaintiffs' property retained "future use ha[ving] a substantial present value."[120] Therefore, the TRPA moratorium presented a partial taking situation properly analyzed under *Penn Central*. Given the unchallenged District Court factor-balancing, the Ninth Circuit found that TRPA was not liable and dismissed TSPC's challenge in its entirety.

Writing for the three-judge panel, Judge Reinhardt rejected the District Court's moratorium analysis. The opinion criticized the lower court for misreading *First English* to find a categorical taking for a "temporal 'slice' of each fee."[121] The Ninth Circuit endorsed a broad conception of property rights by stating that the entire timeframe is to be considered in

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117 *See Tahoe-Sierra*, 122 S.Ct. at 1485 ("Recovery under a *Penn Central* analysis is also foreclosed both because petitioners expressly disavowed that theory, and because they did not appeal from the District Court's conclusion that the evidence would not support it.") It would have been extremely unlikely that TSPC would have prevailed under *Penn Central* given the discretion afforded to District Courts in matters of fact-finding and Judge Reed's conclusion that "all three *Penn Central* factors, at least to some extent, weigh[ ] against a finding that TRPA's actions constituted a partial taking". *Tahoe-Sierra*, 34 F.Supp.2d at 1242.

118 *See Tahoe-Sierra*, 216 F.3d 764.

119 *See id.* at 782-789.

120 *Id.* at 781.

121 *Id.* at 774.

analyzing a regulatory taking; the approach of severing temporal segments is only viable when determining compensation for physical takings.[122] Reinhardt praised the planning moratorium as an effective device that prevents deterioration and encourages community participation during the planning process.[123] Indeed, the opinion held that such temporary moratoria – including TRPA's ordinances restricting development on sensitive land until the adoption of the regional plan – do not constitute temporary *Lucas* takings for which just compensation is automatically required.

B. The Kozinski Dissent

TSPC petitioned the Ninth Circuit for an *en banc* rehearing. Although the petition was denied, Judge Kozinski, joined by four other circuit judges, dissented from the denial and wrote a separate opinion harshly criticizing the decision allowed to stand.[124] According to Kozinski, the Supreme Court in *First English* unambiguously found that temporary prohibitions of use (including moratoria) are takings for which just compensation is constitutionally mandated,[125] that economically useless property may retain value or future use is not sufficient to avoid a taking, and that if government can circumvent liability by merely labeling use restrictions as temporary, the result would be "a sizeable loophole to the Takings Clause."[126] Kozinski concludes by chastising his colleagues for playing fast and loose with the Constitution and binding precedent to achieve a pre-determined outcome:

> The panel's desire to ease local governance does not justify approving means that violate rights secured by the Fifth Amendment as authoritatively interpreted by the Supreme Court.[127]

Judge Kozinski's dissent – dubbed his "petition for certiorari" – revealed a deep split within the Ninth Circuit. The majority of judges reject the reading of *First English* and *Lucas* to require automatic compensation for temporary use prohibitions such as TRPA's 32-month planning moratorium. A minority of judges, however, interpret *First English* as conclusively resolving the moratorium question and felt strongly that the Supreme Court would so hold were it presented with the issue.

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122 *See id.* at 779.

123 *See id.* at 777.

124 *See* Tahoe-Sierra Pres. Council v. TRPA, 228 F.3d 998, 999 (Kozinski, J., dissenting).

125 *See id.* at 1001 (Kozinski, J., dissenting) ("The panel does not deny that the moratorium here, like the regulation in *Lucas*, deprived the owners of the use of their property for its duration. But it ignores *First English*'s requirement that the owners be compensated for a temporary taking.")

126 *Id.* (Kozinski, J., dissenting).

127 *Id.* at 1003. (Kozinski, J., dissenting).

Further, Kozinski's dissent relies heavily on the theory that physical appropriations and regulatory takings are to be evaluated identically.[128] Ever since the advent of regulatory takings 80 years ago,[129] courts have struggled with the extent to which they are to be evaluated as their physical counterparts. The moratorium issue squarely presents this conflict because were the government to appropriate property for 32 months, compensation for the time of occupation would obviously be required. It remained to be seen whether the Supreme Court would agree with the Ninth Circuit that, in the context of temporary government action, physical appropriations are analyzed differently from regulatory takings.

VI. *TAHOE-SIERRA*: THE UNITED STATES SUPREME COURT

The Supreme Court granted TSPC's writ of certiorari on the last day of its 2000-2001 season. Importantly, the Court focused the question presented by granting certiorari only with respect to:

> Whether the Court of Appeals properly determined that a temporary moratorium on land development does not constitute a taking of property requiring compensation under the takings clause of the United States Constitution.[130]

Consequently, the lower court rulings concerning the 1984-1987 injunction and 1987 Regional Plan remained intact and TRPA could not be found liable for those time periods.[131]

A. Briefing and Oral Argument

On January 7, 2002, the Supreme Court heard oral arguments concerning the constitutionality of TRPA's planning moratorium. TRPA, joined by the Solicitor General,[132] stressed the reasonableness of analyz-

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[128] *See id.* at 1002 (Kozinski, J., dissenting) ("The panel opinion dismisses these [appropriation] cases because they involved physical takings, rather than regulatory ones. *See Tahoe-Sierra, 216 F.3d at 779* ("The fact that just compensation was required in these cases, however, has no bearing on the question before us."). But *First English* rejected that distinction and found that these cases provided "substantial guidance" for its holding that all temporary takings, including regulatory ones, required compensation. 482 U.S. at 318, 107 S.Ct. 2378. Again, the panel substitutes its own view of takings law for that of the Supreme Court.")

[129] *See Pennsylvania Coal*, 260 U.S. 393 (1922).

[130] Tahoe-Sierra Pres. Council v. TRPA, 533 U.S. 948, 121 S. Ct. 2589-2590 (2001).

[131] In an amazing display of audacity, TSPC ignored the question crafted by the Supreme Court. The TSPC brief explains that TRPA's "regulations plainly took the property's use and potential for *whatever period of time* the Court cares to examine between 1981 (when Ordinance 81-5 was adopted) through the present . . . ." Tahoe-Sierra Pres. Council v. TRPA, Brief for Petitioners at 18, on file at TRPA (emphasis added). During oral arguments, the Court reminded TSPC's attorney of the relevant timeframe under consideration. *See* 2002 U.S. TRANS LEXIS 2, *10.

[132] The United States wrote a strong brief on behalf of TRPA. *See* Tahoe-Sierra Pres. Council v. TRPA, Brief for the United States as Amicus Curiae Supporting Re-

ing moratoria using the *Penn Central* framework, the impropriety of severing property interests to create a *Lucas* taking, and the inapplicability of *First English*.[133] TSPC argued that any denial of economically viable use of property – irrespective of the duration or governmental purpose – automatically requires compensation pursuant to *Lucas* and *First English*.[134] TSPC revealed its extreme position in response to a hypothetical from the Court involving the World Trade Center. Were New York City to adopt a one year moratorium to decide what uses would be appropriate on the site, TSPC informed the Court that the property owner would have to be compensated.[135] After oral argument, the case was taken under submission for the justices to consider the issues raised by the parties, as well as the dozen amicus briefs filed.[136]

B. The Majority Opinion

The Supreme Court announced its decision in *Tahoe-Sierra* on April 23, 2002, one day after Earth Day.[137] A six Justice majority[138] held that, because the constitutionality of planning moratoria are properly evaluated using *Penn Central* and not *Lucas*, TRPA need not compensate affected property owners for its 32-month development freeze on

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spondents, on file at TRPA. The main point of the United States' brief – that "moratoria should [not] be treated differently from ordinary permit delays" – made its way into the Supreme Court opinion. *Tahoe-Sierra*, 122 S.Ct. at 1487 n. 31. Further, Solicitor General Ted Olsen himself used ten minutes of TRPA's half hour to argue that the TRPA's moratorium was constitutionally sound, even squaring off with Justice Scalia in the most unexpected moment of the proceedings. *See* 2002 U.S. TRANS LEXIS 2, *41-*51. Theories abound as to why the conservative, pro-property rights Bush Administration would so actively support TRPA, from a genuine concern over the public fisc were local government required to compensate during moratoria to an exploited opportunity to "green" its image. Suffice it to say, TRPA was pleasantly surprised by this occurrence – a major turning point in the case.

133 *See* Tahoe-Sierra Pres. Council v. TRPA, Brief for Respondents, on file at TRPA. John G. Roberts, of Hogan & Hartson (Washington, D.C.), argued on behalf of TRPA.

134 *See* Tahoe-Sierra Pres. Council v. TRPA, Brief for Petitioners, on file at TRPA. Michael M. Berger, of Berger & Norton (Los Angeles, CA), argued on behalf of TSPC.

135 *See* 2002 U.S. TRANS LEXIS 2, *2-*3.

136 Amicus briefs were submitted in support of TRPA by: the United States; the State of Vermont (on behalf of over twenty states); the American Planning Association, the National Audubon Society (authored by John Echeverria); the National League of Cities, and *Amici* Scientists. Amicus briefs were submitted in support of TSPC by: Institute for Justice (co-authored by Richard Epstein); Pacific Legal Foundation; Atlantic Legal Foundation; Washington Legal Foundation; Defender of Property Rights; National Association of Home Builders; and the American Farm Bureau.

137 *See Tahoe-Sierra*, 535 U.S. 302, 122 S.Ct. 1465 (2002).

138 The six-three split was not entirely unanticipated, given the views of Justices Scalia and Thomas and Chief Justice Rehnquist. In July 2001, those hoping for a TRPA victory produced "rally caps" emblazoned with the desired outcome: "6-3."

environmentally sensitive lands. Written by Justice Stevens,[139] the majority opinion endorses moratoria as effective mechanisms that allow government to temporarily preserve the status quo while undertaking a comprehensive planning effort. By rejecting the District Court's alchemy of *Lucas* and *First English* to require that TRPA compensate property owners while it created a regional plan, the Supreme Court clarified the property interest considered in regulatory takings analyses. It is the multi-dimensional property right, including its temporal aspect, which is the appropriate focal point. This holding – beyond Lake Tahoe and even moratoria – represents a pro-government development in the evolution of the takings doctrine.

Justice Stevens criticized TSPC and the District Court for concluding that *Lucas* applied to TRPA's moratorium by creating a "complete elimination of value" for thirty-two months.[140] The re-formulation of property interests in this manner, called "conceptual severance," is inconsistent with the Supreme Court precedent mandating that takings analyses consider the "parcel as a whole."[141] The majority opinion effectively distinguishes *Lucas* as follows:

> [T]he District Court erred when it disaggregated petitioners' property into temporal segments corresponding to the regulations at issue and then analyzed whether petitioners were deprived of all economically viable use during each period. The starting point should have been to ask whether there was a total taking of the entire parcel; if not, then *Penn Central* was the proper framework.[142]

Using a holistic understanding of property rights, temporary prohibitions on use such as TRPA's moratorium do not implicate *Lucas* "because the property will recover value as soon as the prohibition is lifted."[143] In emphasizing that remaining value will avoid triggering *Lucas*, the Supreme Court departed from the use-focused *Lucas* analysis employed by the District Court.

The *Tahoe-Sierra* majority settled the debate over *First English*, clarifying that the precedent is merely one of remedy. Only if a taking has occurred and then the regulation is repealed must the government automatically compensate affected property owners for the time that the regulation was in effect.[144] *First English* does not bear on whether or not

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139 Perhaps the most liberal of the nine justices, TRPA was overjoyed to learn that he authored the majority opinion. Justice Stevens had made known his incomprehension of TSPC's position during oral arguments, asking whether a "curfew" would require compensation under such a theory. 2002 U.S. TRANS LEXIS 2, *50-*51.

140 *Tahoe-Sierra*, 122 S.Ct. at 1483, *citing Lucas*, 505 U.S. at 1019-1020 n.8.

141 *Tahoe-Sierra*, 122 S.Ct. at 1484.

142 *Id.* at 1483-1484 [citations omitted].

143 *Id.* at 1484.

144 *See Tahoe-Sierra*, 122 S.Ct. at 1478.

a taking has occurred, only the remedy once a taking is determined. In so holding, the Supreme Court laid to rest the misinterpretation that *First English* requires automatic compensation for temporary use prohibitions. *Penn Central* remains the proper framework for evaluating intentionally temporary regulations such as TRPA's moratorium because the "parcel as whole" includes a temporal component.[145] As *First English* itself acknowledges that ordinary permitting delays are not takings,[146] the Supreme Court concluded that: "our decision in *First English* surely did not approve, and implicitly rejected, the categorical submission that petitioners are now advocating."[147]

Instead of advancing the *per se* rule advocated by TSPC, the Supreme Court confirmed that the *Penn Central* analysis is to be used in all but the rarest of regulatory takings challenges. This "default rule" and "polestar" provides courts will the flexibility necessary to conduct a "careful examination and weighing of all the relevant circumstances."[148] The *Penn Central* factor balancing by the District Court in 1999 favored TRPA given the pressing need for a moratorium on the development of environmentally sensitive lands, the temporary nature of the prohibition, and the unrealistic expectation that property owners could construct homes while a regional plan was being created.[149] Because TSPC did not appeal these findings and instead pressed only the *Lucas* theory of liability, the Supreme Court affirmed the Ninth Circuit's holding that the plaintiffs were not entitled to compensation for the 32-month moratorium TRPA instituted between 1981 and 1984.[150]

The *Tahoe-Sierra* majority considers and rejects the request to create a new *per se* rule requiring government to compensate those owners unable to use their property during a moratorium. TSPC and its amici had sought a bright-line categorical rule triggering an obligation to compensate for temporary development freezes, if not upon the enactment of the moratorium then if it lasts more than a specified amount of time (such as one year).[151] The Supreme Court, however, declined the oppor-

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145 *Id.* at 1483, *citing Penn Central*, 438 U.S. at 130-131.

146 *See* First English Evangelical Church of Glendale v. County of Los Angeles, 482 U.S. 304, 321 (1987) (acknowledging "the quite different question that would arise in the case of normal delays in obtaining building permits, changes in zoning ordinances, variances, and the like . . . .")

147 *Tahoe-Sierra*, 122 S.Ct. at 1482.

148 *Id.* at 1484, 1486, *citing* Palazzolo v. Rhode Island, 533 U.S. 606, 636, 633 (2001) (O'Connor, J., concurring).

149 *See Tahoe-Sierra*, 34 F.Supp.2d at 1242 (". . . thus, with all three *Penn Central* factors, at least to some extent, weighing against a finding that TRPA's action constituted a partial taking, we must clearly hold that anything less than a total denial of all economically viable use of the plaintiffs' property would not constitute a taking.")

150 *See Tahoe-Sierra*, 122 S.Ct. at 1490.

151 *See id.* at 1484 n.28.

tunity to create such a rule anticipated to "render routine government processes prohibitively expensive or encourage hasty decision-making."[152] Noting that several states have already enacted statutes "authorizing interim zoning ordinances with specific time limits," the majority felt that this "important change in the law should be the product of legislative rulemaking rather than adjudication."[153] In rejecting the invitation to impose a *per se* compensation requirement, the Supreme Court refused to "transform government regulation into a luxury few governments could afford."[154] With *Lucas* deemed inapplicable and the *Tahoe-Sierra* majority unwilling to create a new rule, *Penn Central* stands as the proper analytical framework for evaluating the constitutionality of moratoria.

C. *The Dissenting Opinions*

Two of the three *Tahoe-Sierra* dissenters wrote separate opinions. Chief Justice Rehnquist felt that TRPA should be held liable for a prohibition on development that lasted nearly six years. Because the 1984-1987 injunction was caused by TRPA's inability to comply with the Compact, Rehnquist concludes that TRPA "was the 'moving force' behind petitioners' inability to develop its land from April 1984 through the enactment of the 1987 plan."[155] However, as noted by the majority, such a "novel theory of causation was not briefed, nor was it discussed during oral argument."[156] Justice Thomas' dissent advocated the application of *Lucas* to regulations prohibiting all productive uses of property, "regardless of whether the property so burdened retains theoretical useful life and value if, and when, the 'temporary' moratorium is lifted."[157] The majority, however, expressly rejected this concept of "temporal severance" in favor of a takings analysis that considers the "parcel as whole" in determining whether to apply Lucas or *Penn Central*.[158]

VII. *TAHOE-SIERRA*: THE PRECEDENT

The *Tahoe-Sierra* decision will have far-reaching implications in the field of land use planning. The Supreme Court not only upheld TRPA's moratorium, but endorses the planning device as a means of achieving environmentally sound development. Planning agencies across the county are now aware that this powerful tool, if used responsibly, can preserve the status quo without triggering a constitutional duty to compensate affected property owners. If steps are taken to tailor the mora-

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152 *Id.* at 1485.
153 *Id.* at 1489 n.37, 1485.
154 *Id.* at 1479.
155 *Tahoe-Sierra*, 122 S.Ct. at 1491 (Rehnquist, C.J., dissenting).
156 *Id.* at 1474 n.8.
157 *Id.* at 1497 (Thomas, J., dissenting).
158 *Id.* at 1483.

torium, as did TRPA, a challenge should withstand a *Penn Central* analysis and takings liability will be avoided. The *Tahoe-Sierra* decision, however, has broader implications for attorneys bringing and defending takings cases. Although the moratoria ruling will facilitate rational planning nation-wide, even more far-reaching will be the majority's distinction between physical and regulatory takings, confinement of the *Lucas* precedent, and reaffirmation of the "parcel as a whole." These developments in Fifth Amendment jurisprudence enhance the ability of government to enact regulations without triggering an automatic requirement to compensate affected landowners.

A. The Constitutionality of Moratoria

The majority of the Supreme Court strongly praised the planning moratorium as "an essential tool for successful development."[159] Moratoria "facilitat[e] informed decision making" and "protect[ ] the interests of all affected landowners against immediate construction that might be inconsistent with the provisions of the plan that is ultimately adopted."[160] Moreover, the proposition that moratoria render property valueless was rejected because "property values often will continue to increase despite a moratorium."[161] The Supreme Court described the adverse consequences of requiring automatic compensation as follows:

> [T]he financial constraints of compensating property owners during a moratorium may force officials to rush through the planning process or to abandon the practice altogether. To the extent that communities are forced to abandon using moratoria, landowners will have incentives to develop their property quickly before a comprehensive plan can be enacted, thereby fostering inefficient and ill-conceived growth.[162]

Tahoe-Sierra does not give planning agencies the ability to enact moratoria without having to compensate affected property owners.

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[159] *Id.* at 1487.

[160] *Id.* at 1487, 1489. Given the benefits accruing to the owners of affected properties during a moratorium, the Supreme Court found that "with a moratorium there is a clear '*reciprocity of advantage.*'" *Id.* at 1489, *citing Pennsylvania Coal*, 260 U.S. at 415 (emphasis added). This eighty-year old phrase has been repeatedly cited in cases throughout the history of regulatory takings and has been the subject of much academic discourse. It is the author's opinion that the extent to which the government allocates benefits and burdens through regulation should be considered as part of the "character of government action" factor in the *Penn Central* analysis. Likewise, the author believes that the character factor also includes a consideration of whether the regulation at issue does or "does not substantially advance legitimate state interests". Agins v. City of Tiburon, 447 U.S. 255, 260 (1980).

[161] *Id.* at 1489.

[162] *Id.* at 1488.

Steps must be taken to advance the likelihood that temporary development freezes will withstand a takings challenge under a *Penn Central* analysis. Through appropriate planning, government can sway two *Penn Central* factors in its favor. First, the character of government action is strongest where the scope of a moratorium is tied to specific findings warranting its imposition. TRPA was successful because its temporary prohibition on the development of environmentally sensitive lands directly advanced TRPA's goal of preventing the degradation of Lake Tahoe. Second, the economic impact can be minimized by having the moratorium last only as long as necessary.[163] Although the Supreme Court in *Tahoe-Sierra* indicated that moratoria lasting over one year would be subject to heightened scrutiny,[164] TRPA's 32-month duration was upheld as appropriate given the mammoth task of creating environmental thresholds and enacting a regional plan for Tahoe. By tailoring moratoria in scope and duration in such a manner, government can increase its chances of prevailing in the necessarily imprecise and *ad hoc* undertaking that is the *Penn Central* regulatory takings analysis.

B. Advancing the Regulatory Takings Doctrine

Tahoe-Sierra advances the takings analysis in several related ways, the result of which will likely be fewer instances in which the government is constitutionally mandated to compensate owners of regulated property. First, the Court drew a sharp distinction between physical appropriations and regulatory takings. Next the Majority addressed *Lucas*, the situation in which a regulation is so extreme that the property owner

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163 The duration of a use-prohibition is highly relevant in evaluating the "economic impact of the regulation" *Penn Central* factor. *Tahoe-Sierra*, 122 S.Ct. at 1489 ("the duration of the restriction is one of the important factors that a court must consider in the appraisal of a regulatory takings claim"). In some situations, the duration will not be immediately known, as with TRPA's moratorium that ended upon an event (plan adoption) and not a date certain. Similarly, properties beneath the IPES line are not presently developable, but must wait until a sufficient, pre-determined number of sensitive lots are purchased. There is tension between the *Tahoe-Sierra* directive that duration is a key *Penn Central* consideration and the statute of limitations requiring plaintiffs to promptly assert takings claims. At the September 2002 oral arguments for the TSPC's IPES challenge, Ninth Circuit justices were presented with a lower court holding that the lawsuit was barred by the statute of limitations even though plaintiffs did not know precisely how long it would be until their properties could be developed. Because the number of sensitive parcels needed to be purchased and retired was known in 1990, the Eastern District concluded that TSPC's cause of action accrued in 1990 and its 2000 lawsuit was therefore barred by the statute of limitations. *See Tahoe-Sierra*, No. CIV S-00-50 LKK DAD, July 28, 2000, Order Granting TRPA's Motion to Dismiss at 14 (E.D. Cal. 2000), on file at TRPA. TRPA is hopeful that the dismissal will be affirmed on appeal. *See supra* notes 47, 116.

164 *See Tahoe-Sierra*, 122 S.Ct. at 1489 ("It may well be true that any moratorium that lasts for more than one year should be viewed with special skepticism.")

must be compensated as if his property were being physically occupied (*i.e.* without regard to the government's purpose for the regulation).[165] The *Tahoe-Sierra* majority confined *Lucas* by failing to implicate the precedent where regulated property is rendered temporarily useless but retains future use and present value. Finally, by reaffirming the "parcel-as-a whole" rule, the High Court ensures that the multi-factored *Penn Central* framework will be used to evaluate all but the rarest of regulatory takings challenges.

1. Distinguishing Physical Appropriations From Regulatory Takings

Property rights advocates have long sought to conflate the constitutional analyses for regulatory takings and physical appropriations, thereby increasing their ability to obtain compensation. The *Tahoe-Sierra* majority purported to settle this lingering aspect of Fifth Amendment jurisprudence by recognizing the "longstanding" and "fundamental distinction" between physical and regulatory takings.[166] When government physically appropriates property, there arises a "categorical duty to compensate the former owners."[167] Regulatory takings, "by contrast, do[ ] not give the government any right to use the property nor . . . dispossess the owner or affect her right to exclude others."[168] Moreover, because each regulatory taking situation is unique and involves "adjusting the benefits and burdens of economic life to promote the common good," it is "inappropriate" to apply the categorical rule requiring compensation for physical appropriations to the regulatory takings analysis.[169] Although there are obvious differences between regulation and occupa-

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165 Although the character of government action is irrelevant under *Lucas*, it is an open question as to whether analysis considers the reasonable, investment-backed expectations of the property owner. There is currently a split of opinion on this matter in the D.C. Circuit Court of Appeals. *Compare* Good v. United States, 189 F.3d 1355, 1361 (Fed. Cir. 1999) (concluding that expectations are relevant in the *Lucas* analysis) *with* Palm Beach Isles Assoc. v. United States, 208 F.3d 1374 (Fed. Cir. 2000) (rejecting the *Good* analysis and holding that expectations are not relevant in *Lucas*). Were the issue before the present Supreme Court, the outcome would be difficult to predict. However, given Justice Kennedy's separate concurrence in *Lucas* which stresses the expectations of the landowner, *Lucas*, 505 U.S. at 1034 (Kennedy, J., concurring), it is not unlikely that *Lucas* will be revisited and clarified to require consideration of the property owner's reasonable, investment backed expectations. Such an outcome is preferred because otherwise speculators can purchase heavily regulated property for depressed prices and prevail under a *Lucas* theory, thereby obtaining a windfall at the expense of government. *See* Echeverria, *supra* note 6, at 11243-44. Further, *Tahoe-Sierra*'s sharp distinction between physical and regulatory takings removes the doctrinal underpinning necessary to argue that reasonable, investment-backed expectations are not relevant in a *Lucas* analysis. *See id.* at 11249-50.

166 *Tahoe-Sierra*, 122 S.Ct. at 1479, 1480.

167 *Id.* at 1478.

168 *Id.* at 1480 n.19.

169 *Id.* at 1480, *citing Penn Central*, 438 U.S. at 124; 1468.

tion, the *Tahoe-Sierra* majority has been criticized for overstating the distinction and ignoring years of precedent that sought to conflate the two types of takings in certain situations.[170] Nevertheless, the sharp distinction drawn will provide less opportunity for property owners to obtain compensation for devaluation attributable to regulation.

2. Confining *Lucas* and Elevating *Penn Central*

Lucas presents the "extraordinary circumstance" where a regulation operates to render property devoid of economically viable use.[171] Regulations resulting in less than a 100% diminution in value are evaluated under the multi-factor balancing of *Penn Central*.[172] When the *Lucas* analytical framework is implicated, compensation can be automatically required without regard for the character of government action.[173] Consequently, since it was decided, the property rights community has attempted to expand the situations in which *Lucas* is implicated. In *Tahoe-Sierra*, the Supreme Court dealt this movement a serious setback by shifting the *Lucas* "total loss" inquiry away from use and towards value.[174] A leading takings scholar remarks that: "[i]t is difficult to see how the Supreme Court could have read *Lucas* any more narrowly, at least without expressly overruling the decision. After *Tahoe-Sierra*, few–if any–regulations will rise to the level of a *Lucas* taking "[175]

TSPC argued that *Lucas* is implicated given the use prohibition during the 32-month moratorium. The Supreme Court disagreed, finding the precedent to be inapplicable because the properties retained value: "Logically, a fee simple estate cannot be rendered valueless by a temporary prohibition on economic use, because the property will recover value as soon as the prohibition is lifted."[176] In so holding, the Supreme Court significantly curtailed *Lucas'* applicability because regulated property will almost always retain some value – as evidenced by the sale of

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170 *See* Andrea L. Peterson, *The U.S. Supreme Court Tahoe* Decision, Litigating Regulatory Takings Claims, GEORGETOWN ENVIRONMENTAL LAW & POLICY INSTITUTE (Berkeley, CA, Oct. 10-11 2002), on file with author. *See also* Echeverria, *supra* note 6, at 11243.

171 *Lucas*, 505 U.S. at 1017.

172 *See id.* at 1019 n.8.

173 Other than to ask whether the regulation at issue prohibits a use already impermissible under "background principles of the State's law of property and nuisance." *Lucas*, 505 U.S. at 1029.

174 *Lucas*, 505 U.S. at 1019 n.8.

175 Echeverria, *supra* note 6, at 11244. Mr. Echeverria, Executive Director of the Georgetown Environmental Law & Policy Institute, posits whether "the Court's confinement of the *Lucas* test to practical irrelevance may set the stage for the Court's eventual repudiation of *Lucas*" and forecasts that "*Lucas* may soon become a dead letter in law as in fact." *Id.* at 11245.

176 *Tahoe-Sierra*, 122 S.Ct. at 1484.

environmentally sensitive parcels in Tahoe during TRPA's moratorium,[177] and the *Suitum* lower court finding that SEZ properties retain value even aside from TDRs.[178] Although *Lucas* itself qualifies its applicability to the "extraordinary circumstance,"[179] *Tahoe-Sierra* demonstrates an unwillingness to expand the precedent beyond the extremely unlikely situation in which regulated property is rendered completely valueless.

By confining *Lucas*, the *Tahoe-Sierra* majority elevates *Penn Central* to the forefront of takings litigation. The majority praises the fact-specific *Penn Central* balancing test for providing the flexibility necessary to determine whether a particular regulation requires compensation. Unlike *Lucas*, *Penn Central* considers all aspects of the regulation at issue: its economic impact; the expectations of the landowner; and the government's motivation. *Tahoe-Sierra* holds that the inquiry as to whether the regulation at issue (TRPA's moratorium) goes too far is just not capable of a bright line rule[180] because government's modern day efforts to protect the environment are necessarily complicated, scientific, and fact-specific. *Penn Central* is not without its disadvantages, namely the lack of predictability and enormous cost to litigate. One law professor has already predicted that government will be at least as adversely affected as large property owners by the uncertainty and expense of litigating under *Penn Central* in the wake of *Tahoe-Sierra.*[181]

3. Reaffirming the "Parcel as a Whole" and Rejecting Conceptual Severance

The property interest considered in the takings analysis can be outcome-determinative. For instance, a homeowner challenging a county setback as a taking will prevail if the setback area alone is analyzed but will lose if the entire parcel is considered. This "denominator" issue, al-

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177 *See Tahoe-Sierra*, 34 F.Supp.2d at 1243 (Judge Reed recounting testimony from an appraiser that un-buildable lots in the Tahoe Region were sold during the moratorium).

178 *Suitum*, 520 U.S. at 732.

179 *Lucas*, 505 U.S. at 1017.

180 The Supreme Court characterized TSPC's proposed categorical rule as "simply 'too blunt an instrument'" for identifying those moratoria which require compensation. *Tahoe-Sierra*, 122 S.Ct. at 1489 *citing Palazzolo*, 533 U.S. at 636 (O'Connor, J., concurring). *See also* Echeverria, *supra* note 6, at 11245 ("After an experimental effort to establish clear, prescriptive rules for regulatory takings claims, a majority of the Supreme Court has apparently decided to abandon the project.")

181 "Although the increased litigation costs may favor the government over small property owners who do not have the resources to maintain a costly lawsuit, the increased expense concomitantly may favor large property owners over the government." Barton H. Thompson, Jr., *Learning to Love Penn Central: The Lessons of Tahoe-Sierra Preservation Council*, Litigating Regulatory Takings Claims, GEORGETOWN ENVIRONMENTAL LAW & POLICY INSTITUTE (Berkeley, CA, Oct. 10-11 2002) at 6, on file with author.

ways a sticking point in the field of regulatory takings, became critical after *Lucas* was decided. Property rights advocates attempt to narrow the relevant property interest, thereby increasing their ability to obtain compensation. Conversely, government seeks to enlarge the denominator to avoid a determination of liability. In 1978, the Supreme Court was presented with a request to consider only on the allegedly "taken" airspace above Grand Central Terminal in New York City.[182] The Court declined to vertically sever the property interest in that situation as follows:

> Taking jurisprudence does not divide a single parcel into discrete segments and attempt to determine whether rights in a particular segment have been entirely abrogated. In deciding whether a particular government has effected a taking, this Court focuses rather . . . [on] THE PARCEL AS A WHOLE . . . .[183]

Tahoe-Sierra presents the parcel as a whole/ denominator issue in the temporal context. The District Court was convinced by TSPC to "effectively sever a 32-month segment from the remainder of each landowner's fee simple estate, and then ask whether that segment has been taken in its entirety by the moratoria."[184] However, the Supreme Court found TSPC's "'conceptual severance' argument [to be] unavailing because it ignores *Penn Central*'s admonition that in regulatory takings cases we must focus on the 'parcel as a whole.'"[185] The approach of "defining the property interest being challenged in terms of the very regulation being challenged" was dismissed by the High Court as disingenuous, "circular," and impermissible.[186] This aspect of the holding sends a clear signal that courts are to use a multi-dimensional conception of property rights when evaluating takings claims; it is improper to separate a particular property interest as the inquiry's focus. Although owners of regulated property and their attorneys will likely continue to develop clever theories for obtaining just compensation, *Tahoe-Sierra*'s parcel as a whole clarification substantially reduces the possibility of such recovery.

VIII. CONCLUSION

The United States Supreme Court has been very kind to Lake Tahoe of late. In the last five years, the Court granted certiorari on two takings challenges involving important planning devices and unresolved aspects of Fifth Amendment jurisprudence: TDRs in *Suitum* and more recently moratoria in *Tahoe-Sierra*. Although a majority of justices in *Suitum* ruled against TRPA and only on procedural grounds, the case is impor-

182 *See Penn Central*, 438 U.S. 104.
183 *Id.* at 130-131 (emphasis added).
184 *Id.* at 1483.
185 *Id., quoting Penn Central*, 438 U.S. at 130-131.
186 *Id.* at 1483.

tant for what was not decided. The Court refused to automatically require compensation where regulated property retaining present value cannot be developed. This outcome, advocated by three concurring justices, would have created bad precedent because the takings inquiry requires a consideration of all relevant concerns that this approach does not address. The present value of the regulated property – including TDRs – should be considered under *Penn Central*'s "economic impact of the regulation" factor,[187] and may prevent a finding of takings liability when balanced against the remaining considerations. Moreover, by making the subjective concept of use the focal point for the takings analysis, the concurrence's view would have injected more confusion in the already chaotic takings doctrine.

In contrast to its outcome in *Suitum*, the High Court made great law in its April 2002 *Tahoe-Sierra* decision. A majority of the Justices forcefully upheld TRPA's planning moratorium and endorsed the device to achieve sound land use planning. The Court found that regulations temporarily prohibiting use, but leaving property with present value and future use, do not categorically trigger a constitutional obligation to compensate; they are instead to be evaluated by balancing the *Penn Central* factors. This flexible analysis includes an examination into why and how the government has chosen to regulate the environment and the resultant benefits flowing to the affected property owners, thereby enabling government to establish that, on balance, the regulation at issue does not go "too far."[188] The *Tahoe-Sierra* majority also goes beyond the moratoria question presented and clarifies several critical aspects of takings law in a manner that will enable government to plan efficiently without having to compensate landowners.

The Supreme Court is to be commended for creating new precedent that will facilitate environmental protection well beyond the Sierra Nevada mountain range. Although Lake Tahoe figures prominently in *Tahoe-Sierra*, it is just one of many natural resources around the country that will benefit from this landmark ruling.[189]

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187 *See Penn Central*, 438 U.S. at 137. *See also* Lazarus, *supra* note 26, at 205.

188 *Pennsylvania Coal*, 260 U.S. at 415.

189 "Passage of time is required before a Supreme Court decision achieves landmark status. But *Tahoe-Sierra* appears to be a good candidate to become a landmark because it may turn out to mark the limits of the expansion of regulatory takings doctrine." Echeverria, *supra* note 6, at 11252.

KEEPING AFRICA OUT OF THE GLOBAL BACKYARD: A COMPARATIVE STUDY OF THE BASEL AND BAMAKO CONVENTIONS

*Andrew Webster-Main**

I. INTRODUCTION

In 1988, Nigerian officials discovered eight hundred open drums, containing eight million pounds of unprotected industrial and nuclear waste, in a local resident's backyard.[1] An Italian exporter, without disclosing the contents of the drums, had rented the lot from the owner for $100 a month.[2] By the time the barrels were discovered, they had already leaked into an adjacent river.[3] Some of the barrels were dumped by residents and used to store drinking water.[4] The waste plagued the local population; residents suffered chemical burns, paralysis, premature births, and fatalities.[5]

In 1992, Italian and Swiss companies exploited the anarchic violence in Somalia by securing an $80 million, twenty-year contract for dumping toxic wastes.[6] The contract was signed by the Somali Minister of Health, yet at the time, none of the warring factions truly held power in the war-torn, famine-stricken nation.[7]

In 2000, South Africa agreed to import 60 tons of hazardous waste from Australia.[8] Environmentalists in both countries responded in outrage, proclaiming, "Australia's export of hazardous waste to South Af-

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* J.D. 2002 University of California, Davis School of Law. Thanks to Professor Holly D. Doremus. This article is dedicated to my wife, Erin.

1 FRED L. MORRISON & WM. CARROLL MUFFETT, *Hazardous Waste, in* INTERNATIONAL, REGIONAL, AND NATIONAL ENVIRONMENTAL LAW 409, 418 (Fred L. Morrison & Rüdiger Wolfrum, eds., 2000).

2 *Id.*

3 *Id.*

4 *Id.*

5 *Id. See* Lillian M. Pinzon, *Criminalization of the Transboundary Movement of Hazardous Waste and the Effect on Corporations*, 7 DEPAUL BUS. L.J. 173, 176 (1994); Sylvia F. Liu, *The Koko Incident: Developing International Norms for the Transboundary Movement of Hazardous Waste,* 8 J. NATL. RES. & ENVTL. L. 121 (1993).

6 Hao-Nhien Q. Vu, *Comment: The Law of Treaties and the Export of Hazardous Waste,* 12 UCLA J. Envtl. L. & Pol'y 389, 390 (1994).

7 *Id.*

8 *Anger Over Import of Hazardous Waste*, PANAFRICAN NEWS AGENCY, Sept. 18, 2000.

rica reveals this country's total disregard to the people and environment of South Africa."[9]

These distressing stories are examples of a global phenomenon that has been called "the 'not in my back yard' (NIMBY) principle writ large:"[10] nations benefiting from modern economic and scientific developments, unwilling to bear the environmental burdens of their economic activities, have often sought to shift those burdens to nations that reap none of the benefits.[11] The world's waste consequently rushes toward poor, developing nations "like water running downhill."[12]

As hazardous waste management becomes an increasingly globalized business, multilateral regimes have emerged to regulate the potential environmental effects of improper practices.[13] The 1989 Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (Basel Convention)[14] has been ratified by 149 states and the European Union.[15] The Bamako Convention on the Ban of the Import Into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes Within Africa (Bamako Convention) was drafted by the Organization of African Unity (OAU) in 1991.[16] It came into force on April 22, 1998 upon its tenth state ratification.[17] As of April 28, 2002, it has been ratified by eighteen African states.[18] As their titles indicate, these instruments share the common goal of controlling the movement of hazardous wastes across national borders. They differ in some substantial aspects, however. This paper will compare and contrast the Bamako and Basel Conventions, and examine the viability of each as an instrument to protect the environmental wellbeing of the African continent.

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9 *Id.*

10 MORRISON & MUFFETT, *supra* note 1, at 409.

11 *Id.* at 409.

12 Hugh J. Marbug, Note, *Hazardous Waste Exportation: The Global Manifestation of Environmental Racism,* 28 VAND. J. TRANSNAT'L L. 251, 282(1995).

13 ORGANIZATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT, TRADE MEASURES IN MULTILATERAL ENVIRONMENTAL AGREEMENTS 100 (1999) [hereinafter OECD].

14 Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, U.N. Doc. UNEP/WG.190/4, UNEP/IG.80/3 (1989), *reprinted in* 28 I.L.M. 657 (1989) [hereinafter Basel Convention].

15 Basel Convention List of Ratifications Website (visited April 25, 2002) <http://www.basel.int/ratif/ratif.html> [hereinafter Basel Ratifications].

16 Bamako Convention on the Ban of the Import Into Africa and the Control of the Transboundary Movement and Management of Hazardous Wastes Within Africa, *reprinted in* 30 I.L.M. 775 (1991) [hereinafter Bamako Convention].

17 Center for Human Rights, University of Pretoria Website (visited April 27, 2002) <http://www.up.ac.za/chr/ahrdb/statorat_12.html> [hereinafter Center for Human Rights].

18 *Id.*

Though regional agreements such as the Bamako Convention have sometimes been dismissed as merely hortatory,[19] such assessments overlook the fact that regional agreements can play an arguably more significant symbolic role. This paper proposes that, insofar that the Bamako Convention is a legal instrument drafted uniquely by and for the African region, it symbolizes the proclivity of African states to act regionally in preventing the export of hazardous waste to the African continent. To African nations, the Bamako Convention symbolizes their power to act collectively in the post-Cold War era where Africa's geo-political stock has devalued, and its former stockbrokers are no longer interested in finding new ways to proactively reinvest.[20]

Part II of this paper explores international trade in hazardous waste. Part III analyzes the history and regulatory emphasis of the Basel Convention. This section will then examine the shortcomings and strong points of the Basel Convention. Part IV correspondingly examines the relative merits and weaknesses of the Bamako Convention. Part V revisits the question of the efficacy of the Basel and Bamako Conventions, this time not as individual multilateral environmental treaties, but as complements to each other and as symbols of Africa's desire to protect its fragile resources from outside exploitation.

II. INTERNATIONAL TRADE IN HAZARDOUS WASTE

While the percentage of hazardous waste generated by industrialized countries that crosses an international border is small,[21] international trade of hazardous wastes is nonetheless a big business. United States industries export over 160,000 tons of hazardous waste each year.[22] Trade in hazardous waste is likely to increase in the future, as industrialized nations are faced with increasingly stringent environmental regulations and shrinking landfill capacity, and quantities of hazardous waste continue to grow.[23]

The scarcity of waste disposal sites and the increasing cost of disposal provide an economic incentive for companies in the industrialized

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19 CarrieLyn Donigan Guymon, *International Legal Mechanisms for Combating Transnational Organized Crime: The Need for a Multilateral Convention,* 18 BERK. J. INT'L LAW 53, 77 (2000).

20 Jeremy Levitt, *Conflict Prevention, Management, and Resolution: Africa – Regional Strategies for the Prevention of Displacement and Protection of Displaced Persons: The Cases of the OAU, ECOWAS, SADC, AND IGAD,* 11 DUKE J. COMP. & INT'L L. 39, 40 (2001).

21 OECD, *supra* note 13, at 100.

22 Daniel Jaffe, Note, *The International Effort to Control the Transboundary Movement of Hazardous Waste: The Basel and Bamako Conventions,* 2 ILSA J. INT'L & COMP. L. 123, 125 (1995).

23 OECD, *supra* note 13, at 100.

world to export their waste.[24] While disposal of a ton of waste can cost as much as $2500 in the United States, the same waste can be disposed in a less developed nation for as little as three dollars a ton.[25] As environmental regulations in industrialized nations become more stringent and comprehensive, this economic incentive correspondingly increases.[26] Two major legal regimes governing hazardous waste disposal in the United States, the Resource Conservation and Recovery Act (RCRA)[27] and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)[28] both present incentives for domestic industries to export hazardous wastes.[29]

RCRA's regulations governing waste disposal in the United States are so lengthy and time-consuming that courts have described them as "mind-numbing."[30] RCRA includes a number of enforcement mechanisms and citizens' suit provisions applicable to domestic waste disposal activities. All of these elements increase the costs and difficulties associated with waste disposal in the United States.[31] Because RCRA does not address disposal of waste in other countries, United States waste generators can circumvent RCRA's oversight by exporting hazardous waste outside the United States.[32]

CERCLA provides similar incentives to dispose of hazardous waste outside of the United States' jurisdiction.[33] CERCLA's fearsome joint and several liability regime, which has been described as "a black hole that indiscriminately devours all who come near it,"[34] is so severe that a generator of waste may seek to export wastes as a means of reducing litigation concerns.[35] CERCLA's liability scheme, however, does not ap-

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24 Jaffe, *supra* note 22, at 124.

25 *Id.*

26 *Id.*

27 Resource Conservation and Recovery Act of 1976, 42 U.S.C.§§ 6901-6991 (1976) [hereinafter RCRA].

28 Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. §§ 9601-9675 (1994) [hereinafter CERCLA].

29 Theodore Waugh, *Where Do We Go From Here: Legal Controls and Future Strategies for Addressing the Transportation of Hazardous Wastes Across International Borders*, 11 FORDHAM ENVTL. LAW J. 477, 490, 497-96 (2000).

30 *Id.*, *See* American Mining Congress v. EPA, 824 F.2d 1177, 1189 (D.C. Cir 1987). (describing the circuitous analysis of RCRA as a "mind-numbing journey").

31 *Id.*

32 *Id.*

33 *Id.* at 496.

34 Long Beach Unified School District v. Dorothy B. Godwin California Living Trust, 32 F.3d 1364, 1366 (9th Cir. 1994).

35 Waugh, *supra* note 29, at 496.

ply to releases in foreign countries even if the release resulted from a hazardous substance exported from the United States.[36]

The United States, along with other industrialized nations, is in an economic position to manipulate less developed nations to its advantage; industries in the northern hemisphere [unclear—does this refer to North America?] are willing to pay generous fees to developing nations in return for an agreement to import their hazardous waste.[37] This would appear to be the archetype of supply and demand economics; industrialized nations have capital and need a place to dump their waste while developing nations lack capital and have the room to store the waste.[38] The transboundary movement of hazardous waste, however, produces externalities that can outweigh economic benefits.[39] When hazardous waste is moved from an industrialized nation to a developing one for disposal purposes, the externalities of environmental degradation and risk to human health are traditionally borne solely by the importing nation. Industrialized nations have nonetheless continued to export hazardous waste to less developed nations, in spite of the fact that the importing nations cannot adequately manage the waste or maintain sufficient environmental and health standards.[40]

The consequences of improper management of hazardous wastes to a nation's environment and to the health of its citizens can be disastrous. When hazardous wastes are improperly handled, they may leach into soil and groundwater and concentrate in food chains.[41] While knowledge on the health and ecological impacts of hazardous substances is limited, case studies indicate that community exposure to hazardous waste is linked to increases in leukemia, kidney cancer and respiratory disorders.[42]

III. The Global Response – The Basel Convention

The Basel Convention is the most significant and influential international agreement regulating trade of hazardous waste.[43] The Basel Convention was born from the view that industrial nations in the northern hemisphere were exporting hazardous wastes to developing nations in

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36 CERCLA, *supra* note 28, at §9601(8) and §9601(22) (defining the terms "environment" and "release" in a manner that limits liability to releases into the navigable waters or territories under the jurisdiction of the United States.).

37 Jaffe, *supra* note 22, at 125.

38 *Id.*

39 *Id.*

40 *See e.g, Anger Over Import Of Hazardous Waste*, *supra* note 8 (describing outrage by international and South African environmental groups over South Africa's agreement to import 60 tons of toxic waste from Australia).

41 OECD, *supra* note 13, at 98.

42 *Id.*

43 Waugh, *supra* note 29, at 503.

the south that were incapable of effective waste management.[44] Public reaction to the threat posed to the environment of developing states by the illegal import of hazardous wastes from industrialized nations shifted focus from the reality that the vast majority of international waste transport takes place between industrialized nations.[45] Nevertheless, this shift in focus may not have been detrimental; public reaction to widely publicized media reports of nefarious dumping of toxic wastes by industrialized nations in developing States[46] provided a nucleus of dissent to the global (NIMBY) principle.

The Basel Convention needed ratification by twenty countries in order to become effective.[47] This is a relatively small threshold compared to many multilateral treaties. For instance, the Rome Statute of the International Criminal Court required sixty country ratifications in order to come into force on July 1, 2002.[48] Nonetheless, ratification of the Basel Convention took over three years.[49] In roughly the same period of time, the Rome Statute generated three times the ratifications of the Basel Convention.[50] Except for Nigeria, member states of the Organization of African Unity (OAU) did not initially ratify the Convention, largely because it failed to impose an outright ban on transboundary waste transport.[51] Ironically, industrialized nations such as the United States, Japan, and Canada were slow to ratify the Convention for exactly the opposite reason; they believed the Basel Convention would unduly constrain legitimate trade in hazardous waste.[52] While Japan and Canada have both since ratified the Convention, the United States has not.[53] Despite initial opposition to the instrument, thirty-five African nations have ratified the Basel Convention.[54]

A. Basel's Aim

The Basel Convention represents a compromise between industrialized and developing nations; consequently, the Convention regulates

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[44] *Trade in Hazardous Wastes and Technologies, in* INTERNATIONAL ENVIRONMENTAL LAW ANTHOLOGY 153, 154 (Anthony D'Amato and Kirsten Engel eds., 1996) [hereinafter D'Amato & Engel].

[45] OECD, *supra* note 13, at 98; *see also* D'Amato & Engel, *supra* note 44, at 154.

[46] D'Amato & Engel, *supra* note 44, at 154.

[47] Basel Convention, *supra* note 14.

[48] Website of the Rome Statute of the International Criminal Court <http://www.un.org/law/icc/> (visited April 27, 2002).

[49] Vu, *supra* note 6, at 410.

[50] The Rome Statute on the International Criminal Court was drafted on July 17, 1998.

[51] Vu, *supra* note 6, at 410.

[52] D'Amato & Engel, *supra* note 44, at 176.

[53] Basel Convention Website (visited April 25, 2002) <http://www.basel.int>.

[54] Basel Ratifications, *supra* note 15. 35 nations listed on website as of 10/10/02.

rather than bans exports of hazardous wastes.[55] The underlying policy goals of the Convention are safe disposal and minimization of transboundary transport of hazardous wastes.[56]

Article 4 of the Basel Convention provides a general framework for state behavior in hazardous waste management.[57] State parties are obliged to conduct the transportation and disposal of hazardous waste in an "environmentally sound manner."[58] States are required to take "appropriate measures" to reach these goals, but they are left to determine the exact nature and extent of such actions.[59] While providing guidance for the conduct of States in that context, Article 4 does not contain absolute obligations.[60]

Although these provisions promulgate valuable global standards for the protection of the environment against adverse effects of hazardous wastes,[61] they are nonetheless beset with ambiguities. Not only do the provisions fail to define "environmentally sound" management, but they also leave a number of other equally important provisions to the discretion of the states.[62] For instance, the provisions are silent in regard to the extent of the generating State's duty to ascertain the adequacy of disposal facilities in the prospective importing state and the allocation of the burden of proof for the permissibility of export.[63]

B. Key Provisions

1. Prior Informed Consent

The Basel Convention allows transboundary movement of hazardous waste, but requires that it must be carried out in accordance with the Convention's regulatory regime of prior informed consent.[64] Exporters must notify receiving countries of intended hazardous waste shipments.[65]

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55 Vu, *supra* note 6, at 411.
56 *Id.*
57 D'Amato & Engel, *supra* note 44, at 155.
58 Basel Convention, *supra* note 14, Art. 4.
59 *Id.*
60 *Id.*
61 *Id.*
62 *Id.*
63 *Id.*
64 Basel Convention, *supra* note 14, Art. 4, para 1(c) ("Parties shall prohibit or shall not permit the export of hazardous wastes and other wastes if the State of import does not consent in writing to the specific import, in the case where that State of import has not prohibited the import of such wastes."); Basel Convention, *supra* note 14, Art. 4, para 2(f) ("Each party shall take the appropriate measures to require that information about a proposed transboundary movement of hazardous wastes and other wastes be provided to the States concerned, according to Annex VA, to state clearly the effects of the proposed movement on human health and the environment.").
65 Basel Convention, *supra* note 14, at Art. 6, para. 1.

The notification must specify all the countries through which the waste will travel.[66] The receiving nation has a number of options: it may accept the offer, reject it, solicit additional information, or accept the request with stipulated conditions.[67] In any case, the exporting nation must not ship the waste until it gets consent and a disposal contract that provides for "environmentally sound management" of the wastes.[68] A state party may not import or export wastes with nonparty states unless a separate disposal agreement that satisfies the environmentally sound management standard has been established.[69] A violation of any of these provisions requires the exporting State to recover its wastes from the receiving country.[70]

In addition to these requirements, the parties to the Basel Convention proposed an amendment ("Decision III/1") in 1995.[71] Decision III/1 prohibits state parties of the Organization of Economic Cooperation and Development (OECD) from exporting hazardous wastes to non-OECD countries.[72] This amendment, commonly called the "Basel Ban," was created largely due to a strong push by African nations, none of which are OECD member countries.[73] The amendment's aim is to increase safe disposal practices and limit generation of hazardous wastes by forcing OECD countries to retain their own hazardous waste.[74] Decision III/1, however, has been ratified by only thirty-two states; it has therefore not yet garnered the sixty-two ratifications necessary to render it binding.[75]

The extent to which the Basel Convention and Ban are enforceable is an important, yet unresolved, issue. Article 16 of the Basel Convention provides for a Secretariat to oversee implementation of the Convention;[76] while it is unknown whether it will function permanently in the position, the United Nations Environmental Program (UNEP) serves as the interim Secretariat.[77] Though there have been efforts to expand the Secre-

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66 *Id.* at Art. 6, para. 1. *See also Id.* at Annex 5(A), para. 7.

67 *Id.* at Art. 6, para. 2.

68 *Id.* at Art. 6, para. 3.

69 *Id.* at Art. 4, para. 5.

70 *Id.* at Art. 8.

71 *See Decisions Adopted by the Third Meeting of the Conference of the Parties to the Basel Convention*, U.N. Doc. UNEP/CHW.3/35 (1995) [hereinafter Basel Ban].

72 *Id.*

73 Organization of Economic Co-Operation and Development (OECD) Website (visited April 26, 2002) <http://www.oecd.org>; *see also Anger Over Import of Hazardous Waste*, *supra* note 8.

74 Waugh, *supra* note 29, at 505.

75 *See* Basel Convention Website (visited April 27, 2002) <http://www.basel.int/WhatsNew/annexVII.PDF>. 32 states have ratified as of 10/10/02 http://www.basel.int/ratif/ratif.html.

76 Basel Convention, *supra* note 14, Art. 16.

77 William Schneider, *The Basel Convention Ban on Hazardous Waste Exports: Paradigm of Efficacy or Exercise in Futility?*, 20 SUFFOLK TRANSNAT'L L. REV. 247, 280 (1996).

tariat's power so that it may enforce and police the Basel Ban, UNEP is currently unable to do so.[78] Such an expansion of power is a prerequisite to successfully enforcing the provisions of the Basel Ban.[79]

The chief benefit to the Basel Convention's prior informed consent approach is that it enables waste trading to continue subject to the control of the receiving country.[80] Critics have nonetheless raised a host of concerns with this approach. The most salient concern about the Basel Convention's prior informed consent regime is that, by facilitating the transboundary movement of hazardous wastes, it creates opportunity for the improper disposal of hazardous wastes within receiving countries.[81] Although the Basel Convention has sought to address this issue by requiring hazardous waste exports to be managed in an environmentally sound manner, concerns have been expressed that this standard is subject to conjecture.[82] The Convention sets no guidelines to determine whether this requirement has been satisfied.[83] Critics' warnings that countries may be misled into improper decision-making on the basis of inaccurate or incomplete information submitted by exporters[84] should be heeded by African nations in particular, as they often lack sufficient resources to implement thorough monitoring and enforcement programs.[85] Until the Basel Ban is ratified, African nations must remain vigilant to the possibility that unscrupulous exporters may submit misleading or incomplete information. Moreover, African nations must maintain vigilance after the ratification of the Ban; it is not inconceivable that exporting countries will endeavor to contravene it.

2. Liability Provisions

Articles 8 and 9 of the Basel Convention impose duties on state parties to retrieve exported waste that is in violation of an importation contract and to penalize illegal traffic in hazardous waste.[86] While these provisions have been praised for being considerably more far-reaching than those found in most other environmental treaties,[87] they mandate unilateral national action or implementation of legislation; they do not erect a liability regime under the Convention itself.

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78 *Id.*

79 *Id.*

80 Waugh, *supra* note 29, at 524.

81 *Id.*

82 *Id.*

83 *Id. at* 529.

84 *Id. at 524.*

85 Waugh, *supra* note 29, at 534.

86 Basel Convention, *supra* note 14, Art. 8 & 9.

87 KATHARINA KUMMER, INTERNATIONAL MANAGEMENT OF HAZARDOUS WASTES: THE BASEL CONVENTION AND RELATED LEGAL RULES 224 (1995).

The Basel Convention provides for the creation of an ad hoc expert organ to prepare a protocol setting out appropriate rules and procedures in the field of liabilities and compensation for damage resulting from the transboundary movement of hazardous wastes.[88] The Basel Protocol on Liability and Compensation (Protocol) was adopted at the Fifth Conference of Parties (COP-5) on December 10, 1999.[89] The Protocol is crucial to establishing an international mechanism that may operate free from what has been called "the whims and prejudices of nations" with regard to what shall constitute liability and obligation.[90]

The Protocol talks began in 1993 in response to the concerns of developing countries that they lacked the funds and technologies to cope with illegal dumping or accidental spills.[91] Observers were concerned that the Protocol's standards could prove difficult to enforce if they were based not on a clear standard (e.g., allowing an export without seeking the importing state's consent) but on whether the exporting state has taken "appropriate measures" to avoid mismanagement or had "reason to believe" the wastes would be mismanaged.[92] The Protocol avoids such pitfalls by imposing strict liability on the "person who notifies" the state of import in accordance with Article 6 of the Basel Convention.[93] Article 6 requires an exporting state to notify or require the generator or exporter to notify "the competent authority of the States concerned of any proposed transboundary movement of hazardous wastes or other wastes."[94] Once the hazardous waste comes into the possession of the disposing party, strict liability is transferred from the notifier to the disposer.[95] Under the Protocol, notifiers and disposers are strictly liable for any "damage due to an incident occurring during a transboundary movement of hazardous wastes."[96] Any other participant in the transboundary movement of hazardous waste is liable for "damage caused or contrib-

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[88] Basel Convention, *supra* note 14, Art. 12.

[89] Basel Protocol on Liability and Compensation for Damage Resulting From Transboundary Movements of Hazardous Wastes and Their Disposal and of the Decision Regarding the Basel Protocol (1999) [hereinafter Protocol on Liability and Compensation]; *See also* Basel Convention Protocol Website (last visited April 26, 2002) <http://www.basel.int/protocol/protodes.html>.

[90] C. Russell H. Shearer, *Comparative Analysis of the Basel and Bamako Conventions on Hazardous Waste,* 23 ENVTL L. 141, 158-59 (1993).

[91] *See generally id.*

[92] Basel Convention, *supra* note 14, Art. 4, para. 2; *see* Sean D. Murphy, *Prospective Liability Regimes for the Transboundary Movement of Hazardous Wastes,* 88 A.J.I.L. 24, 44; *see also* KUMMER, *supra* note 87, at 225 ("In their present form, the provisions are unlikely to contribute significantly to the development of the law in the field of state responsibility.").

[93] Protocol on Liability and Compensation, *supra* note 89, Art. 4.

[94] Basel Convention, *supra* note 14, Art. 6.

[95] Protocol on Liability and Compensation, *supra* note 89, Art. 4 para 1.

[96] *Id.* Art. 3.

uted to by his lack of compliance with the provisions implementing the Convention or by his wrongful intentional, reckless or negligent acts or omissions."[97] Therefore, the exporting or generating party that engages the Basel Convention's Article 6 prior informed consent process is strictly liable for the damage done from transboundary movement of hazardous waste until the waste reaches the disposing party.[98] At that point, strict liability shifts to the disposing party.[99] A party that handled the waste at some point in its movement but was neither a "notifier" or "disposer" would be liable only for damage arising from the party's faulty actions.[100]

The Protocol includes in its definition of damage "the cost of preventative measures" as well as "the costs of measures of reinstatement of the impaired environment."[101] Under the protocol, therefore, a party, regardless of the standard of care it exercises, can be strictly liable as a "notifier" or a "disposer" for costs incurred in preventing or minimizing damage from the transboundary movement of hazardous waste for which it is responsible.[102] Furthermore, a state can be strictly liable as a "notifier" or "disposer" for the necessary clean-up and restoration costs incurred from damage by transboundary movement of hazardous waste.[103]

The Protocol's liability provisions are, therefore, broader than some had expected. It is perhaps for this reason that, three years after its crea-

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97 *Id.* Art. 5.

98 *Id.* Art. 4 para. 1 ("The person who notifies in accordance with Article 6 of the Convention, shall be liable for damage until the disposer has taken possession of the hazardous wastes and other wastes. Thereafter the disposer shall be liable for damage.").

99 *Id.*

100 *See Id.* Art. 5 ("Without prejudice to Article 4, any person shall be liable for damage caused or contributed to by his lack of compliance with the provisions implementing the Convention or by his wrongful intentional, reckless or negligent acts or omissions.").

101 *Id.* Art. 2 para. 2(c) ("For the purposes of the Protocol . . . "damage" means (i) loss of life or personal injury; (ii) loss of or damage to property other than property held by the person liable in accordance with the present Protocol; (iii) loss of income directly deriving from an economic interest in any use of the environment, incurred as a result of impairment of the environment, taking into account savings and costs; (iv) *the costs of measures of reinstatement of the impaired environment, limited to the costs of measures actually taken or to be undertaken;* and (v) *The costs of preventative measures, including any loss or damage caused by such measures,* to the extent that the damage arises out of or results from hazardous properties of the wastes involved in the transboundary movement and disposal of hazardous wastes and other wastes subject to the Convention.") (emphasis added).

102 *Id.* Art. 2 para. 2(e) ("'preventative measures' means any reasonable measures taken by any person in response to an incident, to prevent, minimize, or mitigate loss or damage, or to effect environmental clean-up.").

103 *Id.* Art. 2 para. 2(d) ('Measures of reinstatement' means any reasonable measures aiming to assess, reinstate or restore damaged or destroyed components of the environment. Domestic law may indicate who will be entitled to take such measures.).

tion, the Protocol has yet to be ratified.[104] Like the Convention, the Protocol requires only 20 state ratifications to enter into force.[105] It has been signed by thirteen, but has not yet been ratified by a single country.[106]

3. Scope of the Basel Convention

The Basel Convention creates a two-pronged [should this be two-pronged test?] test for determining whether a substance falls within its purview. First, the substance must be defined as a "hazardous waste."[107] If not, the waste must alternately be an "other waste."[108] Second [or make "first" above "firstly," also where is secondly?], a waste must also be "subject to transboundary movement."[109]

The Basel Convention provides [yet another two-prong test] [not 'yet another' if the earlier test was 3-pronged] to determine if a substance is a "hazardous waste."[110] A substance is a "waste" for purposes of regulation if it belongs to one of the 45 categories enumerated in Annex I[111] or the 86 categories enumerated in Annex VIII.[112] Annex I includes specific substances such as "Zinc compounds" as well as broadly-defined materials such as "clinical wastes from medical care in hospitals, medical centers and clinics."[113] Annex VIII includes substances such as "Metal wastes and waste consisting of alloys of . . . selenium" and "fluff – light fraction from shredding."[114] In order to fall under the regulatory ambit of the Basel Convention, an Annex I or Annex VIII substance must also possess a "hazardous" characteristic enumerated in Annex III.[115] This list

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104 Basel Ratifications, *supra* note 15.

105 Protocol on Liability and Compensation, *supra* note 89, Art. 29. ("The Protocol shall enter into force on the ninetieth day after the date of deposit of the twentieth instrument of ratification, acceptance, formal confirmation, approval or accession.")

106 Basel Ratifications, *supra* note 15.

107 Basel Convention, *supra* note 14, Art. 1 para. 1; *see also* Basel Convention, *supra* note 14, Art. 2 para. 1. ("'Wastes' are substances or objects which are disposed of or are intended to be disposed of or are required to be disposed of by the provisions of national law.")

108 Basel Convention, *supra* note 14, Art. 1 para. 2; Basel Convention, *supra* note 14, Annex 2.

109 *Id.* Art 1 para. 1; *see also Id.* Art. 2 para. 3. ("'Transboundary movement' means any movement of hazardous wastes or other wastes from an area under the national jurisdiction of one State to or through an area under the national jurisdiction of another State or to or through an area not under the national jurisdiction of any State, provided at least two States are involved in the movement. . .")

110 *Id.* Art. 1 paras. 1(a) and (b).

111 *Id.* Annex 2.

112 *Id.* Annex 8.

113 *Id.* Annex 1.

114 *Id.* Annex 8.

115 *Id.* Annex 3.

of 14 characteristics includes "toxic (delayed or chronic)" and "flammable," among others.[116]

The Basel Convention, therefore, sets up a double-hurdle test to determine if a substance is a "hazardous waste" subject to regulation. This process closely resembles RCRA's two-step process of determining whether a waste is "hazardous."[117] A crucial difference between the two instruments exists, however; in order for a waste to fall under the purview of RCRA, it must *either* be listed as one of many pre-determined "hazardous" substances or possess a hazardous characteristic, such as ignitability or toxicity.[118] The Basel Convention, by requiring a "hazardous waste" *both* to be listed on Annex I or VIII *and* to possess a "hazardous" characteristic listed in Annex III, sets a significantly higher standard for regulation.

The Basel Convention does not require "other waste" to meet the same stringent two-step standard.[119] "Other waste" must fall into one of the two categories enumerated in Annex II.[120] These categories of wastes "requiring special consideration" are "wastes collected from households" and "residues arising from the incineration of household wastes."[121] A waste that falls into one of these two Annex II categories is not subject to the requirement of also possessing an Annex III "hazardous" characteristic.

Annex IX lists substances that are specifically excepted from the "waste" definition "unless they contain Annex I material to an extent causing them to exhibit an Annex III characteristic."[122] Under Annex IX, a substance such as "feldspar waste" or "coal-fired power plant fly-ash" is not a "waste" for the purposes of Basel Convention regulation unless it contains a substance listed in Annex I such as "mercury [or] mercury compounds" to an extent causing it to exhibit a Annex III "hazardous" characteristic, such as "poisonous." While Annex IX may function to better define when a mixed substance is subject to Basel Convention regulation, it would appear to potentially exempt a wide variety of potentially hazardous substances insofar as it establishes a presumption that the substances it lists are not subject to regulation unless they contain a quantity of an Annex I substance large enough to exhibit an Annex III characteristic. Therefore, Annex IX impliedly exempts from regulation any mix-

116 *Id.*

117 RCRA, *supra* note 27.

118 *Id.*

119 Basel Convention, *supra* note 14, Art. 1 para. 2 ("Wastes that belong to any category contained in Annex 2 that are subject of transboundary movement shall be 'other wastes' for the purposes of this Convention.")

120 *Id.* Annex 2.

121 *Id.*

122 *Id.* Annex 9.

ture of an Annex IX waste and another material, regardless of whether the mixture exhibited an Annex III characteristic, unless the second material is listed on Annex I.

A significant challenge in implementing the Basel Convention lies in the difficulty of establishing whether a substance is a "hazardous waste" as defined by Annexes I, VIII, XI and III. Characteristics listed under Annex III range from those that are easily recognizable, ("explosive" and "corrosive") to those with only delayed or chronic effects, ("toxic" and "ecotoxic").[123] The Convention acknowledges the dilemma inherent in determining whether a substance is hazardous; Annex III provides that "the potential hazards posed by certain types of wastes are not yet fully documented; tests to define quantitatively these hazards do not exist. Further research is necessary in order to develop means to characterize potential hazards posed to man and/or the environment by these wastes."[124] It is not unlikely that the means to determine such potential hazards, especially those with delayed effects, would arrive later in the developing world than anywhere else.

Annex III does not specify at which dosage a substance is considered to display a characteristic triggering regulation. It is unclear, therefore, whether a teaspoonful of toxic waste dropped into the Pacific Ocean would be considered a violation of the Basel Convention.[125] The Basel Convention leaves to the state parties the responsibility of determining these dosage and concentration levels.[126]

The Basel Convention compounds the problems arising from multiple interpretations of its terms by including within the definition of "hazardous waste" substances "defined as, or . . .considered to be, hazardous wastes by the domestic legislation of the Party of export, import or transit."[127] Any substance that is considered hazardous in a country involved as an exporter, importer, or transporter or toxic waste is therefore considered to fall within the ambit of the Basel Convention. Upon the ratification of the Protocol, a generator of waste not considered toxic in the country of generation can therefore be strictly liable for damages arising from the transboundary movement of that waste to or through any country that considers the waste to be hazardous under its national legislation.

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123 *Id.* Annex 3; *See* Jason L. Gudofsky, *Transboundary Shipments of Hazardous Waste for Recycling and Recovery Operations,* 34 STAN. J. INT'L L. 219, 234 (1998).

124 Basel Convention, *supra* note 14, Annex 3.

125 Jaffe, *supra* note 22, at 133.

126 Gudofsky, *supra* note 123, at 235.

127 Basel Convention, *supra* note 14, Art. 1 para. 1(b).

Lastly, the Basel Convention does not regulate radioactive wastes[128] or wastes "which derive from the normal operations of a ship."[129] The Basel Convention specifies that both of these substances fall outside its regulatory scope because they are regulated by other "control systems" and international instruments.[130]

4. Dispute Resolution

The Basel Convention outlines a course of action to be taken in the event that a dispute between state parties arises. Article 4 requires that conduct violating the Convention must be prevented or punished.[131] Article 9 obliges states parties to implement national legislation to prevent and punish illegal traffic in hazardous wastes.[132] In order to enforce compliance with these provisions, Article 20 provides three alternatives for dispute resolution: negotiation, submission to the International Court of Justice (ICJ), and submission to arbitration.[133] If negotiations between the parties fail, the dispute is referred to the ICJ or to arbitration, provided the parties so agree.[134] Annex VI outlines the procedures for arbitrating a dispute between parties to the Basel Convention.[135] Neither process is compulsory; states can choose to submit to the jurisdiction of the ICJ, but none have yet done so in order to settle a dispute under the Basel Convention.[136] It is unclear whether any states have chosen to submit a dispute to arbitration.[137] Because submission of a dispute to the ICJ or to arbitration is entirely voluntary, disputes between parties to the Basel Convention can potentially be left unresolved.

All claims under the Protocol are to be brought either in the national courts of countries where the damage from a hazardous waste trade was suffered, where the incident occurred, or where the defendant has his habitual residence or place of business.[138] The Protocol leaves it to the parties involved to ensure that their courts possess the necessary

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128 *Id.* Art. 1 para. 3.

129 *Id.* Art. 1 para. 4.

130 *Id.* Art. 1 paras. 3 & 4; *See* International Convention for the Prevention of Pollution from Ships, Nov. 2, 1973, S. TREATY DOC. NO. [I changed "Treaty Doc. No. to small caps] 1, 95thCong., 1stSess., 12 I.L.M. 1319 (1977); *see also* Protocol Relating to the International Convention for the Prevention of Pollution of Ships, Feb. 17, 1978, IMCO Doc. TSPP/CONF/11 78.09 (1978).

131 *Id.* Art. 4, para. 4.

132 *Id.* Art. 9, para. 5.

133 *Id.* Art. 20.

134 *Id.*

135 *Id.* Annex 6.

136 *Id.*

137 *Id.* Annex 6, Art. 2 ("The claimant party shall notify the Secretariat that the Parties have *agreed to submit the dispute to arbitration*. . .") (emphasis added).

138 Protocol on Liability and Compensation, *supra* note 89, Art. 17 para. 1(a)-(c).

competence to entertain such claims.[139] Therefore, if a Greek firm shipped waste to Spain via Tunisia, a Tunisian court could hold the Greek firm strictly liable for damages incurred from a leakage of hazardous waste suffered in Tunisia. Under the Protocol, the Greek firm could also be tried in Greece. If the leaking waste also washed onto Algerian shores, an Algerian court could also hear the case. In such a hypothetical circumstance, all three parties would likely wish to hear the case. It is also possible that national, regional, ethnic, or social biases would produce different outcomes in the same case, depending on the venue. By not establishing an independent source to determine whether a particular national court is an appropriate forum for receiving a claim and to impartially resolve disputes when several parties claim jurisdiction over a case, the Protocol opens up the possibility of international "forum shopping" and leaves an important step in the enforcement process to the "whims and prejudices of nations."

IV. The African Response – The Bamako Convention

The Preamble of the Basel Convention protects the sovereign right of every state to ban the import of hazardous wastes for transit or disposal.[140] Therefore, one of the initial consequences of the Basel Convention was the subsequent negotiation of separate regional agreements banning all imports of hazardous wastes to developing nations in specific regions.[141] One of these agreements was the Bamako Convention.[142]

The OAU created the Bamako Convention in 1991 as a response to perceived shortcomings of the Basel Convention.[143] Declaring that the hazardous waste trade constituted "a crime against Africa and the African people,"[144] African leaders believed that Basel's regulatory regime would merely legitimize a practice they found unacceptable.[145] Under the Basel Convention, cash-poor states could potentially be lured to ignore the disastrous consequences of the hazardous waste trade in the face of tremendous economic incentives.[146] African leaders were concerned that

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139 *Id.* Art. 17 para. 2.

140 Basel Convention, *supra* note 14, pmbl. (". . . Fully recognizing that any State has the sovereign right to ban the entry or disposal of foreign hazardous wastes and other wastes in its territory. . .."); *see generally* Mark Bradford, *The United States, China and the Basel Convention on the Transboundary Movements of Hazardous Wastes and Their Disposal*, 8 Fordham Envtl. Law J. 305 (1997).

141 Bradford, *supra* note 140, at 322.

142 Bamako Convention, *supra* note 16.

143 Shearer, *supra* note 90, at 143.

144 Morrison & Muffett, *supra* note 1, at 418.

145 *Id.*

146 *Id.*

if such economic incentives proved too enticing, Africa would become a dumping ground for hazardous waste from industrialized countries.[147]

A. Hazardous Waste in Africa

African nations are not unfamiliar with hazardous wastes. For example, there are estimated to be 100,000 tons of stockpiled pesticides in Africa.[148] The developing African continent, however, does not share the capacity of the industrialized world to manage such toxic substances .[149] Many of these stockpiled substances are poorly contained or dumped irresponsibly, leaking into water supplies and contaminating the food chain.[150] Bobby Peek, an environmentalist in South Africa, the richest of all sub-Saharan African countries,[151] explains that environmental standards and control technology in his country are "about 30 years behind anything in the United States and Europe."[152]

Incidents at the Thor chemicals plant in Natal province of South Africa in 1994 illustrate the technical shortcomings of African nations to manage toxic substances. Three senior officials of Thor, a British-owned firm, were indicted on criminal homicide charges after two workers died after being exposed to high levels of mercury toxins.[153] Another worker was in a coma due to the exposure, and 28 others were diagnosed as having mercury poisoning symptoms.[154] Thor was provided with a permit by the apartheid-era South African government to import large amounts of toxic materials from the United States.[155] The plant leaked large amounts of mercury into rivers in the Natal province.[156]

A significant problem that has gone hand-in-hand with environmental degradation in Africa is political corruption. The United Nations Environment Program (UNEP), based in Nairobi, Kenya, has asserted that, owing to poverty and political instability, "some African governments or groups may resort to accepting hazardous wastes in exchange for money, weapons or other needs."[157] This theory has played itself out in Somalia,

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147 *Id.*

148 *World Moves Towards Curbing Toxic Chemicals,* Xinhua General News Service, Feb. 20, 2002 [hereinafter *Toxic Chemicals*].

149 *Id.*

150 *Id.*

151 *See* Mr. Dowling's Electronic Passport: Africa Today (visited April 25, 2002) <http://www.mrdowling.com/611-nations.html>.

152 Tina Susman, *Nature under Pressure: The Clouds of Suspicion/ Many Believe South Africa's Industries Emit Toxins that Kill,* N.Y. NEWSDAY, Nov. 30, 2002, at A8.

153 Eddie Koch, *South Africa: Cabinet Against Toxic Waste Imports*, INTER PRESS SERVICE, Nov. 3, 1994.

154 *Id.*

155 *Id.*

156 *Id.*

157 *Africa Remains Upbeat On Protection of the Environment,* PANAFRICAN NEWS AGENCY, November 30, 1998 [hereinafter *Africa Remains Upbeat*].

whose long coastline, raging war and absence of functioning government created the perfect environment for the dumping of hazardous waste by unscrupulous brokers who offered guns in exchange for being allowed to unload their waste.[158]

The crux of the problem was succinctly presented by Xie Zhenhua, minister of China's State Environmental Protection Administration: "There is too big a gap in the capacity of chemical management between developed and developing countries."[159] Africa, plagued by political corruption and saddled with little or no waste handling technologies, needed the Bamako Convention, which bans the importation and movement of hazardous wastes across national borders, to compensate for this gap.[160]

B. Provisions of the Bamako Convention

1. The Ban

In shaping the Basel Convention, member countries of the OAU pushed for a total ban on transboundary shipment of hazardous waste.[161] Recognizing their inability to enforce unilateral bans on the shipment of such waste under national legislation, OAU nations looked towards the strength of a multilateral instrument to enforce such measures.[162]

The industrialized countries favored regulation over prohibition.[163] The United States, for example, strongly opposed prohibition, characterizing the transboundary shipment of hazardous waste as a free trade issue and arguing that prohibition would burden individual liberty and conflict with free trade and freedom of contract.[164] Other countries, such as the Netherlands, opposed the ban because they rely on exportation of waste as domestic environmental conditions make safe disposal impossible.[165] Some nations opposed a ban because they import hazardous wastes as a source of valuable recyclable resources.[166] Countries such as the Philippines and India rely on imported lead-acid batteries as a source for lead.[167] If these countries were party to an instrument that banned the movement of hazardous waste into their borders, such as the Bamako Convention, not only would they lose their source of lead, but also there would be less reclamation of these hazardous wastes.[168] For the majority

158 Susman, *supra* note 152.
159 *Toxic Chemicals*, *supra* note 148.
160 *Africa Remains Upbeat, supra* note 157.
161 Murphy, *supra* note 92, at 35.
162 *Id.*
163 D'AMATO & ENGEL, *supra* note 44, at 176.
164 *Id.* at 176.
165 Murphy, *supra* note 92, at 35.
166 Waugh, *supra* note 29, at 523.
167 D'AMATO & ENGEL, *supra* note 44, at 176.
168 *Id., see also* Gudofsky, *supra* note 123, at 219.

of industrialized countries, however, the most salient reason for opposing the ban was the economics of hazardous waste traffic.[169]

In the end, the industrial countries won the argument. The OAU shaped the Bamako Convention, therefore, as a response to the inadequacies of the Basel Convention. The Bamako Convention places a complete ban on all hazardous waste imports into Africa,[170] including the importation of waste for use in recycling, a frequently used loophole in the Basel Convention.[171] The Bamako Convention also creates a limited ban on the transfer of hazardous waste within and among the African nations.[172]

There has been considerable debate surrounding the merits of a total ban on the movement of hazardous waste. It has been argued that a ban only does a disservice to those nations who are unable to dispose of it in an environmentally safe manner.[173] A country that lacks safe disposal facilities for the toxic wastes it generates faces three choices: (1) disposing of the wastes locally and, presumably, unsafely; (2) halting waste generation; or (3) shipping the wastes elsewhere, preferably somewhere with safe disposal facilities.[174] If the country continues to produce hazardous waste, it should be allowed to dispose of its waste in a safer manner elsewhere. As long as wastes are generated in countries that cannot safely manage their disposal, their international transport should be permitted and regulated, rather than banned.[175]

The focus of the Bamako Convention, however, is not on *exports* of hazardous wastes from Africa; rather, it is meant to halt *imports* into the continent. The Bamako Convention was created in order to address the growing dual problems of industrial nations using Africa as a dumping ground and of Africa's continuing incapacity to adequately handle such waste.[176] The Bamako Convention's imposition of the Basel Convention's prior informed consent rule vis-à-vis movement of hazardous wastes between its state parties thus allows African States that have the capacity to safely dispose of hazardous waste to accept it from their African neighbors.[177] Moreover, the Bamako Convention does not restrict African States from exporting hazardous waste to non-OAU countries. The Bamako Convention's ban, therefore, does not function to limit an African State's choice to export hazardous waste it cannot dispose of prop-

169 *Id.*
170 Bamako Convention, *supra* note 16, Art. 4 para. 1.
171 Marbug, *supra* note 12, at 271.
172 Bamako Convention, *supra* note 16, Art 4, para. 3(n).
173 *See, e.g.,* Vu, *supra* note 6, at 391.
174 *Id.*
175 Shearer, *supra* note 90, at 163.
176 *Id.*
177 Bamako Convention, *supra* note 16, Art. 4, para. 3(n).

erly. Rather, its aim is to protect Africa from becoming a dumping ground for the hazardous waste of an industrialized country.[178]

The chief benefit to the imposition of a total ban is that it decreases the possibility that generators will pass their environmental responsibilities onto countries which lack the environmental technology, regulatory infrastructure, or training and experience necessary to ensure that the waste management adequately protects human health and the environment.[179] A ban therefore reduces fears that receiving countries will dismiss potential risks in order to obtain the income, technological benefits, and employment opportunities associated with waste importation.[180]

There is no escaping the fact, however, that the ban inflicts some collateral damage. The Bamako Convention essentially forces its states parties to forgo any legitimate recycling or reclamation interest they may have had for the environmental security that the Convention confers. In this regard, the Bamako Convention largely ignores the importance that recycling and reclamation play in the emerging world environmental order.[181] On the other hand, the ban recognizes that most African nations are not administratively capable of enforcing such a "recycling and reclamation" exception were it to exist, and that such a loophole would probably allow for contravention of the Convention.[182] Recycling has been used as a pretext to export thousands of tons of wastes such as lead scrap, contaminated scrap metal, plastic waste and computer wastes.[183] Even legitimate recycling or recovery operations that extract the valuable components of a hazardous waste will end up with residual wastes that a developing country may not be able to safely handle.[184] Furthermore, in the absence of adequate safeguards, recycling or recovery operations can pose greater human health problems than disposal, due to the higher levels of worker exposure and handling.[185]

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178 The OAU Council of Ministers passed a Resolution on Dumping of Nuclear and Industrial Waste in Africa 1989. The Resolution was drafted in the wake of the aforementioned hazardous waste-dumping fiasco in Koko, Nigeria and after 15,000 tons of toxic incinerator ash were found in Guinea in 1988. This Resolution, calling for a ban on dumping, declared that dumping hazardous wastes in Africa was a "crime against Africa and the African people." ORGANIZATION OF AFRICAN UNITY: COUNCIL OF MINISTERS RESOLUTION ON DUMPING OF NUCLEAR AND INDUSTRIAL WASTE IN AFRICA, May 23, 1989, *reprinted in* 28 I.L.M. 568 (1989). This resolution served as the framework for the Bamako Convention.

179 Waugh, *supra* note 29, at 521.

180 *Id.*

181 Shearer, *supra* note 90, at 175.

182 *Id.*

183 Kunda Dixit, *Last Place on Earth to Dump Trash,* INTER PRESS SERVICE, Mar. 10, 1994.

184 OECD, *supra* note 13, at 98.

185 *Id.*

Opponents of the Bamako Convention's total ban argue that it denies developing nations in Africa the opportunity to enjoy the economic and technological benefits of the hazardous waste trade.[186] Considering the widespread corruption that jeopardizes the political integrity of many African countries,[187] there is no guarantee any economic or technological benefit from such an endeavor would enrich the country as a whole. The practice of Somali warlords of accepting hazardous waste in return for guns[188] could hardly be colored as an exchange that works to the technological or economic advantage of the Somali people. Nigeria, a party to the Basel Convention,[189] has been the recipient of hazardous waste from abroad during the last quarter century.[190] Very recently, the former Nigerian presidential family was found to have embezzled over a billion dollars from Nigeria.[191] By rough estimate, this sum accounts for 3.1% of Nigeria's Gross National Product (GNP).[192] Such flagrant embezzlement casts a shadow of doubt over the likelihood that the benefits of any trade activity would actually benefit the people living under such regimes.

2. Liability and Dispute Resolution Under the Bamako Convention

The Bamako and Basel Conventions feature identical provisions in Articles 8 and 9 that impose duties on state parties to re-import waste that is in violation of an importation contract and to penalize illegal traffic in hazardous waste.[193] The Bamako Convention provides a slightly stronger reading of a state party's obligations under Article 9 in that it provides for the wastes to be returned to the states of origin in every case, and places a stronger emphasis on states' duties to adopt relevant criminal legislation of a punitive and deterrent nature.[194] While these provisions have been praised for being considerably more far-reaching than those found in most other environmental treaties,[195] they mandate unilateral national action or implementation of legislation; they do not erect a liability regime under the Conventions itself.

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186 Lillian M. Pinzon, *Criminalization of the Transboundary Movement of Hazardous Waste and the Effect on Corporations,* 7 DEPAUL BUS. L.J. 173, 202 (1994).

187 *Id.*

188 Susman, *supra* note 152.

189 Basel Ratifications, *supra* note 15.

190 *See, e.g.,* MORRISON & MUFFETT, *supra* note 1, at 409.

191 Elizabeth Olson, *Nigeria to Recover $1 Billion From the Family of a Late Dictator,* N.Y. TIMES, April 18, 2002, at A5.

192 *See* World Resources Institute Website <http://www.wri.org/wr-96-97/wr96dtei.pdf> (Nigeria's GNP was $31.5 billion in 1993.) (visited April 25, 2002).

193 Bamako Convention, *supra* note 16, Art. 8 & 9; Basel Convention, *supra* note 14, Art. 8 & 9.

194 Bamako Convention, *supra* note 16, Art. 9; *see* Kummer, *supra* note 84, at 103.

195 Kummer, *supra* note 87, at 224.

The Bamako Convention's re-importation mandate creates potential problems in regulating illegal traffic in hazardous wastes.[196] Under Article 9, a party who exports waste improperly is required to return the waste to its own jurisdiction, despite the fact that in some cases it may be less expensive or more environmentally sound to explore other options.[197] This should be of particular concern to African nations exporting waste, as many lack the resources to manage, transport, or retransport hazardous waste.[198]

Pursuant to the Bamako Convention's Article 9 mandate, African states have been extremely proactive in creating national laws forbidding the import of hazardous waste. The Ivory Coast has adopted a law that imposes prison terms of up to twenty years and fines of up to $1.6 million for individuals who import toxic or nuclear waste into the country.[199] Other African nations have even prosecuted government officials involved in the hazardous waste trade.[200] Guinea arrested at least thirteen people after 15,000 tons of incinerator ash from Philadelphia were found in 1988.[201] Nigeria has not only arrested people, but has threatened to execute anyone, including foreigners, involved in the dumping of hazardous waste inside its borders.[202]

Like the Basel Convention, the Bamako Convention calls upon parties to negotiate a substantive protocol on the issue of liability.[203] Unlike the Basel Convention, no such protocol yet exists for the Bamako Convention.[204] Nonetheless, the Bamako Convention, in furtherance of its chief goal of blocking any import of hazardous waste into Africa, creates a regime of unlimited joint and several liability on the generators of improperly disposed waste.[205] This regime is to be enforced by the implementation of appropriate national legislation.[206] The unlimited liability provision allows for the imposition of whatever damages are deemed appropriate, including punitive damages.[207] A claim could be brought against any generator, exporter, carrier, importer or disposer that was associated with the wastes that caused damage to the claimant.[208] The onus of liability would fall either upon all those responsible on a pro rata basis reflecting responsibility, or entirely upon one of those responsible

196 Shearer, *supra* note 90, at 177.
197 *Id.*
198 *Id.*
199 Pinzon, *supra* note 186, at 173.
200 *Id.*
201 *Id.*
202 *Id.*
203 Bamako Convention, *supra* note 16, Art. 12.
204 *See* MORRISON & MUFFETT, *supra* note 1, at 428.
205 Bamako Convention, *supra* note 16, Art. 4 para. 3(b).
206 *Id.* Art 4, para 4(a).
207 Marbug, *supra* note 12, at 274.
208 Murphy, *supra* note 92, at 53.

parties, leaving that party to obtain compensation from the other responsible parties.[209] Joint and several liability fulfills a purpose that is especially pertinent to the states parties to the Bamako Convention insofar that it imposes liability when the responsible parties have been identified, but the extent of responsibility is impossible to determine.[210]

Joint and several liability, however, can frustrate a just resolution to disputes. For instance, it can potentially impose liability on innocent parties rather than the actor at fault.[211] Imposing liability on multiple defendants could also reduce a disposal facility's financial incentive to ensure that imported waste is safely handled and disposed.[212] Importers and disposers would be less likely to handle waste safely if they believed that any suits by local parties would be brought against foreigners, either because the foreigners were perceived to have deep pockets or because of political pressure to protect local industries.[213] Such a result would only prolong the continuing incapacity of African nations to adequately handle hazardous waste.[214] Lastly, the Bamako Convention's joint and several liability regime places responsibility on law-abiding generators to supervise the actions of disposers, despite the fact that the generator may be thousands of miles away from the site of disposal.[215] While such a regime would force exporters to scrutinize the adequacy of a receiving party's facilities, it would place an almost impossible responsibility on generating parties to monitor the safe handling and disposal of wastes after exportation.[216]

3. The Scope of the Bamako Convention

While the Basel Convention's definition of "wastes" reflects an attempt not to overregulate or establish an excessively inclusive list,[217] the Bamako Convention extends its scope of regulation much more broadly.[218] Firstly, the Bamako Convention mirrors RCRA's two-step process more faithfully than does the Basel Convention insofar that the Bamako Convention defines "hazardous waste" as any waste that is listed in its Annex I *or* that possesses any hazardous characteristic enumerated in its Appendix II.[219] Therefore, the double-hurdle test of the Basel Convention is transformed into an either/or test similar to that in

209 Shearer, *supra* note 90, at 158.
210 *Id.*
211 Waugh, *supra* note 29, at 527.
212 *Id.*
213 Murphy, *supra* note 92, at 54.
214 Shearer, *supra* note 90, at 163.
215 Waugh, *supra* note 29, at 527.
216 *Id.*
217 Gudofsky, *supra* note 123, at 229.
218 *Id.* at 247.
219 Bamako Convention, *supra* note 16, Art. 2 para. 1(a)&(c).

RCRA. The either/or test necessarily includes many more substances under its regulatory scope than does the double-hurdle test.

The Bamako Convention includes a provision roughly identical to that in the Basel Convention that includes within its definition of hazardous wastes substances "that are considered to be hazardous wastes by the domestic legislation of the Party of export, import, or transit,"[220] but the Bamako Convention extends the definition to include any waste "that has been banned, cancelled or refused registration by government regulatory action, or voluntarily withdrawn from registration in the country of manufacture, for human health or environmental reasons."[221] The Bamako Convention also regulates radioactive waste.[222]

The Bamako Convention's greatest deviation in scope from the Basel Convention is found in Article 4(3)(f), which states,

> "Each party shall strive to adopt and implement the preventive, precautionary approach to pollution problems which entails, *inter alia*, preventing the release into the environment of substances which may cause harm to humans or the environment without waiting for scientific proof regarding such harm."

This mandate, an articulation of what is commonly known as the precautionary principle, extends the Bamako Convention's regulatory power to wastes that have not been proven hazardous, but *may be* hazardous.[223] The precautionary principle is essentially a counterpart to the customary international law obligation of due diligence that requires minimization of the risk of harm.[224] The precautionary principle is a significant shift from the Basel Convention's cost-benefit approach inasmuch that it is based neither on economic analysis nor on scientific proof.[225] Because the lack of information on the environmental damages caused by hazardous waste mismanagement and by transboundary movements of hazardous waste is a major barrier to understanding the extent of the environmental problem addressed by both conventions, the precautionary principle is especially appropriate.[226]

The one-two punch of the Bamako Convention's either/or test for defining "hazardous waste" and its promulgation of the precautionary principle lead observers to call its scope "immensely broader than that of

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220 *Id.* Art. 2 para. 1(b).
221 *Id.* Art. 2 para. 1(d).
222 *Id.* Art. 2 para. 2.
223 Gudofsky, *supra* note 123, at 247.
224 Mark Allan Gray, *The International Crime of Ecocide*, 26 CAL. W. INT'L L. J. 215 at 142 (1996).
225 Howard S. Kaminsky, *Assessment of the Bamako Convention on the Ban of Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa*, 5 GEO. INT'L ENVTL. L. REV. 77, 78 (1992).
226 OECD, *supra* note 13, at 100.

the Basel Convention."[227] This breadth of scope could be argued to result in overinclusion. If too many wastes fall under the ambit of regulation, industrial opposition provoked from the inclusion of substances that are believed to not be hazardous could potentially block its enactment.[228]

The Bamako Convention mandates an ambitious measure in furtherance of the precautionary principle. State parties are required to promote clean production methods "applicable to entire product life cycles."[229] The emphasis of this cradle-to-grave approach is to eliminate waste before it is created by utilizing technologies that produce goods with less waste by-product.[230]

The Bamako Convention's mandate for clean production methods has been sharply criticized in respect to the economic realities of developing nations in Africa.[231] By requiring the creation of new technology, the Bamako Convention creates a potentially insurmountable obstacle for African nations with little or no capital.[232] It has been suggested, therefore, that the Bamako Convention symbolizes the quixotic regional desire of African nations to end and prohibit the influx of polluting technologies into their nations.[233]

The Basel Convention, on the other hand, requires its states parties to ensure that hazardous waste generation is reduced to a minimum, taking into consideration technological, social, and economic factors.[234] By taking these factors into consideration, no party is required to make technological innovations or legal amendments beyond their means or national best interest.[235] It is possible that parties to the Basel Convention will use the "national best interest" as a pretext for inaction.

4. Loopholes

The framers of the Basel Convention have extended a certain degree of effort to address the concerns of the OAU nations. First, in an attempt to ensure that each signatory of the Basel Convention could successfully manage each hazardous waste that may be legally traded under its regulatory scope, the Convention calls for transfers of technology.[236] To this

227 Gudofsky, *supra* note 123, at 247.
228 Vu, *supra* note 6, at 412.
229 Bamako Convention, *supra* note 16, Art. 4 para 3(g).
230 Shearer, *supra* note 90, at 161.
231 *See* Shearer, *supra* note 90, at 162-163.
232 *Id.*
233 *Id.*
234 Basel Convention, *supra* note 14, Art. 4 para. 2(a).
235 Shearer, *supra* note 90, at 162.
236 Basel Convention, *supra* note 14, Art. 10 paras. 1 & 2(d) ("The Parties shall cooperate with each other in order to improve and achieve environmentally sound management of hazardous wastes and other wastes. To this end, the parties shall . . . Cooperate actively, subject to their national laws, regulations, and policies, in the trans-

end, the Basel Convention has established Regional Centers of Technology and Training in many developing countries, including Egypt, Nigeria, Senegal, and South Africa.[237] These centers facilitate technical and technological advancement, promote cleaner production technologies and the use of environmentally sound waste management practices, and provide advice on enforcement aspects of the Basel Convention.[238]

In addition, the Basel Convention contains certain "loopholes" that function to encourage its ratification by states party to the Bamako Convention.[239] Article 11 allows non-party countries to transport waste to party countries if a bilateral, multilateral or regional agreement exists for such a purpose, as long as such agreements are "not less environmentally sound" than the Convention.[240] This provision was enacted to address concerns of OAU countries that the Basel Convention was too weak and did not protect the interests of the developing nations because it did not adopt a total ban.[241] Because Article 11 allows more restrictive instruments to be enacted, it does not preclude OAU States from becoming parties to the Bamako Convention.[242]

Article 11 of the Bamako Convention similarly provides that the parties to the Convention may enter into bilateral or multilateral arrangements with Parties or non-Parties, provided that such agreements or arrangements "stipulate provisions which are no less environmentally sound than those provided for by the Convention."[243] The "Basel Ban," which effectively functions to bar all movement of hazardous waste into African countries,[244] harmonizes the Basel Convention's provisions with those of the Bamako Convention.[245] A party to the Bamako Convention, therefore, can also ratify the Basel Convention. Articles 11 of the Basel and Bamako Conventions consequently function to allow the Conventions to operate simultaneously.[246]

The Basel Convention also contains a loophole that compromises the ability of developing nations to restrict imports of hazardous

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fer of technology and management systems related to the environmentally sound management of hazardous wastes and other wastes. *They shall also co-operate in developing the technical capacity among Parties, especially those which may need and request technical assistance in this field.*") (emphasis added).

237 Basel Convention Website <http:www.basel.int/pub/basics.html#train> (visited April 28, 2002).

238 *Id.*

239 Vu, *supra* note 6, at 418.

240 Basel Convention, *supra* note 14, Art. 11.

241 Shearer, *supra* note 90, at 173.

242 *Id.*

243 Bamako Convention, *supra* note 16, Art. 11.

244 Basel Ban, *supra* note 71.

245 Shearer, *supra* note 90, at 174.

246 *Id.* at 173-74.

wastes.[247] While the Basel Convention imposes dual control on both the export and import parties to a waste transport, it does not apply to brokers working for international clients.[248] This shortcoming is best illustrated by the aforementioned attempt of Italian and Swiss firms to dump hazardous waste in Somalia in 1992.[249] Because Italy and Somalia were not parties to the Basel Convention, but Switzerland was,[250] only Switzerland was obligated to comply with the Convention. The Swiss party functioned as the "broker" of the deal between Italian and Somalian parties.[251] The Basel Convention, however, does not apply to Switzerland unless the waste either originated from or is transported through Switzerland.[252] Thus, because the waste did not come from or go through Switzerland, Switzerland was able to evade the Basel Convention's regulatory domain.[253]

The Somalia incident exposes a loophole in the Basel Convention that probably will be continually exploited unless it is "closed." In fact, UNEP indicates that it is now a common practice for companies in industrialized countries to take the "path of least resistance " and hire brokers to market their waste to undeveloped countries.[254] The incident raises an equally fearsome specter of doubt insofar that it exposes the Achilles' heel of all international agreements: they only bind governments, not individuals.[255] In 1992, Somalia had no government, so there was nothing for either the Basel or the Bamako Convention to bind. Stronger governmental regimes may also have difficulty regulating the activities of private actors. For example, several months passed before the Nigerian government discovered Italian industries had been dumping toxic waste in Koko.[256]

Article 11 may have a small loophole-within-a-loophole: it mandates that such separate agreements must implement "environmentally sound management of hazardous wastes" at levels no less restrictive than those of the Basel Convention,[257] yet it fails to define the term "environmen-

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247 Bradford, *supra* note 140, at 322.

248 *See generally* Vu, *supra* note 6, at 430-1.

249 *Id.*

250 *See* Basel Ratifications, *supra* note 15. (Italy ratified the Basel Convention in 1994; Somalia has not yet ratified it. Switzerland ratified the Convention in 1990.)

251 Vu, *supra* note 6, at 431.

252 *Id.*

253 *Id.*

254 Susman, *supra* note 152.

255 Vu, *supra* note 6, at 431.

256 *See* Nigeria Waste Imports from Italy <http://www.american.edu/ted/nigeria.htm> (visited April 27, 2002).

257 Basel Convention, *supra* note 14, Art. 11 para. 1. ("Notwithstanding the provisions of Article 4 paragraph 5, Parties may enter into bilateral, multilateral, or regional agreements or arrangements regarding transboundary movement of hazardous wastes or other wastes with Parties or non-Parties provided that such agreements or

tally sound management." Because it leaves the definition of this term to state parties, the Basel Convention allows for inconsistent or even conflicting decisions between countries over what management practices are environmentally sound.[258] Moreover, because it is impossible to verify the quality of such separate agreements and States' compliance with them, Article 11 potentially jeopardizes the Basel Convention's aim of ensuring compliance with its standards by all parties.[259]

V. CONCLUSION

The recent fracas in South Africa over the import of 60 tons of hazardous waste from Australia demonstrates that the Basel and Bamako Conventions fail to stop states from conspiring to import hazardous waste into Africa. As UNEP explains, Africa continues to be "targeted as a dumping ground . . . because [unscrupulous waste producers or dealers] believe this is the place with the least capacity to control or do something about it."[260]

The event demonstrates why all African States should ratify *both* the Bamako and Basel Conventions. Because the conventions can operate simultaneously, States are not precluded from doing so. Indeed, fourteen countries in Africa have ratified both the Basel and Bamako Conventions.[261] In furtherance of this goal, African states should endeavor to meet a few key objectives.

First, all States must ratify the Basel Convention. Of Africa's dual problems with hazardous waste – industrial nations using Africa as a dumping ground and Africa's continuing incapacity to adequately handle such waste[262] - [this should be a dash not a hyphen] only one is sufficiently addressed by the Bamako Convention. While the Bamako Convention's ban on all import of hazardous waste into Africa addresses the former problem, only the Basel Convention addresses the latter. Signing the Basel Convention allows African countries the opportunity to enjoy the United Nation's affirmative commitment to provide assistance to developing countries in achieving the Basel Convention's goals, including the "environmentally sound management of hazardous wastes."[263] The Basel

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arrangements do not derogate from the environmentally sound management of hazardous wastes and other wastes as required by this Convention. These agreements shall stipulate provisions which are not less environmentally sound than those provided for by this Convention in particular taking into account the interests of developing countries.")

258 Waugh, *supra* note 29, at 530.

259 D'Amato & Engel, *supra* note 44, at 162.

260 Susman, *supra* note 152.

261 *See* Center for Human Rights, *supra* note 17; *see also* Basel Ratifications, *supra* note 15.

262 Shearer, *supra* note 90, at 163.

263 *See generally id.*

Convention provides funding and monitoring procedures that the Bamako Convention cannot.[264]

The Basel Convention, unlike the Bamako Convention, has the support of many nations. The Bamako Convention, despite its ambitious protective measures, has only been ratified by eighteen African countries.[265] Four of these countries; Congo, Sudan, Togo, and Zimbabwe, have not ratified the Basel Convention.[266] OAU Nations were politically obligated to become parties to the Bamako Convention before they became parties to the Basel Convention.[267] Nonetheless, of the 54 African countries to ratify the Basel Convention, 40 have not also ratified the Bamako Convention.[268]

Second, all States must ratify the Basel Ban and the Protocol. While some observers marked the deal between Australian and South African parties as "the first time that the . . .Basel . . . Ban . . . has been intentionally violated,"[269] the Basel Ban has in fact yet to be ratified into force.[270] Australia and South Africa, both parties to the Basel Convention,[271] have not ratified the Basel Ban, and were therefore not bound by it.[272] Australia, an OECD-member country,[273] would have been in violation of the Basel Ban, if the Basel Ban had been ratified by South Africa and in force. Furthermore, if the Secretariat is afforded greater enforcement power under Article 16 of the Basel Convention, Australia could be punished for its violation. Additionally, if the Protocol were in force, both the notifying party in Australia and the disposing party in South Africa would have been strictly liable for any damages resulting from the hazardous waste trade.

Lastly, all African States must ratify the Bamako Convention. Like the vast majority of African States, South Africa has not ratified the Bamako Convention, so it is not subject to the Convention's joint and several liability provisions.[274] The Bamako Convention's broad definition of "hazardous waste" would probably include paragoethite, the waste to be shipped from Australia, because it contains both lead and arsenic.[275]

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264 Rebecca A. Kirby, *The Basel Convention and the Need for United States Implementation,* 24 GA. J. INT'L & COMP. L. 281, 299 (1994).

265 Center for Human Rights, *supra* note 17.

266 *See Id.; see also* Basel Ratifications, *supra* note 15.

267 Shearer, *supra* note 90, at 179.

268 *Id.*

269 *Anger Over Import of Hazardous Waste, supra, note 8.*

270 Basel Convention Website, http://www.basel.int/ratif/ratif.html (last visited April 27, 2002).

271 *Anger Over Import of Hazardous Waste*, *supra* note 8.

272 Basel Ratifications, *supra* note 15.

273 Organization of Economic Co-Operation and Development Website <http://www.oecd.org> (visited April 28, 2002).

274 Center for Human Rights, *supra* note 17.

275 *Anger Over Import of Hazardous Waste, supra* note 8.

Even if the substance was not proven to be "hazardous," the Bamako Convention's precautionary principle would require the South African party to refuse the Australian party's waste shipment if it was determined that paragoethite *may* cause harm.[276]

The Bamako Convention transcends its function as an instrument of protection against unscrupulous foreign industrialists; it is a symbol of African unity and strength. It is crucial that African nations show solidarity, a willingness to cooperate, and a desire to end the trade in hazardous waste.[277] The issue is not only an environmental or economic one – the OAU clearly viewed the hazardous waste trade as a racial issue when it called the transport of waste into Africa "a crime against Africa and African people."[278] It is therefore important to view the Bamako Convention, despite its shortcomings, as a symbolic instrument that, in tandem with the Basel Convention, will serve to further the interests of all African nations.

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276 Bamako Convention, *supra* note 16, Art. 4 para. 3(f).
277 *Id.*
278 Marbug, *supra* note 12, at 295.

THE 10,000 YEAR GUARANTEE: HIGH-LEVEL RADIOACTIVE WASTE DISPOSAL AT YUCCA MOUNTAIN, NEVADA

*Aletheia Gooden**

I. INTRODUCTION

Chernobyl rested on the Pripiat River in northcentral Ukraine, unknown to the rest of the world. Unfortunately, its anonymity did not last forever. On April 26, 1986 at 1:23 A.M., the number four reactor at the V.I. Lenin Nuclear Power Plant exploded and released thirty to forty times the radioactivity of the atomic bombs dropped on Hiroshima and Nagasaki.[1] The volcano-like explosion at Chernobyl killed thirty-one individuals instantly and significantly exposed 600,000 others to radiation. Over 100,000 Ukrainians, Russians, and Belorussians had to abandon entire cities and settlements within the 18.6 mile extreme contamination zone.[2] The average risk of developing a general cancer increased by 0.15% to 0.6% for those exposed to the radiation. Those living near the reactor at the time of the melt-down experienced genetic damage and around 760 children living in the supposed "safety zone" developed thyroid cancer. The average risk of developing thyroid cancer increased by 0.9% to 5.0% for those exposed.

Along with the human health and safety impacts of a nuclear accident, there are environmental and financial impacts as well.[3] Billions of rubles (31.27 Rubles = 1 USD) were spent and continue to be spent on soil decontamination. The radiation caused mutations and death in animals. A ban on milk, meat, fruits and vegetables was placed in 1986 and 1987 in Eastern Europe as a result.

Nuclear contamination burned large amounts of vegetation throughout countries in Europe. The explosion had the greatest impact on forests because of the high filtering characteristics of trees.[4] A "red forest"

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1 NUCLEAR ENERGY AGENCY, CHERNOBYL TEN YEARS ON RADIOLOGICAL AND HEALTH IMPACT, *at* http://www.nea.fr/html/rp/chernobyl/chernobyl.pdf; Peter Bleickardt, *Chernobyl'*, *at* http://www.ibiblio.org/expo/soviet.exhibit/chernobyl.html (Jan. 10, 2002).

2 *Id.*

3 *Id.*

4 NUCLEAR ENERGY AGENCY, *supra* note 1, at 9.

was created near the Chernobyl site, where the radiation was so high it killed all the trees, and the trees had to be handled and destroyed as radioactive waste.[5]

The nuclear accident at Chernobyl impacted the world.[6] The explosion blew radioactive particles into the sky to form a plume that traveled by wind to other countries. Once rain hit the plume, the radionuclides reached the ground, and contamination spread.[7]

The nuclear disasters at Chernobyl and Three Mile Island (Pennsylvania) stopped the development of nuclear power plants.[8] Though no new reactors have been built since 1979 in the United States, the threat of a nuclear explosion is not the only problem associated with nuclear power.[9] Nuclear reactors produce high-level radioactive waste in the form of spent fuel rods. Permanent disposal of the spent fuel creates uncertainty and substantial risk to human health and safety, and the environment. This paper analyzes the radioactive waste disposal problem and its potential affects on human health and safety. It addresses the laws affecting high-level radioactive waste disposal. The proposed geologic repository at Yucca Mountain, Nevada and the problems, logistics, status, and legal battles against locating the nation's nuclear waste dump at Yucca Mountain are discussed. Lastly, this paper presents possible solutions to the nuclear disposal dilemma.

II. The Radioactive Waste Disposal Problem

This section addresses current and future radioactive waste production and its potential effects on human health and safety.

A. Amounts and Sources

Following World War II federal nuclear weapons testing increased along with the development of commercial nuclear power plants.[10] Inevitably, these activities began to produce large amounts of high-level radioactive waste. High-level radioactive waste is defined as radioactive solids, liquids, or gases that initially produce large amounts of ionizing

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[5] *Id.*

[6] Bleickardt, *supra* note 1.

[7] *Id.*

[8] *Id.*

[9] Christopher Flavin & Nicholas Lenssen, Nuclear Power Nears Peak as the 20th Anniversary of Three Mile Island Approaches, the Nuclear Industry Faces Slow Slide to Oblivion, Worldwatch Institute, *at* http://www.worldwatch.org/alerts/990304.html (Mar. 5, 1999.)

[10] John Gross, *Nuclear Native America: Nuclear Waste and Liability on the Skull Valley Goshute Reservation*, 7 B.U. J. Sci. & Tech. L. 140, 143 (2001).

radiation.[11] Examples include nuclear fission waste products such as spent fuel rods and assemblies, coolant fluids, and gases.[12] Currently, 109 operating nuclear power plant reactors and nine shutdown reactors exist in the United States at seventy-three different reactor plant sites.[13] These facilities supply twenty percent of our nation's electricity and in doing so produce 2000 metric tons annually of high-level radioactive waste.[14]

This high-level radioactive waste is in the form of spent nuclear fuel that is created by the fission process at nuclear reactor sites.[15] The fuel that runs nuclear power plants is made up of small uranium and plutonium pellets. The pellets are placed inside long metal fuel rods that are grouped together to form fuel assemblies. The fuel assemblies are placed inside the reactor. During the fission process, uranium-235 gains a neutron and becomes an unstable uranium-236, which splits apart, discharging two fission fragments, two or three neutrons, and gamma rays.[16] The energy released from the fission process is in the form of kinetic energy. The kinetic energy is used to boil water into steam, which drives a turbine-generator to produce commercial electricity.

The pieces left over after the atom is split are radioactive. Gradually, the uranium and plutonium are burned up and the trapped fission pieces decrease the chain reaction efficiency. As a result, every eighteen months the old fuel assemblies are removed and new fuel is added. The used fuel is removed from the reactor and stored in steel lined, concrete vaults filled with water near the nuclear facilities. If the storage pools fill up, the spent fuel is stacked in dry cask storage near the reactor site. The average nuclear reactor produces thirty tons of spent fuel annually.[17]

Today, there is over 42,000 metric tons of used fuel sitting in water cooling ponds or dry cask storage at nuclear plant sites.[18] Plant operators are allowed to use dry cask storage if the cask design is approved by the Nuclear Regulatory Commission (NRC).[19] The NRC developed dry cask storage systems, or Independent Spent Fuel Storage Installations (ISFSI's) to expand interim storage of spent fuel both on-site near reac-

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11 THOMAS J. SCHOENBAUM & RONALD H. ROSENBERG, ENVIRONMENTAL POLICY LAW 784 (3d ed. 1996).

12 *Id.*

13 Jason Hardin, *Tipping the Scales: Why Congress and the President Should Create a Federal Interim Storage Facility for High-Level Radioactive Waste*, 19 J. LAND RESOURCES & ENVTL. L. 293, 298 (1999).

14 Amy Sypula, *Beyond Yucca Mountain: Split Liability Drives Action for Interim Nuclear Waste Storage*, 6 U. CHI. L. SCH. ROUNDTABLE 251, 253 (1999).

15 *Id.*

16 GILBERT M. MASTERS, INTRODUCTION TO ENVIRONMENTAL ENGINEERING AND SCIENCE 71 (Prentice Hall 1998) (1991).

17 Hardin, *supra* note 13, at 295.

18 THOMAS J. SCHOENBAUM & RONALD H. ROSENBERG & HOLLY DOREMUS, ENVIRONMENTAL POLICY LAW 36 (4th ed. 2001).

19 42 U.S.C. § 10153 (West 1995).

tors and off-site away from nuclear facilities.[20] Dry cask storage is initially licensed for twenty years and can be licensed for up to 100 years with review and approval by NRC.[21] Spent fuel will continue to be produced annually at a rate of 2000 metric tons through the year 2010.[22] If a significant number of reactor licenses are not extended beyond their forty-year licensing period,[23] spent fuel production will gradually decline and end in the 2030s. By that time, there will be approximately 85,000 metric tons of spent nuclear fuel.[24]

In addition to spent fuel generated from the commercial nuclear power industry, defense and research activities by the federal government produce spent fuel and high-level nuclear waste. Approximately 8.3 million cubic yards of federal weapons production waste is in temporary storage at the DOE's Savannah River plant in South Carolina and the DOE's Hanford Reservation in Washington.[25] Spent nuclear fuel from nuclear-powered naval vessels and naval reactor prototypes is also transported, tested, and stored at the National Engineering Laboratory in Idaho and in New York.[26] Much of this waste is contaminating the environment because it is stored in leaky containers.[27] On sixteen different occasions between 1987 and 1991, toxic gases were released from the storage facilities, and injured workers.[28]

B. Potential Health and Environmental Effects

The production and accumulation of spent fuel creates environmental and human health concerns.[29] The uranium involved in the fission process must be mined and extracted from the earth. The mining of uranium ore produces radioactive and chemical waste and causes ecological damage.[30] Mine tailings contain toxic metals such as arsenic, cadmium,

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20 10 C.F.R. § 72.42 (2002).

21 10 C.F.R. § 72.3 (2002).

22 NUCLEAR WASTE TECHNICAL REVIEW BOARD, DISPOSAL AND STORAGE OF SPENT NUCLEAR FUEL—FINDING THE RIGHT BALANCE (United States) (Mar. 1996).

23 42 U.S.C. § 2133(c) (West 1994).

24 NUCLEAR WASTE TECHNICAL REVIEW BOARD, *supra* note 22.

25 SCHOENBAUM & ROSENBERG, *supra* note 11; Michael B. Gerrard, *Fear and Loathing in the Siting of Hazardous and Radioactive Waste Facilities: A Comprehensive Approach to a Misperceived Crisis*, 68 TUL. L. REV. 1047, 1075 (1994).

26 Hardin, *supra* note 13, at 295; Gerrard, *supra* note 25, at 1075.

27 SCHOENBAUM & ROSENBERG, *supra* note 11, at 794.

28 Gerrard, *supra* note 25, at 1075.

29 This paper addresses the problems associated with spent radioactive fuel but it is important to note that spent fuel is not the only waste byproduct and waste disposal problem associated with the production of nuclear energy.

30 MARK D. JACKSON, RADIOACTIVITY: WHAT YOU DON'T SEE CAN KILL/HEAL YOU, *at* http://www.science.fall.edu/chemistry/xpl/radioact.prn.pdf (last visited May 20, 2002).

mercury, and the radionuclides involved in the decay of uranium-238.[31] Toxic metals are hazardous to human health and the environment. Additionally, only 0.72% of naturally occurring uranium is the desired isotope uranium-235.[32] For this reason, an enrichment facility is needed to increase the naturally occurring concentration of uranium by two to three percent so it can be used in the reactors.

Spent fuel is dangerous to human health and the environment because it contains radioactive material with very long half-lives.[33] The pieces left over from the fission process contain cesium-137, which concentrates in muscles and has a half-life of thirty years; strontium-90, which concentrates in bone and has a half-life of twenty-eight years; and iodine-131, which concentrates in the thyroid gland and has a half-life of 8.1 days.[34] Uranium-238, another element present in spent fuel, has a half-life of 4.5 billion years. There are many other long-lived radionuclides produced by fuel reactors that make spent fuel radioactive for tens of thousands of years.

Radioactive elements pose a threat to living organisms because they are unstable and undergo spontaneous changes within their nucleus, which emit alpha, beta, or gamma radiation.[35] Spent fuel emits alpha, beta, and gamma radiation. Alpha particles are large and easy to stop. Human skin sufficiently blocks external alpha radiation from entering the body. However, if alpha particles are taken internally through inhalation or ingestion, they can severely impact the body. Alpha particles cause ionization in surrounding atoms. Alpha's positive charge attracts electrons in its path, raising their energy levels and possibly removing them completely from their nuclei. Ionization harms living organisms by breaking down molecules into ions, destroying the molecule and creating reactive fragments.[36]

Beta particles move faster and are lighter than alpha particles. Beta particles are electrons that are emitted from an unstable nucleus as a result of the spontaneous transformation of a neutron into a proton plus

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31 MASTERS, *supra* note 16, at 72.

32 *Id.*

33 *Id.*

34 A half-life is the amount of time it takes for one-half of the quantity of the element to decay either to a stable form or to another element in the decay chain. (*Id.*) For example, the following is the decay life of plutonium-239, a radioactive waste present in spent fuel. Plutonium has a half-life of 24,390 years, at which time it decays and forms uranium-235. Uranium-235's half-life is 704,800 years, at which time it decays and forms thorium-231. Thorium-231's half-life is twenty-six hours, at which time it decays and forms radium-227. The decay chain continues to include nine more elements before the original radionuclide becomes lead-207 and is stable.

35 MASTERS, *supra* note 16, at 68.

36 JACKSON, *supra* note 30.

an electron.[37] Beta particles can travel several centimeters into human tissue.[38] However, they can be stopped by glass or a sheet of aluminum one-cm thick.

Gamma rays are the third type of radiation emitted by spent fuel. Gamma rays have short wavelengths and thus are highly energetic and cause biologically damaging ionization. Concrete, steel, or several centimeters of lead is most often used to block these rays.[39]

Alpha, beta, and gamma radiation produced by high level radioactive waste are very dangerous to living organisms. For example, an individual standing one yard away from an unprotected, ten year-old fuel assembly, would receive a lethal dose of radiation in under three minutes.[40] Radiation causes surrounding molecules to become unstable which results in molecular damage including the breakage of chemical bonds.[41] It takes a long time for an organism to respond to molecular damage caused by radiation. This is why the effects of radiation may remain undetected for many years. Skin cells are most easily burned by radiation; in the same way severe sunburns damage skin layers.[42] Additionally, low-level radiation causes somatic and/or genetic cellular damage.[43] Somatic damage increases the risk of the following cancers: leukemia, bone, thyroid, breast, skin, and lung.[44] Somatic effects also include sterility, cataracts, burns, and a reduction in lifespan. Genetic damage on the other hand, affects future generations by mutating reproductive cells.

III. The Law of Radioactive Waste Disposal

In 1954, with the enactment of the Atomic Energy Act,[45] the government first permitted the private use and ownership of nuclear reactors.[46] The Act made the federal government responsible for the disposal of high-level radioactive waste resulting from commercial nuclear fission.[47] The perception at that time was that spent fuel could be recycled or disposed of safely.[48]

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37 Masters, *supra* note 16, at 68.

38 *Id.*

39 Radiation and Foreign Research Reactor Spent Fuel, *at* http://www.nsc.org/public/ehc/rad/fsf_ch6.pdf (last visited May 19, 2002).

40 Public Citizen, Get the Facts on Nuclear Waste Transportation, www.nirs.org/roadsrails/road.PDF (last visited May 20, 2002).

41 Masters, *supra* note 16, at 69.

42 Jackson, *supra* note 30.

43 Masters, *supra* note 16, at 69.

44 *Radiation and Foreign Research Reactor Spent Fuel*, *supra* note 39.

45 42 U.S.C. §§ 2011-2259 (West 1994).

46 42 U.S.C. § 2133(a) (West 1994).

47 42 U.S.C. § 2012(c) (West 1994).

48 Lawrence Flint, *Shaping Nuclear Waste Policy at the Juncture of Federal and State Law*, 28 B.C. Envtl. Aff. L. Rev. 163, 166 (2000).

Up until the late 1970s, nuclear fuel was commercially reprocessed and recycled.[49] The current nuclear reactor fission process uses up only a small percentage of the fuel's energy, leaving behind highly radioactive waste, with great energy potential. Reprocessing the spent fuel would reduce the amount of high-level waste but it would also result in the isolation of plutonium.[50] Plutonium creates a potential nuclear weapons proliferation risk. Because of this risk and the threat of terrorism, President Carter suspended the commercial reprocessing of spent nuclear fuel in 1977.[51] The United States currently supports the "Nonproliferation and Export Control Policy" of 1993 which discourages the reprocessing of spent fuel and the commercial trade of plutonium for energy.[52] Unlike in the United States, spent nuclear fuel is reprocessed and recycled in other countries such as the United Kingdom, France, and Japan.[53]

Congress passed the Nuclear Waste Policy Act[54] (NWPA) in 1982 to address the issue of spent fuel storage. Like the Atomic Energy Act, NWPA made the federal government responsible for the permanent disposal of high-level nuclear waste.[55] However, the Act placed primary responsibility for storing spent fuel on the producers of nuclear power.[56]

A. The Nuclear Waste Policy Act (1982) and The Nuclear Waste Policy Amendments Act (1987)

NWPA[57] provides a comprehensive program for the management and disposal of spent radioactive fuel generated by commercial nuclear reactors.[58] The federal government is responsible for the ultimate disposal of the radioactive waste but the nuclear utilities are responsible for the interim storage of the spent fuel before it is received by the federal government.[59] The federal government is instructed under NWPA to dis-

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[49] *Id.*; Gerrard, *supra* note 25, at 1075 (The only operating commercial reprocessing plant was located in West Valley, New York. The plant reprocessed nuclear waste for six years, before closing in 1972. The plant's closure left behind hundreds of thousands of gallons of highly radioactive liquid waste and a legacy of fires and accidents.).

[50] *Id.* at 167.

[51] *Id.*

[52] THE WHITE HOUSE OFFICE OF THE PRESS SECRETARY, FACT SHEET NONPROLIFERATION AND EXPORT CONTROL POLICY, *at* http://www.fas.org/spp/starwars/offdocs/w930927.htm (Sept. 27, 1993).

[53] UNITED STATES DEPARTMENT OF ENERGY, HISTORY OF THE CIVILIAN RADIOACTIVE WASTE MANAGEMENT PROGRAM, *at* http://www.ymp.gov/timeline/index.htm (last visited May 20, 2002).

[54] 42 U.S.C. §§ 10101-10270 (West 1995).

[55] 42 U.S.C. § 10131(a)(4) (West 1995).

[56] 42 U.S.C. § 10131(a)(5) (West 1995).

[57] 42 U.S.C. §§ 10101-10270 (West 1995).

[58] 42 U.S.C. § 10131(b) (West 1995).

[59] 42 U.S.C. § 10131(a)(4),(5) (West 1995).

pose of spent nuclear fuel and high-level radioactive waste in underground geologic repositories.[60] The idea for a geologic repository originated in 1957 when the National Academy of Sciences determined that the best way to protect human health and safety and the environment would be to bury radioactive waste in rock deep underground.[61] In the 1960s the government studied thick salt deposits as possible repository sites. The government also studied the possibility of using basalt and welded turf and other volcanic rock types for a repository in the 1970s.

The United States Department of Energy (DOE) was authorized under NWPA to find, build, and operate the geologic repositories.[62] NWPA instructed DOE to identify three potential sites for the first underground storage facility and to conduct a site characterization of each of the three sites.[63] In 1983, after ten years of data collection, DOE selected nine locations in six states for potential underground radioactive waste storage facilities.[64] The following are the nine candidate site locations: Vacherie dome, Louisiana (salt dome); Cypress dome, Mississippi (salt dome); Richton dome, Mississippi (salt dome); Yucca Mountain, Nevada (tuff); Deaf Smith County, Texas (bedded salt); Swisher County, Texas (bedded salt); Davis Canyon, Utah (bedded salt); Lavender Canyon, Utah (bedded salt); and Hanford Site, Washington (basalt flows).[65] From the nine proposed sites, the Secretary of Energy (Secretary) was required to pick three to recommend to the President.[66] An environmental assessment needed to accompany each site.[67] In 1984, Draft Environmental Assessments were done for all nine sites.

NWPA requires the Secretary to consult with the Council of Environmental Quality, the Administrator of the Environmental Protection Agency, and the Director of the United States Geological Survey to develop guidelines which "specify factors that qualify or disqualify any site from development as a repository, including . . . hydrology, geophysics, seismic activity, . . . proximity to water supplies, [and] populations."[68] The guidelines should consider the proximity of the repository to sites where high-level radioactive waste and spent nuclear fuel is generated and the transportation and safety issues involved in moving such waste to

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60 42 U.S.C. § 10131(b)(1) (West 1995).

61 UNITED STATES DEPARTMENT OF ENERGY, *supra* note 53.

62 42 U.S.C. § 10191(2) (West 1995).

63 42 U.S.C. § 10132(b)(1)(B) (West 1995).

64 UNITED STATES DEPARTMENT OF ENERGY, *supra* note 53.

65 *Id.*

66 42 U.S.C. § 10132(b)(1)(B) (West 1995).

67 42 U.S.C. § 10132(b)(1)(D) (West 1995); 42 U.S.C. § 10132(b)(1)(D)(i)-(vi) (West 1995) (environmental assessment requirements).

68 42 U.S.C. § 10132(a) (West 1995).

the repository.[69] In December of 1984, DOE issued general guidelines for the recommendation of the sites.[70] In 1996, the specific citing guidelines were revised with the following generalized guidelines.[71] First, the repository must allow for containment of waste in accordance with the Environmental Protection Agency (EPA) standards and NRC regulations after closure. Second, the repository must abide by EPA's standards established specifically for Yucca Mountain and NRC's regulations during construction, operation, and closure.

The Secretary recommended Yucca Mountain, Nevada; Deaf Smith County, Texas; and Hanford Site, Washington to the President for approval site characterization. The President approved the three sites in 1986.[72] Due to the high costs associated with researching geologic repositories, Congress postponed all work for a second repository and reassessed its need to characterize three potential storage facilities.[73] In 1987 Congress passed the Nuclear Waste Policy Amendments Act, directing DOE to study a repository only at Yucca Mountain, Nevada.[74]

Site characterization is the initial step in determining if a facility is suitable to store the nation's high-level radioactive waste.[75] Site characterization at Yucca Mountain involved studying the geology and hydrology of the site. Scientists observed the depth, thickness, and extent of the host rock at Yucca Mountain and whether it responded to heat or water. They studied the ground water at the site and the amount of water present, where the water comes from, how far the water table is from the surface, and in what direction the water flows. The amount of surface water at Yucca Mountain was also observed. Researchers studied the terrain at the site and the potential for volcanic activity and earthquakes. Scientists also observed the climate in the past at Yucca Mountain and predicted future temperatures in the area and what impact climate could have on a repository. Yucca Mountain was initially picked as a repository because of its arid condition, lack of water, isolated water basin, and low population density near the site. Yucca Mountain's deep water table would allow the repository to be placed 1,000 feet underground and still be 800 feet above the water table.[76]

Site characterization also includes analyzing the social, environmental, and economic impacts a repository has on a location. Social effects

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69 *Id.*

70 10 C.F.R. § 960 (2002).

71 NUCLEAR WASTE PROJECT OFFICE, UPDATE ON NUCLEAR WASTE PROGRAM DEVELOPMENTS, *at* http://www.state.nv.us/mucwaste/news/upd4-97.htm (Apr. 1997).

72 51 Fed. Reg. 19783 (June 2, 1986); *Nevada v. Herrington*, 827 F.2d 1394, 1397 (9th Cir. 1987).

73 42 U.S.C. § 10172 (West 1995).

74 *Id.*

75 42 U.S.C. § 10133(a) (West 1995).

76 Sypula, *supra* note 14, at 260.

of locating a repository at a site include impacts on: schools, public health, law enforcement, fire protection, medical care, cultural and recreational needs, distribution of public lands to allow for timely expansion of facilities, social services, and transportation.[77] Environmental effects are addressed in the required Environmental Impact Statement[78] discussed below. Economic effects include the impact a repository will have on Nevada's tourism, property values, and economic development and growth.[79]

After site determination is complete the Secretary has two choices. If the Secretary determines the site is unsuitable, he must terminate all site characterization activities and notify Congress, and the Governor and Legislator of the state where the site is located.[80] Additionally, he must reclaim the site and report to Congress within six months on recommendation for further action, including the need for new legislative authority.[81] If upon completing site characterization, the Secretary determines the site is suitable, he may recommend the site to the President for development as a geologic repository.[82] With the recommendation of the site, the Secretary must provide to the public and submit to the President a thorough statement explaining his decision.[83] The statement must include, among other things, a final Environmental Impact Statement[84] pursuant to the National Environmental Policy Act.[85]

The Secretary must notify the Governor and Legislature of the State where the repository is located at least thirty days prior to making a recommendation to the President.[86] If the President accepts the Secretary's recommendation, NWPA requires the President to submit a recommendation of the site to Congress.[87] The site designation is effective sixty days after the President's proposal unless a Notice of Disapproval is submitted by the Governor and legislature of the State where the site is located, or by the authoritative body of a Native American Tribe on whose reservation the site is located.[88] If a Disapproval Notice is submitted, the site is disapproved unless within the first ninety days of a continuing ses-

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77 42 U.S.C. § 10174(b) (West 1995).

78 42 U.S.C. § 10134(a)(1)(D) (West 1995).

79 Texas Electric Service Co. v. Nelon, 546 S.W.2d 864, 869 (Tex. Ct. App. 1977); Gerrard, *supra* note 25, 1078; SCHOENBAUM & ROSENBERG, *supra* note 11, at 788.

80 42 U.S.C. § 10133(c)(3) (West 1995).

81 42 U.S.C. § 10133(c)(3)(F) (West 1995).

82 42 U.S.C. § 10134(a)(1) (West 1995).

83 42 U.S.C. § 10134(a)(1)(D) (West 1995).

84 *Id.*

85 42 U.S.C. § 4321-4370 (West 1994).

86 42 U.S.C. § 10134(a)(1) (West 1995).

87 42 U.S.C. § 10134(a)(2)(A) (West 1995).

88 42 U.S.C. § 10135(b) (West 1995).

sion of Congress after the submittal, Congress passes a resolution of siting approval.[89]

The Governor and legislature of a State or the authoritative body of a Native American Tribe can only submit a Notice of Disapproval if they did not previously enter into a Benefits Agreement with the Secretary.[90] A Benefits Agreement entitles the State or Native American Tribe where the repository or a Monitored Retrievable Storage (MRS) facility is located to obtain financial payments before and after the spent fuel is received.[91] If Nevada entered into a Benefits Agreement it would receive $10 million before accepting the radioactive waste, $20 million upon receiving the first of the spent fuel, and $20 million annually thereafter until closure of the facility.[92] The downside to entering into a Benefits Agreement is that once entered into, the State or Native American Tribe gives up its right to disapprove the site.[93] Nevada wants to legally challenge the designation of Yucca Mountain as a repository and so did not enter into a Benefits Agreement or receive funding.

If the President recommends a site and its designation becomes effective, NWPA requires DOE to submit an application to NRC for a license permitting construction of the repository.[94] If the application is approved and construction begins, NWPA instructs DOE to apply to NRC for licensing authority to accept waste into the repository and to close the site once the spent fuel and radioactive waste are properly stored inside.[95] Operations at the repository will last for 100 years, during which time the wastes are still retrievable.[96] After this time period, access to the underground storage site will close but above-ground monitoring will continue for 10,000 years. Eventually, the surface facilities at the Yucca Mountain site will be dismantled.[97]

NWPA sets the total amount of high-level radioactive waste allowed to be stored in the repository at 70,000 metric tons.[98] The geologic repository was initially intended only to hold commercial spent fuel. However, this changed in 1985 when President Reagan determined that

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89 42 U.S.C. § 10135(c) (West 1995).

90 42 U.S.C. § 10173(a)(1) (West 1995).

91 42 U.S.C. § 10173 (West 1995); Scott R. Helton, *The Legal Problems of Spent Nuclear Fuel Disposal*, 23 ENERGY L. J. 179, 184 (2002) (MRS was proposed as an offsite interim storage facility. It was designed to serve as a holding location where spent nuclear fuel could be monitored until a permanent disposal solution was found. With the designation of Yucca Mountain as the radioactive waste repository, the MRS system is placed on hold.)

92 42 U.S.C. § 10173(a)(1) (West 1995).

93 *Id.*

94 42 U.S.C. § 10134(b) (West 1995).

95 10 C.F.R. § 63.51 (2002).

96 UNITED STATES DEPARTMENT OF ENERGY, *supra* note 53.

97 10 C.F.R. § 63.52(a) (2002); 10 C.F.R. § 960.4 (2002) (post-closure guidelines).

98 42 U.S.C. § 10134(d) (West 1995).

defense waste should be stored with commercial spent fuel in a single repository.

To pay for the geologic repository NWPA created a Nuclear Waste Fund (NWF).[99] Generators of commercial nuclear power were required to pay a one-time fee based on the amount of electricity generated in a nuclear power reactor prior to April 7, 1983, and an ongoing fee of one-tenth of one cent (one mil) for each kilowatt-hour of electricity produced, which they are allowed to pass on to their customers.[100] The Secretary may review the ongoing fee amount annually and adjust it to cover the federal government's costs of managing civilian spent nuclear fuel.[101] As of August 1997, the NWF through fees collected, interest earned, and payments owed, totaled over $12 billion, of which $4.8 billion was expended on repository related activities.[102] Annually the fee generates approximately $630 million.

In exchange for paying the fee, NWPA requires utilities to enter into contracts with the Secretary for the acceptance and disposal of their spent fuel.[103] The contracts are called *Standard Contracts for Disposal of Spent Nuclear Fuel and/or High-Level Radioactive Waste*[104] and provide that DOE will take title to the spent nuclear fuel as quickly as practicable following the operation of a repository and in return for payment of the fees, will dispose of the spent nuclear fuel not later than January 31, 1998.[105] Because a radioactive waste repository is not expected to be operable until at least 2010, the federal government obviously has not met the January 31, 1998 deadline.

Many states and utilities are concerned about DOE's inability to meet its obligations under NWPA. On May 3, 1995, to address the concerns of nuclear reactor owners, DOE published its Final Interpretation of Nuclear Waste Acceptance Issues.[106] In the Final Interpretation, DOE stated it would not be able to accept spent nuclear fuel by January 31, 1998. DOE concluded it did not have an unconditional statutory or contractual responsibility to accept high-level waste and spent fuel starting January 31, 1998 in the absence of a repository or interim storage facility constructed under NWPA.[107] In response, several utilities and state commissions who paid fees to the NWF sought review of DOE's order. In *Indiana Mich. Power Co. v. Dep't of Energy*,[108] the District of Columbia

99 42 U.S.C. § 10222(d) (West 1995).
100 42 U.S.C. § 10222(a)(2)-(3) (West 1995).
101 42 U.S.C. § 10222(a)(4) (West 1995).
102 H.R. REP. NO. 105-290, pt. 1, at 26 (1997).
103 42 U.S.C. § 10222(a)(5)(A) (West 1995).
104 10 C.F.R. § 961.11 (1983).
105 42 U.S.C. § 10222(a)(5)(B) (West 1995).
106 60 Fed.Reg. 21, 793 (1995).
107 60 Fed.Reg. 21, 793-94 (1995).
108 Indiana, 88 F.3d 1272, 1272-1277 (D.C. Cir. 1996).

Circuit Court of Appeals held that DOE's responsibility to accept radioactive waste was not conditioned on the existence of a repository or other facility.[109] Thus, DOE had a responsibility to start disposing of the radioactive waste no later than January 31, 1998. At the time of the lawsuit, however, DOE had not yet defaulted on its statutory or contractual obligation, so the court declined to designate an appropriate remedy.[110]

Recent cases affirm that the federal government is liable to nuclear utilities for failing to receive their spent radioactive fuel by January 31, 1998.[111] As a result, utilities are engaged in suits against DOE for damages totaling $8.5 billion with total liability projected to reach as high as $40 to $80 billion.[112] This is more than the cost of building the repository and transporting the waste to Yucca Mountain, which is estimated to cost $58 billion.[113]

United States taxpayers, not the utilities, will ultimately pay for nuclear waste disposal. The damages the government owes the utilities will either come out of the NWF[114] (which is payed for by electricity consumers in the form of increased utility rates) or general revenues (which are payed for by United States taxpayers). Even if a repository was completed and ready to accept nuclear waste by January 31, 1998, the transportation of the waste and construction would still be payed for by the NWF. Essentially, the statuory framework of NWPA allows the utilities to receive all the profits of nuclear electricity, while the public receives all the financial burdens and responsibilities of disposing of their radioactive waste.

One outcome of not being able to accept nuclear waste by NWPA's deadline is that spent fuel is piling up at nuclear reactors. State law limits the amount of spent fuel stored on site at many nuclear facilities.[115] If the utilities are unable to give their waste to the federal government for disposal, they may be required to shut down prematurely.

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109 *Id.* at 1277.

110 *Id.*

111 *See* Maine Yankee Atomic Power Co. v. U.S., 225 F.3d 1336, 1343 (Fed. Cir. 2000) (DOE's failure to begin disposal services by specified date constituted breach of contract); Northern States Power Co. v. U.S., 224 F.3d 1361, 1367 (Fed. Cl. 2000) (utilities may maintain their damage suit against DOE for breaching contractual NWPA obligation).

112 Flint, *supra* note 48, at 165.

113 Lawrence O'Rourke, *House Backs Yucca Dump*, SACRAMENTO BEE, May 9, 2002, at A18.

114 There is debate over whether paying damages qualifies as one of the designated legal uses of the NWF. The list of designated uses is located at 42 U.S.C. § 10222(d) (West 1995).

115 Flint, *supra* note 48, at 165.

Lastly, NWPA mandates that the federal government transport the nation's commercial high-level radioactive waste to a federal storage facility, by utilizing private industry to the fullest extent possible.[116]

IV. The Proposed Yucca Mountain Repository

This section discusses the location of Yucca Mountain, the underground design of the facility, the current status of the repository, and Nevada's legal battle against the site.

A. The Site

The repository at Yucca Mountain is located 100 miles north of Las Vegas, Nevada. The nearest neighbor to the site is a legal brothel located eighteen miles away.[117] The site includes part of the Nevada Test Site and the Nellis Air Force Base. The site is also part of the Western Shoshone people's traditional homelands, as recognized by the United States government when it signed the Treaty of Ruby Valley in 1863.[118] DOE spent $6 billion over fifteen years researching the Yucca Mountain repository.[119]

B. The Proposed Repository

The surface buildings of the repository will cover over 150 to 400 acres.[120] Special facilities for receiving, unloading, and handling the containers of spent fuel and high-level radioactive waste will be built along with offices, maintenance and repair shops, and warehouses. The underground facility will be even larger, encompassing approximately 1400 acres.

The repository will contain numerous tunnels drilled deep into a geologic structure, with each of the tunnels containing bore holes into which waste containers will be placed.[121] The site will encompass 150 miles of service and storage tunnels 1400 feet below Yucca Mountain. Spent fuel will be transported to the site and then reloaded into storage containers. 12,000 very large containers of spent fuel from commercial nuclear reactors along with 4500 smaller containers of high-level nuclear weapons production waste would be transported down into the tunnels.[122] Locomotives will pull the containers into the tunnels, and robots would

116 42 U.S.C. § 10157(a)(2) (West 1995).
117 Gerrard, *supra* note 25, at 1077.
118 18 Stat. 689.
119 Sypula, *supra* note 14, at 251.
120 *Id.*
121 *Id.* at 254-55.
122 Luther J. Carter & Thomas H. Pigford, *Getting Yucca Mountain Right*, 54 Bull. Atom. Scientists 56 (Mar.-Apr. 1998).

monitor the site for 100 years. "The containers, made of corrosion-resistant stainless steel and designed to shield radiation from the environment for 1000 years, would provide an extra, engineered barrier to augment the geologic barrier. After the containers are placed into individual bore holes, the holes would be sealed with a liner and closed at the surface."[123]

C. Current Status

On January 10, 2002, Spencer Abraham, the Secretary of Energy, provided Nevada Governor Kenny Guinn a thirty-day advance notice that the Yucca Mountain site would be recommended to the President as the nation's high-level nuclear waste repository.[124] Guinn responded: " I am damn disappointed in this decision and to expect my veto . . . we will fight it in Congress, in the Oval Office, in every regulatory body we can . . . I told the Secretary that I think this decision stinks, the whole process stinks and we'll see him in court."[125] Nonetheless, on February 14, 2002, Secretary Abraham recommended Yucca Mountain as the radioactive waste repository to the President. President Bush officially approved the site on February 15, 2002.[126] Guinn issued a Notice of Disapproval on April 8, 2002, within the sixty days allowed.[127] Congress had ninety days to override the veto for progress at Yucca Mountain to continue. If no vote in Congress occured, or no simple majority was attained in the House of Representatives and the Senate, the veto would stand and DOE would then have six months to come up with a new repository plan and report it to Congress.[128]

On May 8, 2002, the House of Representatives voted 306-117 to approve the creation of the nuclear waste dump at Yucca Mountain.[129] On July 9, 2002, the Senate passed S.J. Res. 34, approving the radioactive

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123 JAMES FLYNN, ONE HUNDRED CENTURIES OF SOLITUDE 22 (1995).

124 Matthew L. Wald, *Nevada Site Urged for Nuclear Dump*, N.Y. TIMES, *at* http://www.courses.wcupa.edu/tlutz/ess102021/nuclear.doc (Jan. 11, 2002).

125 Betsy Tompkins, *Abraham Announces Intent to Recommend Site for Repository; Reactions Abound*, NUCLEAR NEWS, Feb. 2002, at 15.

126 President's Letter to the Speaker of the House and the President of the Senate Recommending Yucca Mountain, 2002 WL 228239 (Feb. 15, 2002).

127 OFFICE OF GOVERNOR KENNY GUINN, NEVADA GOVERNOR GUINN DECLARES "THE BATTLE BEGINS" AS HE VOTES YUCCA MOUNTAIN NUCLEAR DUMP RECOMMENDATION, *at* http://gov.state.nv.us/pr/2002/4-8YUC.htm (Apr. 8, 2002).

128 Suzanne Struglinski, *Yucca Mountain: As Selection Process Continues, So Does; Conflict or Science, Politics*, GREENWIRE, Apr. 2, 2002.

129 O'Rourke, *supra* note 113, at A1.

waste repository at Yucca Mountain.[130] DOE must now file a license application to NRC before it can build and operate the repository.[131]

Nevada is also fighting the Yucca Mountain site in court. The Nevada Protection Fund was established to raise funds to legally challenge the Yucca Mountain repository.[132] The City of Las Vegas contributed $100,000, Nevada gave $4 million, Clark County donated $1 million and a variety of other organizations and cities donated between $1000 and $50,000 each to stop the development of the Yucca Mountain repository.[133] The following is a list of some of the many Yucca Mountain issues Nevada challenged or is challenging:[134] DOE's citing guidelines,[135] NWPA amendments designating Yucca Mountain as the sole location for site review,[136] DOE's Environmental Impact Statement, NRC's decision to issue DOE a construction authorization for a repository, DOE's groundwater permit to construct and operate the site, and EPA's radiation protection standard.

V. Why the Yucca Mountain Repository Should Not Be Approved At This Time

The nation's radioactive waste dump should not be located at Yucca Mountain for the following reasons: transportation risks, human health and safety risks, equity, politics, earthquakes, and volcanic activity.

A. Transportation Risks

Transporting radioactive waste from seventy-three reactor sites throughout the country to Yucca Mountain will create substantial human health and safety and environmental risks. Approximately 100,000 shipments of high-level radioactive waste will be transported through forty-

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130 Greg Gordon, *Senate Approves Yucca Dump Site*, Sacramento Bee, July 10, 2002, at A1.

131 *President Bush and Congress Approve Yucca Mountain as Repository Site*, Nuclear Energy Institute, *at* http://www.nei.org/doc.asp?catnum=2&catid=232 (last visited Sept. 30, 2002).

132 Tompkins, *supra* note 125, at 15.

133 *Id.*

134 Sypula, *supra* note 14, at 256.

135 *See* Nevada v. Watkins, 939 F.2d 710, 719 (9th Cir. 1991); (Nevada requested review of the General Guidelines for the Recommendation of Sites for Nuclear Waste Repositories. The court dismissed Nevada's petition in holding that the guidelines were reviewable only if they constituted a final recommendation of the secretary to build a repository at Yucca Mountain. Therefore, Nevada does not have a cause of action against the secretary for citing criteria until after Yucca Mountain is designated as the radioactive waste repository).

136 *See* Nevada v. Watkins, 914 F.2d 1545, 1545-1564 (9th Cir. 1990); (The Property Clause of the Constitution grants Congress the authority to designate Nevada as the sole site for a potential nuclear waste facility. Additionally, NWPA preempts Nevada's legislative veto of the Secretary's site characterization of Yucca Mountain).

three states over a thirty-year time period to fill the repository.[137] The spent fuel will be placed in nuclear waste transportation casks. The current transportation casks weigh forty tons for road transportation and 100 tons for rail transportation.[138]

The transportation casks were never fully physically tested to transport high-level radioactive waste.[139] In 1987, NRC sponsored a study done by the Lawrence Livermore National Laboratories which used computer modeling to predict cask responses to accident conditions. The study did not incorporate real life, full-scale testing of the casks. In addition, the test criteria relied on traffic volumes, travel speeds, and hazardous cargoes on roads and railroads from the 1960s. Realizing the need for a more adequate study, NRC recently contracted with Sandia National Labs to conduct a new study, titled "Modal II" or the "Package Performance Study." This study will not be complete until 2003. Congress therefore decided the fate of the geologic repository without knowing whether transportation to Yucca Mountain is safe.

Humans and the environment located near high-level radioactive waste transportation routes may be adversely impacted. By the end of 1995, 1300 shipments of spent fuel were made.[140] Four of these shipments involved accidents but the contents of the casks were not released in any of the accidents. It is likely there will be more collisions in the future because train accidents are more common today than in the past.[141] Train accidents increased by fifteen percent between 1999 and 2001.[142] Train derailments increased thirty-two percent between 1998 and 2001. Increased rear-end collisions, faulty equipment, and train crashes with cars, made 2001 the worst railroad safety year in a decade.

In addition to the possibility of an accident, the perceived risk of escaped radiation decreases property values along major nuclear waste routes.[143] In *Texas Electric Service Co. v. Nelon*,[144] a public utility company brought a condemnation proceeding against property owners to acquire an easement as a right-of-way strip for a railroad spur through the property owners' 358-acre peanut farm. The farm was used solely for the production of peanuts, and as a weekend retreat.[145] One of the purposes

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137 PUBLIC CITIZEN, RADIOACTIVE ROADS AND RAILS, *at* http://www.citizen.org/cmep/energy_enviro_nuclear/nuclear_waste/hi-level/transport/index.cfm (last visited May 20, 2002).

138 Fred Bosselman, *Disposal of Radioactive Waste*, A.L.I. 59, 67 (Aug. 13, 1998).

139 PUBLIC CITIZEN, *supra* note 137.

140 Bosselman, *supra* note 138, at 67.

141 Seth Borenstein, *Tracks, Maintenance Suspected in Rising Rail Crashes*, SACRAMENTO BEE, Apr. 25, 2002, at A6.

142 *Id.*

143 Texas Electric Service Co. v. Nelon, 546 S.W.2d 864, 869 (Tex. Ct. App. 1977.)

144 *Id.* at 865-870.

145 *Id.* at 865-866.

of the easement was to carry nuclear waste away from the Comanche Peak generating plant to the main Santa Fe Railroad line.[146] The Texas Court of Appeals upheld the lower court's determination of damages, allowing the property owners to receive an additional $300 per acre, above the fair market value of the land, due to a reduction in their property value based on actual fear or reasonable fear associated with the transportation of radioactive waste.[147] This fear was based in part by the land owners' expert witness who stated that the transportation of nuclear waste across their land, "present[ed] an actual danger from escaped radiation along the ten-mile right-of-way because of the danger of accidents or sabotage along the route."[148] At trial, an additional witness testified that "there was greater diminishment in the value of small tracts near a railroad than in the value of those farther away."[149]

A 1992 New Mexico Supreme Court case reaffirms the notion of reduced property values as a result of public fear associated with the transportation of radioactive waste.[150] In *Santa Fe v. Komis,* the court awarded a couple $337,815 in damages for the perceived loss of their property value due to the public fear of nuclear waste.[151] The City of Santa Fe brought a taking condemnation proceeding against John and Lemonia Koomis, to use their property for the construction of a highway to transport nuclear waste to a Waste Isolation Pilot Project site.[152] The court held that property owners could recover for decreased market value caused by public perception, regardless of whether the public's fear was reasonable.[153]

Citizens living near nuclear waste transportation routes should not foot the bill for decreased property values or for the inability to sell their home as a result of public fear of radioactive waste transport.

B. Human Health and Safety Risks

If the high-level radioactive waste at Yucca Mountain entered the air, drinking water, or food, it would be very dangerous to humans. Water is the most likely vector by which radioactive material could be released from the repository.[154] The rate of migration from the repository to the water table at Yucca Mountain is uncertain. Nevada state scientists believe the time of migration is less than 1000 years but scientists for

146 *Id.*
147 *Id.* at 868.
148 *Id.* at 868-869.
149 *Id.* at 867.
150 Santa Fe v. Komis, 114 N.M. 659, 659 (1992).
151 *Id.* at 661-662.
152 *Id.* at 661.
153 *Id.* at 662.
154 Sypula, *supra* note 14, at 259.

DOE believe the time is many thousands of years. Recent discoveries of chlorine-36 600 feet below the Nevada ground legitimize the Nevada scientists' concerns. The chlorine-36 was left over from nuclear weapons testing in the atmosphere. Precipitation infiltrated the rock and carried the chlorine-36 600 feet below the ground in less than fifty years. This substantiates the theory that Yucca Mountain's rock pores are very fractured and thus radioactive elements can travel from the repository to the water table in a shorter period of time than DOE predicted. DOE responded by saying that even with fast groundwater movement, the movement would dilute any radioactivity in the water table.[155]

If radioactive waste entered the ground water due to an earthquake, volcanic activity, natural geologic changes, or corroded waste canisters, eventually people would be harmed by drinking the contaminated water, eating produce and meat grown with the contaminated water, and drinking milk from cows that were exposed to radiation through their feed and water. The following hypothetical describes the process by which radioactive waste could reach the ground water and impact human health.[156] Based on DOE's 1998 repository performance assessment, a radioactive plume would begin to form within the first 5000 years after the repository closes.[157] The plume would be roughly in the shape of the repository above it. It would reach two and a half miles wide, two miles long, and have a depth of 160 feet. With time, it would become more elongated and move closer to the earth's surface as it followed the aquifer to the south. Traveling at a rate of thirty feet a year, after 7000 years the plume would pass beneath U.S. 95, the highway from Las Vegas to Reno. After 7500 years, the plume would reach the wells in Amargosa Valley. After 11,000 years it would reach Franklin Lake Playa or Alkali Flat where the aquifer nears the surface.[158] Amargosa Valley and Alkali Flat contain wells that are used for irrigation to water alfalfa, which is used to feed cows that deliver more than 30,000 gallons of milk daily to Los Angeles.[159]

Near Alkali Flat, the water would be drawn into the surface environment and atmosphere by the roots of plants and evaporation.[160] Some radioactivity would begin to deposit at or near the surface as solids, subject to dispersion by wind and water. The contaminated soil would blow into the air as dust particles, and people would inhale the contaminated

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155 *Id.* at 260.

156 Carter & Pigford, *supra* note 122, at 56.

157 *Id.*

158 *Id.*

159 Sypula, *supra* note 14, at 259.

160 Carter & Pigford, *supra* note 122, at 56.

soil.[161] The plume, would remain in place for hundreds of thousands of years, with the concentration of contaminants increasing over its forty-mile length as more and more radionuclides travel downward from the repository to the aquifer below.[162]

In 10,000 years, the annual dose from drinking contaminated water from wells three miles from the repository would be approximately 0.02 rem per year.[163] When the dose from eating food contaminated by irrigation water from the wells is added, the total dose would be about 0.13 rem. This is thirteen times the annual dose limit set by NRC two decades ago for persons living near nuclear power plants.[164]

As this example shows, if radioactive waste leaks into the ground water, the health of nearby residents who depend on the aquifer as their sole source of potable water would be adversely impacted.[165] The health of Nevada, California, Utah, and Oregon residents would also be at risk[166] The aquifer under Yucca Mountain is part of the Great Basin, consisting of a large drainage system covering these four states.[167] The harms associated with ingesting and inhaling radioactive materials are discussed in the *Potential Health and Environmental Effects* section of this paper.

C. *Equity*

Nevada is being "singled out as a sacrificial lamb for the nuclear power industry" because the state is politically weak.[168] Nevada is required to store the entire nation's high-level radioactive waste even though it does not generate any nuclear waste.[169] Nevada citizens should not have to bear the radioactive waste burden of the entire nation. The current on-site storage solution for high-level radioactive waste is more equitable because it distributes the waste around the country in the locations where it is produced. Those who derive benefit from commercial nuclear reactors in the form of electricity also feel the environmental burden associated with the nuclear process.

The Yucca Mountain site will inequitably impact the health, safety, economy, and natural environment of Nevada citizens. The health and

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161 Kevin Kamps, *Comments on the Department of Energy's Draft Environmental Impact Statement*, Nuclear Information and Resource Service, *at* http://www.nirs.org/dontwasteamerica//YMDEISComments.htm (Feb. 28, 2000).

162 Carter & Pigford, *supra* note 122, at 57.

163 *Id.*

164 *Id.*

165 PUBLIC CITIZEN, *supra* 137.

166 M. Bakker et al., *Regional Groundwater Modeling of the Yucca Mountain Site Using Analytic Elements*, 226 J. HYDROLOGY 167, 167 (1999).

167 *Id.*

168 SCHOENBAUM & ROSENBERG, *supra* note 11, at 795.

169 *Id.*

safety of Nevada citizens will be placed at risk. All 100,000 shipments of radioactive waste will pass through and stop in Nevada, making transportation risks much greater for Nevada residents. If radiation from the repository contaminates the air, soil, and/or water table, individuals living or working near the site will be harmed to a greater extent than people living farther away from Yucca Mountain. Following the September 11, 2001 terrorist attacks in America, we must also consider that concentrating the nation's high-level radioactive waste in one location may increase the risk of a terrorist attack in Nevada.[170] In the event of a nuclear release, harm to Nevada human health and safety would substantially increase.

Moreover, Nevada citizens are already inequitably impacted by the effects of radioactive waste and research because the nation's nuclear weapons test site is located in their state.[171] More than 900 nuclear tests were conducted at the test site, which is located on the edge of Yucca Mountain.[172] Some Nevada residents suffered diseases as a result of the open-air testing of nuclear weapons in the 1950s and early 1960s.[173] The long history of nuclear testing in Nevada presents another reason why it is inequitable to require Nevada citizens to bear the burden of the nation's nuclear waste.

In addition to adversely impacting human health and safety, a nuclear accident near Las Vegas would stigmatize the area and cause a significant number of tourists to stay away.[174] Even without a nuclear explosion at Yucca Mountain, the mere fact that the area will store nuclear waste will deter visitors. Because of the high profile nature of nuclear waste disposal, and the public fear associated with radioactive waste, a majority of Americans would be aware of and fearful of the Yucca Mountain site.[175] Research shows that individuals are more worried about catastrophic events than ordinary day-to-day risks, even if they have a less chance of occurring.[176] The nuclear industry and regulatory experts argue that the probability of a major nuclear meltdown at a large reactor ranges from "a chance of one in 100,000 to one in a billion per year."[177] Even so, nuclear accidents such as Chernobyl and Three-

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170 Marta Adams & Andrea Nichols, *The Yucca Mountain Fight is Far From Over*, NEV. LAWYER 26 (Feb. 2002).

171 Gerrard, *supra* note 25, at 1077; Scott R. Helton, *The Legal Problems of Spent Nuclear Fuel Disposal*, 23 ENERGY L.J. 179, 184 (2002).

172 *Id.*

173 Gerrard, *supra* note 25, at 1078.

174 *Socioeconomic Issues Associated With a High-Level Radioactive Waste Repository at Yucca Mountain*, *at* http://www.state.nv.us/nucwaste/yucca/socio01.htm (last visited May 20, 2002).

175 *Id.*

176 Sypula, *supra* note 14, at 262.

177 SCHOENBAUM & ROSENBERG, *supra* note 11, at 788.

Mile Island leave prominent images in peoples' minds of the dangers associated with nuclear power.[178] Even if the government and nuclear industry persuade the public that the dangers associated with a repository are small, the severity of the danger will take precedence in most people's risk calculations. As a result, people will be extremely fearful of Yucca Mountain.

If negative nuclear waste perceptions are associated with Nevada, the state will most likely experience a decline in tourism and new industry growth.[179] For every potential casino in Nevada that would change its mind due to Yucca Mountain, the state estimates it will lose 14,200 jobs and approximately $500 million in annual revenue.[180] This is compared to the estimated 3000 to 4000 jobs created by the construction and operation of the repository. Therefore, operating a high-level radioactive waste dump at Yucca Mountain will hurt more than help Nevada's economy.

D. Politics

Politics, not science, drives the Yucca Mountain decision. A recent poll conducted by Mason-Dixon Polling and Research Inc. supports this notion.[181] Sixty-eight percent of Nevada citizens believe the repository will be constructed regardless of what scientific research shows.[182] A good example of Nevada's lack of political power is the 1987 amendment to NWPA, directing DOE to study a repository only at Yucca Mountain, Nevada.[183] It is impossible to scientifically pick the best location for a national geologic repository if you limit the research to only one site.

In 1987, when Sen. Bennett Johnston (D-La.) persuaded the Senate Appropriations Committee to add the NWPA amendments (S- 1668) to an Energy and Water Projects appropriation bill for the 1988 fiscal year (H.R. 2700), Nevada did not have powerful Senate representation.[184] In 1982, Sen. Chic Hecht (R-Nev.) was elected by defeating four-term Sen. Howard Cannon (D-Nev.).[185] Sen. Harry Reid (D-Nev.) became senator when former Sen. Paul Laxalt (R-Nev.), once a governor of the state and friend of Reagan, retired in 1987. Nevada had Hecht and a freshman senator in the Senate the year the NWPA amendments were attached to

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178 *Id.*

179 *Socioeconomic Issues Associated With a High-Level Radioactive Waste Repository at Yucca Mountain*, *supra* note 174.

180 *Id.*

181 Tompkins, *supra* note 125, at 52.

182 *Id.*

183 42 U.S.C. § 10172 (West 1995).

184 Mark E.Rosen, *Nevada v. Watkins: Who Gets the Shaft?*, 10 VA. ENVTL. L.J. 239, 252 (Spring 1991).

185 Struglinski, *supra* note 128.

a larger bill and enacted into law. The fact that the NWPA amendments became part of a larger spending bill made it more difficult for Nevada to stop progress at Yucca Mountain because it made it impossible to measure who voted in favor of or against the site.

Nevada is consistently at a political disadvantage in the radioactive waste disposal process because it only has two representatives. When Congress passed NWPA in 1982, western lawmakers accepted the potential for a repository in their states with the promise that elected officials in the East would be asked to make the same sacrafice. Originally the NWPA envisioned two or more repositories.[186] But in 1985, eastern lawmakers successfully eliminated their states from consideration. The original nine repository sites were located in Louisiana, Mississippi, Utah, Texas, Washington, and Nevada. Louisiana has seven representatives, Mississippi has five representatives, Utah has three representatives, Texas has thirty representatives, and Washington has nine representatives.[187] From the beginning, Nevada was badly outnumbered in the House. When the Secretary of Energy recommended three sites to the President for approval for site characterization, Nevada could not compete against Texas' thirty representatives or Washington's nine representatives.[188]

With only two representatives, Nevada has no chance against representatives from thirty-five states with seventy-three nuclear waste sites who see an opportunity to ship their radioactive waste elsewhere.[189] The majority of nuclear reactors are located in eastern states.[190] To no surprise many of the biggest Yucca Mountain supporters are eastern lawmakers. For example, Speaker of the House Rep. Dennis Hastert (R-Ill.) represents a state with seven nuclear waste sites and is one of the most vocal supporters of Yucca Mountain.[191] Representatives who do not want a high-level radioactive waste dump in their backyard (or state) are the driving forces behind Yucca Mountain, not science.

E. Earthquakes

Yucca Mountain may fail to isolate radioactive high-level waste because it is seismically active.[192] The geologic repository is supposed to be

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186 Mark Sherman, *Nevada Left in the Nuclear Hot Seat*, SACRAMENTO BEE, May 5, 2002, at A9.

187 Jeff Trandahl, *Official Alphabetical List of the House of Representatives of the United States*, Office of the Clerk, *at* http://clerk.house.gov/index.php (Apr. 15, 2002).

188 Sherman, *supra* note 186, at A9.

189 *Id.*

190 NUCLEAR WASTE TECHNICAL REVIEW BOARD, *supra* note 22.

191 Sherman, *supra* note 186, at A9.

192 Kamps, *supra* note 161.

able to withstand the impact of a magnitude six earthquake.[193] It is reasonably possible that a magnitude six or greater earthquake will happen at Yucca Mountain within the next 10,000 years, given the state of stress and the present tectonic activity in the region.[194] Nevada places third, after Alaska and California, as the most earthquake prone state in the nation.[195] In the past twenty-five years, more than 600 earthquakes with magnitudes greater than 2.5 on the Richter scale struck within fifty miles of Yucca Mountain. In June of 1992, a 5.46 earthquake at Little Skull Mountain,[196] located 9.3 miles southeast of Yucca Mountain, seriously damaged DOE's field office.[197]

An earthquake at Yucca Mountain could potentially raise the groundwater level high enough to flood the repository.[198] Evidence shows that in the past, the water table level at Yucca Mountain rose as much as 100 meters higher than its current level. A small earthquake could potentially raise the water table at Yucca Mountain 150 meters, while a severe earthquake could raise the level almost 250 meters, which would flood the repository.[199]

F. Volcanic Activity

Along with the danger of earthquakes, Yucca Mountain is subject to volcanic activity. Volcanic eruptions, twenty miles away, formed Yucca Mountain on adjacent flat land between 7.5 and 15 million years ago.[200] Molten magma erupted into the atmosphere and clouds of ash rolled southward depositing ash, some of it so hot it welded together.[201] Over time, layers and layers of volcanic ash compressed and consolidated to form Yucca Mountain.[202] The subsurface formations at Yucca Mountain consist of heterogeneous layers of anisotropic, fractured volcanic rocks.[203] Thirty-three earthquake faults criss-cross the site.[204] The most recent eruption at the site is estimated to have occurred within the past 20,000

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193 John Bruce Davies & Charles B. Archambeau, *Geohydrological Models and Earthquake Effects at Yucca Mountain, Nevada*, 32 ENVTL. GEOLOGY 23, 32 (Jul. 1997).

194 *Id.*

195 Kamps, *supra* note 161.

196 Davies & Archambeau, *supra* note 193, at 32.

197 Kamps, *supra* note 161.

198 *Id.*

199 *Id.*

200 Helton, *supra* note 91, at 184.

201 *Id.*

202 *Id.*

203 G.S. Bodvarsson et al., *Overview of Scientific Investigations at Yucca Mountain-the Potential Repository for High-Level Nuclear Waste*, 38 J. CONTAMINANT HYDROLOGY 3, 8 (Nov. 1999).

204 Andrew Gumbel, *Bush to Dump Nuclear Waste in Earthquake Zone, at* http://www.earlham.edu/archive/opf-l/March-2002/msg00123.html (Mar. 15, 2002).

years. The possibility of a future eruption(s) is a concern because some of the high-level radioactive waste that would be stored at the site has a half-life of tens of thousands to billions of years.

A lava pocket rests beneath the repository. A line of lava cones extends westward from Yucca Mountain. The youngest cone is closest to Yucca Mountain.[205] The Western Shoshone Nation calls the site "Serpent Swimming Westward" because the crust at Yucca Mountain is expanding westward.[206]

Yucca Mountain has an abundance of crystals with gas trapped inside.[207] The crystals were formed by hot water welling up into the mountain from below. The presence of lava beneath the site could drive hot groundwater up into the repository, flooding the waste casks. The hot water could deteriorate the casks, resulting in steam or chemical explosions within the repository. For the above stated reasons, building the repository at Yucca Mountain will create unjustifiable risks.

VI. Conclusion

The Yucca Mountain repository should not be built at this time due to human health and safety risks, environmental risks, and scientific uncertainty. By limiting radioactive waste disposal research to one site, scientists were precluded from conducting a fair alternatives analysis, making it impossible to know if Yucca Mountain is the best location for a repository. Limiting the options to one site also created an incentive for a repository to be recommended prematurely. After spending many years and billions of taxpayer dollars, policymakers and researchers were more likely to continue the project at Yucca Mountain rather than to stop progress completely and start all over again.

Additionally, NWPA does not encourage a fair discussion of solutions to the nuclear waste disposal problem. Instead of promoting discussion among scientists, policymakers, industry, and the public to truly determine if Yucca Mountain is a good solution to storing radioactive waste, NWPA implicitly supports the site. Rather than analyzing whether a geologic repository should be built in the first place, the statute designates geologic disposal as the nation's solution to spent fuel and sets the date for operation and acceptance of the spent fuel at January 31, 1998.

Very few policymakers probably knew of the risks associated with permanently storing high-level radioactive waste underground when NWPA was passed. As a result, the soonest a repository would be complete is 2010, twelve years after the date required by law. Additionally,

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205 *Id.*

206 *Id.*

207 Kamps, *supra* note 161.

the very utilities that are producing the radioactive waste are collecting damages against the government in the billions of dollars because the Secretary breached its duty under the Standard Contracts for Disposal of Spent Nuclear Fuel.

For these reasons, the Yucca Mountain repository should not be built at this time. Instead, spent fuel should remain in storage pools and dry cask storage at the reactor sites. Once the storage pools fill up, the spent fuel should be stacked in dry cask storage until a sound scientific and moral disposal solution is presented. A repository may be the answer, but only if alternative sites can be analyzed and compared in determining the final location.

A LASTING PROPOSAL FOR ENDANGERED BAY-DELTA FISH SURVIVAL: THE ENVIRONMENTAL WATER ACCOUNT AND THE ACCUMULATION OF WATER CONTRACT RIGHTS IN THE CENTRAL VALLEY PROJECT AND THE STATE WATER PROJECT

*Joshua Harris**

I. INTRODUCTION

In their operation of the Delta export pumps, the water agencies have routinely exceeded the take limits for winter-run salmon and Delta smelt ever since these fish were listed under the Endangered Species Act and the take limits were established. These unconscionable fish kills are threatening the very existence of these species, and are illegal. It is time for these agencies to comply with the law and to give the winter-run salmon and Delta smelt a chance to recover.[1]

The San Francisco Bay-Delta is the center of an on-going struggle to meet California's growing water needs. The competing demands of rapid urban growth, continued economic development, and environmental restoration have caused decades of intense conflict involving farmers, politicians, environmentalists, and business people. In the 1990's, the Bay-Delta water management crisis reached a boiling point, giving rise to a new movement for cooperation among all interested parties. This fresh policy approach culminated in the signing of the CALFED agreement, a historic document that unites the multitude of Bay-Delta-related state and federal agencies under one unified management mandate. While much progress has taken place in the past ten years, Bay-Delta management still has a long path ahead. Among the most difficult tasks, Californians must come up with a durable solution to the continuous conflict between the massive Delta pumps, operated by the Central Valley Project ("CVP") and the State Water Project ("SWP"), and the endangered Delta fish species that are killed or otherwise adversely affected by these pumps.

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[1] Mike Sherwood, *Delta Water Export Pumps Killing Two Protected Fish Species*, (January 11, 2002), *available at* http://www.earthjustice.org/news/display.html [hereinafter Sherwood].

Bay-Delta management, under the authority of the CALFED agreement, have been experimenting with creative methods of operating the pumps in a manner sufficient to meet urban and agricultural needs while at the same time providing water for endangered fish species' ecosystem needs. It is important to keep the pumps working to supply California's agricultural industry with enough reliable water necessary to keep farming viable in the Central Valley. It is equally important to keep water flowing through the Bay-Delta to protect one of California's most valuable resources, our fish. As we shall see, management efforts to satisfy both needs have successfully safeguarded pumping reliability for water users, but have insufficiently protected Delta fish.

To solve the pump/fish dilemma, decision-makers must move towards a long-term rebalance of allocations and use of California's hydrologic resources. Only when a water diversion at the Delta pumps is consistently harmonized with the ecological needs of the Delta will sensitive fish species have a chance to recover. Shortsighted programs that provide insufficient and tentative protection to endangered fish not only place the fish species at ever-increasing risk of extinction, but also threaten California's agricultural water supply reliability goals by increasing the risk of an environmental backlash with extreme reductions in farm water deliveries for Bay-Delta ecosystem recovery purposes. By striving for a feasible, sustainable balance of uses of Bay-Delta water, this paper hopes to ensure that all interested parties' long-term needs and desires are fulfilled. Farmers and environmentalists must consider the consequences of another breakdown of Bay-Delta water management and participate cooperatively in formulating solutions.

To achieve a rebalance of water use, this paper suggest an organized effort to create and locate excess water in the Central Valley, specifically in the two water projects associated with the pumps. These water assets and the contract rights underlying them should be dedicated to Delta fish through permanent, lasting environmental water contracts conversions.[2] Water rights for fish have historically been difficult to obtain in California, but in order to protect both the Delta fish and agriculture's water reliability in the Central Valley, permanent rights may provide the missing piece in the Bay-Delta pump-versus-fish puzzle.

The background of this complex problem is needed to understand the suggested solution. While California water history, development, and current use is a fascinating subject, the background section below represents only a general outline of the most pertinent parts. After the background, we will delve into the possibility of water rights conversions

[2] While the ideas proposed here may or may not be currently feasible — politically, economically, and socially — they are meant to provide a springboard for new perspectives on Bay-Delta pump/fish management.

for Delta fish recovery purposes and the different ways this conversion might be accomplished.

II. BACKGROUND

A. The Setting and Cast – the Bay-Delta Ecosystem, State Water Project (SWP), Central Valley Project (CVP), California Agriculture and Endangered Fish

The Bay-Delta watershed, including the Sacramento and San Joaquin rivers, collectively drain much of California's yearly rainfall, including most flows from the Sierra Nevada Mountains and the Coast Range.[3] The rivers draw water from approximately 39,000 square miles of California and meet at the Sacramento-San Joaquin Delta.[4] Much of the water then turns westward towards the ocean, making its way through the San Francisco Bay, eventually passing under the Golden Gate bridge, and out into the Pacific.

While a portion of the water still follows this age-old path to the ocean, much of it is diverted at the Delta for human use and consumption. At times, up to 70% of the water flowing into the Delta can be pumped out of the Delta and into California's vast system of canals and aqueducts.[5] This pumping occurs at two of humanity's most extraordinary engineering marvels. The Tracey Pumping Plant supplies the CVP with vast quantities of water, while the Harvey O. Banks Pumping Plant, the SWP's pumping facility in the Delta, has more than double the capacity of its counterpart.[6]

The SWP, created in 1960 when California voters approved a $1.75 billion bond issue, has grown to include 32 storage facilities, reservoirs and lakes; 17 pumping plants; three pumping-generating plants; five hydroelectric power plants; and about 660 miles of open canals and pipelines.[7] The California Department of Water Resources manages and operates the SWP with a staff of approximately 2,700 and an annual budget of $1 billion.[8] The project's goals include providing water to its diverse water users, maintaining water quality in the Delta, controlling

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[3] Randy Brown & Wim Kimmerer, *Environmental and Institutional Background for CALFED's Environmental Water Account*, (October 2001) (on file with CALFED Head Office in Sacramento, California) [hereinafter Brown].

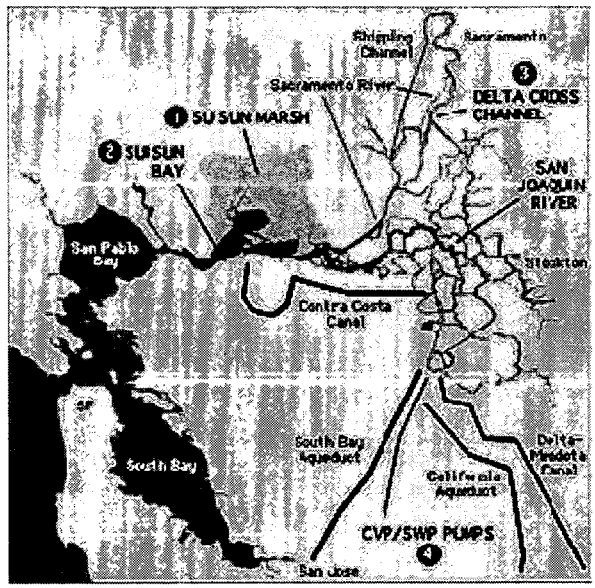
[4] *Id.*

[5] *CALFED Bay-Delta Program, Programmatic Record of Decision* 2 (August 28, 2000) [hereinafter *ROD*].

[6] Brown, *supra* note 3, at 19-23 (stating that SWP capacity is 10,300 cfs, while CVP capacity is 4,600 cfs).

[7] California Department of Water Resources, *State Water Project Overview*, *available at* http://wwwdwr.water.ca.gov/dir-state_water_projectR2/default.html [hereinafter *SWP Overview*].

[8] *Id.*



Source: The Bay Institute

floodwaters, creating recreational activities, and enhancing the ecosystem for fish and wildlife.[9]

The Central Valley Project began as a California state initiative as well, but quickly fell into federal hands. In 1933, almost 30 years prior to the commencement of the SWP, California was eager to expand agriculture in the Central Valley.[10] The California Legislature authorized the sale of $170 million of bonds and the voters approved the measure, but the Great Depression quickly proved too devastating for project survival. The Federal Government stepped in, providing the necessary funds to continue the massive endeavor.[11]

The CVP is now run by the Bureau of Reclamation,[12] an arm of the U.S. Department of Interior, and consists of 18 dams that create reservoirs with a collective capacity of 13 million acre-feet of water.[13] According to the Western Area Power Administration, "the project's 615 miles of canals irrigate an area 400 miles long and 45 miles wide–almost one third of California. Power plants at the dams have an installed capacity of

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9 *Id.*

10 A. DAN TARLOCK ET AL., WATER RESOURCE MANAGEMENT 685 (4th ed. 1993).

11 *Id.* at 685.

12 *Id.* at 651.

13 Western Area Power Association, *Central Valley Project, available at* http://www.wapa.gov/geninfo/ppcv.htm.

more than 2,000 megawatts and provide enough energy for 650,000 people."[14]

The CVP and the SWP, although separate in many respects, operate in conjunction with each other. Certain facilities, including the San Luis Reservoir and over 100 miles of the California Aqueduct, are used cooperatively by both projects.[15] Because of this close relationship, an office housing managers from both projects, called the Joint Operations Center, has been set up in Sacramento.[16] Further cooperative management initiatives are planned for the future.[17]

The two water projects play a major role in providing water for a key component of California's overall economy, the Central Valley farm industry. In fact a full 85% of water diverted by the water projects goes to agricultural uses.[18] Central Valley agriculture has been ranked first in the nation in terms of highest yields per acre and dollar value of farm produce.[19] The Valley is comprised of over eleven million acres of total farmable acreage that produces over 250 varieties of major crops.[20] The area grows over half of the fruit and vegetables consumed by the entire population of the United States.[21] Much of this agricultural activity is totally dependant on water deliveries from the Bay-Delta.

As well as providing the lifeblood to Central Valley agribusiness, the San Francisco Bay/Sacramento-San Joaquin Delta Estuary is "an area of unsurpassed ecological importance for salmon, migratory waterfowl, and a host of other plants and animals."[22] Over 750 species of plants and animal rely on the Bay-Delta for their ecosystem needs.[23] The Bay-Delta

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14 *Id.*

15 United State Department of the Interior, Bureau of Reclamation, *Central Valley Project Homepage*, *available at* http://www.mp.usbr.gov/cvp/ [hereinafter *DOI CVP Homepage*].

16 *Id.*

17 TOOLS TO AUGMENT 2002 CVP ALLOCATIONS, *available at* http://wwwoco.water.ca.gov/calfedops/notes/2002/feb/wtrsply_tools.pdf (outlining the use of joint point of diversion, a coordination/sharing initiative between the SWP and the CVP).

18 AMERICAN OCEANS CAMPAIGN, ESTUARIES ON THE EDGE: THE VITAL LINK BETWEEN LAND AND SEA 233 (March 17, 2002), *available at* http://www.americanoceans.org/issues/pdf/sanfran.pdf [hereinafter AMERICAN OCEANS].

19 *Citizen Net: Central Valley Partnership, Statistics on the Central Valley* (Autumn 1998), *available at* http://www.citizenship.net/resources/valley/statistics.htm.

20 *Id.*

21 *Id.*

22 CALFED BAY DELTA PROGRAM SUMMARY (August 2000), *available at* http://calfed.water.ca.gov/adobe_pdf/2000/program_summary.pdf [hereinafter SUMMARY].

23 *ROD*, *supra* note 5, at 1-2.

is home to approximately 130 fish species, 54 of which rely on the Delta ecosystem for survival.[24]

The Bay-Delta sustains 80 percent of California's commercial fisheries,[25] contributing greatly to California's $159 million fishery economy.[26] Importantly, Chinook salmon used to play a large part in the success of the state's fishery-based economy, but record declines, including a drastic catch decrease of 475,000 pounds between 1988 and 1990, have caused fishermen to look for new sources of revenue.[27]

Among the fish species that depend on the Bay-Delta are eleven species listed as endangered or threatened by the U.S. Fish and Wildlife Service (FWS) and the National Marine Fisheries Services (NMFS) under the Endangered Species Act of 1973 (ESA). Both the winter-run[28] and the spring-run[29] of the aforementioned Sacramento River Basin Chinook salmon are endangered. The Delta smelt[30], a small fish found only in the Delta, is also listed for protection, as are the Sacramento splittail,[31] four runs of Steelhead Trout (Central Valley, Northern California, South Central, and Central Coast ESU's),[32] Tidewater Goby,[33] Coho Salmon (Central California Coast ESU),[34] and California Coastal Chinook Salmon.[35] The Endangered fish can affect pumping activities in significant ways, curtailing SWP/CVP water diversions.

In addition to these species that have been formally recognized under the ESA, other fish species may also be in danger and have been proposed for protection. The Green Sturgeon is currently being evalu-

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24 Sue McClurg, *Water Education Foundation: A Briefing on the Bay-Delta and CALFED* (September 2001), *available at* http://www.water-ed.org/calfeddeltabriefing.asp [hereinafter McClurg].

25 *Id.*

26 U.S. DEPT. OF COMMERCE, FISHERIES OF THE UNITED STATES, at 3 (1993).

27 AMERICAN OCEANS, supra note 18, at 232.

28 Reclassification of the Sacramento River Winter-Run Chinook Salmon From Threatened to Endangered Status, 59 Fed. Reg. 13836 (March 23, 1994).

29 Determination of Threatened Status for Two Chinook Salmon Evolutionarily Significant Units (ESUs) in California, 64 Fed. Reg. 72,960 (Dec. 29, 1999).

30 Determination of Threatened Status for the Delta Smelt, 58 Fed. Reg. 12,854 (Mar. 5, 1993).

31 Determination of Threatened Status for the Sacramento Splittail, 64 Fed. Reg. 5963 (Feb. 8, 1999).

32 Listing of Several Evolutionarily Significant Units of West Coast Steelhead, 63 Fed. Reg. 32996 (June 17, 1998).

33 Determination of Endangered Status for the Tidewater Goby, 59 Fed. Reg. 5494 (Feb. 4, 1994).

34 Listing of the Central California Coast Coho Salmon as Threatened in California, 61 Fed. Reg 59028 (Nov. 20, 1996).

35 Determination of Threatened Status for Two Chinook Salmon Evolutionarily Significant Units (ESUs) in California, 64 Fed. Reg. 72,960 (Dec. 29, 1999).

ated by the NMFS for ESA listing.[36] The Central Valley Fall- and Late Fall-Runs of Chinook Salmon have been named as candidates for listing based on significant risk factors including degraded spawning environments due to agricultural and municipal water activities.[37] As long as fish habitat in the Delta watershed continues to deteriorate, more species are likely to attain threatened or endangered status.

The Bay-Delta ecosystem encompasses a wide geographic area, provides massive amounts of water to California's agriculture industry, and contains many endangered and threatened species. The need to protect and restore the rapidly degrading Bay-Delta ecosystem continues to grow as human water use increases, placing more and more species at risk of permanent extinction.

B. Plot Line and Build-up – Problems For Endangered Fish, Rising conflicts, and Impetus for Change

The Bay-Delta is critically important to California, providing drinking water for two-thirds of Californians and fueling Central Valley agriculture, the most productive farmland in the world.[38] While the diversion of vast quantities of water from the Bay-Delta has been key to California's economy and rapid population growth, the development has not come without cost. As indicated by the number of endangered fish species, the ecosystem of the Bay-Delta is in rapid decline.[39]

Increased water diversions are chief among the dangers for endangered fish species in the Delta. The species of special concern for Delta water management are the four races of Chinook salmon, steelhead trout, delta smelt, Sacramento splittail, and the green sturgeon.[40] Fisheries scientists specifically identify these fish species as the most adversely affected by water project impacts.[41] Specifically, fish are entrained in the pumps and killed. According to John Beuttler of the California Sportfishing Protection Alliance:

The water project pumps in the Delta are like the worlds largest vacuum cleaner sucking billions of young fish and larvae in the southern Delta to their death . . . . The project pumps are so powerful that they frequently reverse the natural outflow patterns of the Sacramento and

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[36] Notice of Determination: Endangered and Threatened Species: 90-Day Finding for a Petition to List North American Green Sturgeon as Threatened or Endangered under the Endangered Species Act, 66 Fed. Reg. at 64793 (Dec. 14, 2001).

[37] Endangered and Threatened Species: Threatened Status for Two Chinook Salmon Evolutionarily Significant Units (ESUs) in California, 64 Fed. Reg. at 50394 (Sept. 16, 1999).

[38] *ROD*, *supra* note 5, at 1-2.

[39] Sherwood, *supra* note 1.

[40] Brown, *supra* note 3, at 24.

[41] *Id.* at 3.

San Joaquin Rivers, which results in chaos for the estuary's ecosystem and fisheries.[42]

Delta pumping not only kills fish directly, it creates havoc in the ecosystem. The massive flow reversals within the Delta region and increased salinity levels in Delta waters create a challenging environment for adult spawning fish and for migrating juvenile fish.[43] For the four races of Chinook salmon, "water project operations can affect streamflow, temperature, and sediment loading, all factors that affect salmon movement and survival."[44] The salmon are most in danger during spawning and out-migration periods.[45] Less is known about steelhead and splittail species, but Delta management agencies believe that they are affected by pumping activities in ways similar to the Chinook salmon.[46]

Unlike the anadromous species, the Delta Smelt remain in the Delta area all year long, making it more vulnerable to project operations. Delta smelt are negatively affected by degraded Delta hydrology.[47] Reduced ecosystem functioning due to pumping activities, including impeded flushing of the Delta waters and subsequent higher retention levels of pollutants, causes disruption to food availability and habitat for the Delta Smelt.[48]

Other negative effects of the Delta pumps included exposure of endangered fish species to increase predation from other fish.[49] When juvenile fish become disoriented and stray from their natural paths due to current reversals caused by the pumps, other, larger fish prey on the exposed fish. Additionally, fish are continually lost in the salvage process, when fish managers collect fish that survived a trip though the pumps from canals in order to put them back into the Bay-Delta.[50]

Even with the identification of adverse impacts on endangered Delta fish species, the pumping activities continue:

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[42] Sherwood, *supra* note 1 (quoting John Beuttler of the California Sportfishing Protection Alliance).

[43] Holly Doremus, *Water, Population Growth, and Endangered Species in the West*, 72 U. COLO. L. REV. 361, Spring 2001 [hereinafter Doremus].

[44] Brown, *supra* note 3, at 28.

[45] *Id.*

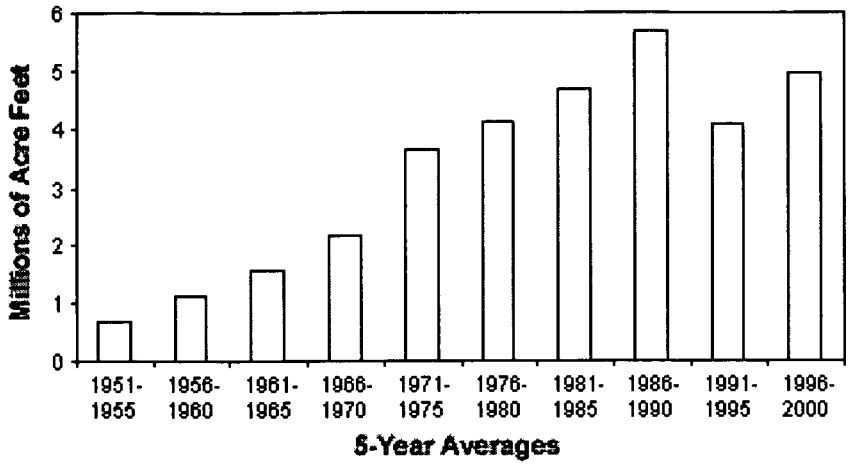
[46] *Id.* at 36-40.

[47] *Id.* at 38.

[48] AMERICAN OCEANS, *supra* note 18, at 233-234.

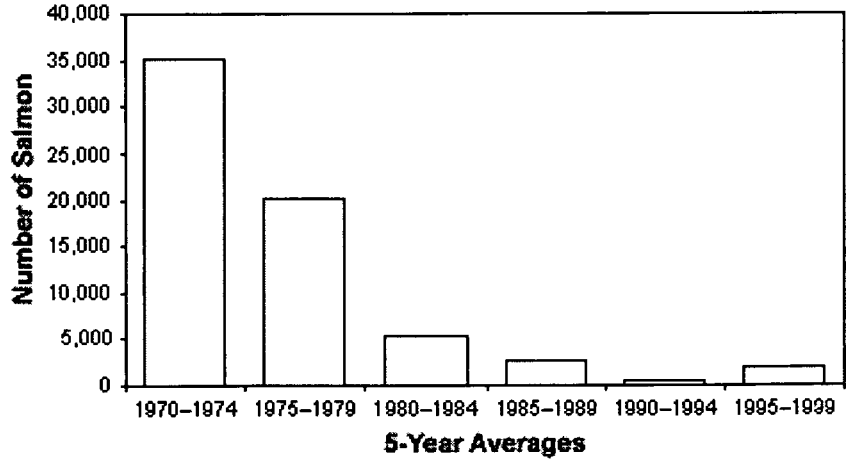
[49] McClurg, *supra* note 24.

[50] *Id.*



Source: California Interagency Ecological Program

As the above graph demonstrates, pumping from the Delta increased dramatically between 1950-1990. The largest increases are partly due to the development of the SWP in the mid-1960's resulting in increased farming opportunities in the Central Valley. The correlation between these diversion increases and the salmon population decreases indicated on the chart below highlight the connection between the pumps and the fish:



Source: California Department of Fish and Game

While many factors played into the decline of the salmon, the Bay-Delta pumps have played a major role in the decline of the Delta ecosystem and in causing the near extinction of many species of fish.[51]

With more fish in danger, water export deliveries by the CVP/SWP have become more unreliable. Laws protecting species listed under the Endangered Species Act caused pumping to stop at critical time for the fish, eliminating water project exporting for temporary periods at very short notice.[52] "As other fish have been added to the endangered species list, the window for CVP and SWP export pumps has narrowed."[53] As the window narrows more and more, water exports are curtailed causing extreme hardship to Central Valley farmers and others.

Adding to the curtailment of farm water deliveries, the Central Valley Project Improvement Act (CVPIA) dedicated 800,000 acre-feet of water annually to fish and wildlife restoration purposes.[54] The CVPIA represents the federal government's efforts to stave off further environmental destruction. Unfortunately for agriculture interests, the 800,000 acre-feet of water must come from somewhere and often farmers are being asked to manage their crops with less reliable water allocations.[55]

With the stress on the system increasing and the demand for exported water unrelenting, the stakes grow progressively higher.[56] "Efforts to protect endangered fish have led to restrictions on water project operations and increases in fresh water outflow; both actions have sparked controversy."[57]

Conflicting managerial mandates caused inefficiencies that have compounded the water shortage problems, adding to the Bay-Delta difficulties. During the 1980's and early in the 1990's, the Delta system was managed by a variety of laws, accords, and judicial decisions implemented by different state and federal agencies. Water quality standards issued by the State Water Resources Control Board (discussed in depth below), the aforementioned fish protection measures mandated by the United States Congress in the CVPIA and by the ESA regulated by the FWS and NMFS all contributed to the management framework sur-

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51 AMERICAN OCEANS, *supra* note 18, at 233.

52 DEPARTMENT OF WATER RESOURCES, DIVISION OF PLANNING AND LOCAL ASSISTANCE, BULLETIN 160-93, THE CALIFORNIA WATER PLAN UPDATE (October 1994), *available at* http://rubicon.water.ca.gov/exsum/esch1.html.

53 McClurg, *supra* note 24.

54 U.S. BUREAU OF RECLAMATION, *CVPIA Homepage* (May 17, 2002), *available at* http://www.mp.usbr.gov/cvpia/.

55 Central Valley Project Improvement Act, Pub. L. No. 102-575, 106 Stat. 4600, (1992). *See also*, *DOI CVP Homepage*, *supra* note 15.

56 Doremus, supra note 43, at 375-376.

57 McClurg, *supra* note 24.

rounding the survival and protection of fish populations in the Delta.[58] While some of these programs helped the ecosystem and fish, continual conflict over the interpretation and implementation of the various mandates caused repeated fish kills in excess of the water projects permits and years of Bay-Delta habitat degradation.[59]

Among the most important controversies in the management of the Bay-Delta resource, water quality standards epitomize the difficulties presented by the lack of coordination among the multitude of state and federal actors and laws that contribute to the estuary's functioning in the later part of the century. Water quality in the Bay-Delta hinges on a variety of important factors, including salinity barriers. To stave off salinity barriers, water exports are decreased to allow fresh water to push out the salt water. In 1978, the State Water Resources Control Board issued a decision, D-1485, setting water salinity standards for Suisun Marsh, a brackish area of the Delta.[60] While this decision clearly defined restrictions on both the CVP and the SWP,[61] the U.S. Bureau of Reclamation, charged with the operation of the CVP, refused to adhere to state mandated water quality standards.[62]

After a period of negotiations, the State Water Resources Control Board finally sued the United States. The Bureau argued that federal preemption allowed the CVP to operate under its own standards, while the Board contended that all water contracts issued in California should conform to the water quality standards under state law.[63] In 1986, in a famous decision, the court held that the Board prevailed on the preemption issue, but at the same time, the court ordered the Board to reconsider project restrictions based on all water users in the system and not simply focusing exclusively on the SWP/CVP.

The State Water Resources Board then restudied and revised its standards over another period of years only to be told in 1993 by the EPA that its revisions did not adequately protect fish.[64] Finally in 1994, all of the parties sat down and formed an agreement, the Bay-Delta Accord, which was followed by the signing of the Bay-Delta Water Quality

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58 Joseph L. Sax, *The New Age of Environmentalism*, 41 WASHBURN L.J. 1, 3-4 (Fall 2001).

59 Christina Swanson, *The First Annual State of the Environmental Water Account Report* 4 (Sept. 2001), *available at* http://www.bay.org/science/EWA01-4.pdf [hereinafter Swanson].

60 STATE WATER RESOURCES CONTROL BOARD D-1485 (on file at the State Water Resources Control Board) [hereinafter SWRCB D-1485]. *See also*, U.S. v. SWRCB, 182 Cal. App.3d 82, 107 (1986).

61 SWRCB D-1485.

62 U.S. v. SWRCB, 182 Cal. App. 3d 82 (Cal. App. 1986)

63 *Id.*

64 STATE WATER RESOURCES CONTROL BOARD PROPOSED RULE D-1630.

Control Plan a year later.[65] Even as agreements have been signed, resolution of the conflict over who is going to provide the water for salinity control persists as the CVP/SWP pressure water users north of the Delta to reduce their diversions instead of relying on reductions in project deliveries for all of the necessary water.[66]

To resolve all of the controversies over managerial conflicts and the general water shortage, many changes needed to be made, both in project operations and in ideology. Changes to Delta water management ideology began to occur in the late 1980's and early 1990's. Between 1987 and 1992, California experienced its second worst drought in history.[67] All the interests that rely on Bay-Delta water suffered during this drought. As the projects reduced exports to farmers and municipalities, fish populations decreased alarmingly.

Many policy-makers, including then-Gov. Pete Wilson, argued that the dramatic developments in the Bay-Delta controversy necessitated an entirely new approach to the problem.[68] The federal government responded with the formation of a cooperative workgroup commonly called Club-FED, consisting of federal Bay-Delta agencies including the U.S. Bureau of Reclamation, the U.S. Fish and Wildlife Service, the National Marine Fisheries Service and EPA.[69] The consolidation of management agencies provided a method to reduce conflicts and increase efficiency in Bay-Delta decision-making.[70]

Club-FED eventually became the framework for a much broader state-federal cooperative management group. In June 1994, state and federal government officials formalized their cooperative efforts in signing a framework agreement.[71] The officials agreed to coordinate CVP/SWP pumping actions to protect endangered species and to begin to create long-term solutions to problems in the Bay-Delta Estuary.[72]

Soon after the signing of the Framework agreement, the state and federal lead agencies signed the more formal 1994 Bay-Delta Accord. Importantly, the various signatory agencies undertook a comprehensive effort to solve Bay-Delta conflicts and management problems. The program became known as CALFED.

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65 *CALFED Bay-Delta Program History*, *available at* http://calfed.ca.gov/About-Calfed/ProgramHistory.shtml.

66 STATE WATER RESOURCES CONTROL BOARD, ORDER WR 2001-05, ORDER STAYING AND DISMISSING PHASE 8 OF THE BAY-DELTA WATER RIGHTS HEARING AND AMENDING REVISED DECISION 1641 (April 26, 2001).

67 McClurg, *supra* note 24.

68 *Id.*

69 *Id.*

70 *Id*

71 *CALFED Bay-Delta Program Overview*, (Oct. 22, 1998), *available at* http://calfed.ca.gov/general/overview/html [hereinafter *Overview*].

72 *Id.*

C. Denouement — CALFED - A Badly Needed Ecosystem Management Solution

The mission of the CALFED Bay-Delta Program is to develop a long-term comprehensive plan that will restore ecological health and improve water management for beneficial uses of the Bay-Delta system.[73]

In signing the CALFED Record of Decision (ROD) on August 28, 2000, the major players in California water management took a historic step towards a realistic, long-term, ecosystem-wide plan for balanced use of one of the most valued resources in the West — water.[74] CALFED is a collaborative coalition of over 20 federal and state agencies assembled to coordinate the management of California's complicated Bay-Delta watershed.[75]

The CALFED program is designed to unify managerial mandates in order to reduce problems caused by overlapping, contradicting, and/or insufficient directives pertaining to the control of Bay-Delta waters and the protection of imperiled fish species. According to Professor Sax, in the "new era" of ecosystem management, watershed wide decision-making will give rise to efficient, lasting, and balanced solutions.[76] CALFED's central document, the ROD, lays out four expansive goals: 1) provide reliable water supply for agriculture and cities; 2) improve water quality; 3) control flooding; and most importantly for our purposes 4) restore the Sacramento-San Joaquin ecosystem, including the Bay-Delta, and the fish runs that live and breed there.[77] CALFED's broad goals reflect the optimism felt by many for this cooperative, system-wide effort towards resolution of California's water conflicts.

CALFED has taken on an enormous task with great expectations from all involved. In an attempt to live up to these high expectations, CALFED officials incorporated many management innovations into their plan. CALFED agencies have agreed to a flexible management approach incorporating "a high level of stake-holder participation," the concept of scientific adaptive management, and a phased approach to the implementation of new policies and programs.[78] This commendable component of flexibility emphasized in CALFED ideology reflects a respect for the experimental nature of the massive endeavor CALFED has undertaken.

In addition, CALFED agencies have identified six solution principles to guide decision-making on an on-going basis. Solutions should be

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[73] *ROD*, *supra* note 5, at 9.
[74] *See* Sax, *supra* note 58, at 3-4.
[75] *ROD*, *supra* note 5, at 1.
[76] Sax, *supra* note 58, at 4.
[77] *ROD*, *supra* note 5, at 2.
[78] *ROD*, *supra* note 5, at 3-5.

affordable, equitable, implementable, durable, able to reduce conflicts in the system, and they should cause no significant redirected impacts.[79] These solution principles will provide management agencies with guidance for decisions not yet faced or even understood.

CALFED is an invaluable contribution to ecosystem management for the 21st century. In unifying management of the Bay-Delta system, setting forth clear goals, requiring future flexibility, and structuring decision-making around solid solution principles, CALFED has given Californians a framework with which they may work towards a realistic, long-term resolution of the Bay-Delta water conflicts.

III. Environmental Water Account

Among the most experimental components of CALFED, the Environmental Water Account ("EWA") was hailed as an innovative solution to the vexing problem of providing adequate water for the environment while not limiting water for agricultural purposes.[80] The EWA is a flexible tool that purchases, borrows, shifts, and strategically manages water throughout the watershed in order to provide healthy habitat for fish populations at critical times.[81] The EWA's goal is to provide water for fish "without the need to reduce project deliveries."[82] Despite the widespread optimism at its inception, after a year of EWA operations, a chorus of suggestions for improvements resounds.

The EWA is a key element of CALFED's water management plan.[83] It utilizes a block of water, approximately 380,000 acre-feet per year, to flexibly meet the needs of endangered species in the Bay-Delta.[84] Ideally the creative acquisition and use of EWA water will not reduce water deliveries to water contractors south of the Delta, the customers serviced by water from the pumps.[85] While the EWA involves much less total water than some other Delta watershed programs, such as the CVPIA's 800,000 acre-feet per year, the EWA's importance lies in its flexibility and its ability to make pumping curtailment decisions in real-time.[86] The EWA is meant to augment water availability to fish at critical times and fine-tune the balanced management of the Delta ecosystem and the

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79 Summary, *supra* note 22, at 6.

80 Barton H. Thompson, *Markets for Nature*, 25 Wm. & Mary Envtl. L. & Pol'y Rev. 261, 314 (Winter 2000).

81 Summary, *supra* note 22, at 14.

82 *Id.*

83 Brown, *supra* note 3, at 3.

84 *ROD*, *supra* note 5, at 58. *See also* Cynthia Koehler, *Putting It Back Together: Making Ecosystem Restoration Work* 64 (June 2001), *available at* http://www.savesfbay.org/putting.html [hereinafter Koehler].

85 *ROD*, *supra* note 5, at 54-55

86 Summary, *supra* note 22, at 14. Koehler, *supra* note 84, at 64.

SWP/CVP pumps.[87] If achieved, a functional EWA program may bridge the gap between on-going water reclamation activities and the restoration of fisheries in the Delta.

The EWA operates in a tiered system. The first tier described in the EWA system consists of baseline water and no EWA water is used.[88] The water flowing through the system designated as the baseline includes unallocated water, CVPIA water, and water needed to fulfill the terms of the Water Quality Control Plan and ESA fish protection measures.[89] The second tier of water is mainly EWA water.[90] The EWA water is meant to fulfill the needs of imperiled fish when the baseline water becomes temporarily inadequate. Third tier water remains somewhat enigmatic. CALFED has committed to providing additional water if tier 1 and tier 2 water are inadequate for fishery protection and restoration purposes.[91] CALFED has generally failed to state where this water will come from.[92] Most assume that the water will be purchased at market rates.[93]

EWA water is used to protect fish in the Delta in a variety of ways. Most importantly, EWA managers can ask for pumping reductions at critical times for Delta fish.[94] While exports at the pumps are curtailed, stored EWA water replaces supplies the contractors would otherwise have lost.[95] The contractors receive their "no net loss" guarantees in this way. By reducing pumping activities, fewer fish are killed in the pumps themselves, fewer fish are threatened and eaten by predator fish in the forebay and surrounding waters, and fewer fish are lost in the salvage process.[96]

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87 SUMMARY, *supra* note 22, at 14.

88 *ROD*, *supra* note 5, at 57.

89 *ROD*, *supra* note 5, at 57

90 Also included in Tier 2 is water from the Ecosystem Restoration Program (ERP). The ERP is a separate CALFED program with similar goals, though less focused on problems directly in the Bay-Delta region. "Through the EWP, the CALFED agencies will: improve salmon spawning and juvenile survival in upstream tributaries . . . by purchasing up to 100,000 acre feet of water per year." *CALFED Environmental Water Program*, *available at* http://www.calfedewp.org/about.html.

91 *ROD*, *supra* note 5, at 57.

92 Consider the language in the ROD that states: "Tier 3 is based upon the commitment and ability of CALFED Agencies to make additional water available should it be needed. It is unlikely that assets beyond those in Tier 1 and Tier 2 will be needed to meet ESA requirements." ROD, *supra* note 5, at 58. The assets for Tier 3 water are not identified and therefore the promise of tier 3 water availability is left without water to fulfill it.

93 Brown, *supra* note 3, at 3.

94 *CALFED Bay Delta Program's Environmental Water Account Facts and Background*, *available at* http://www.calfed.water.ca.gov/programs/ewa/FactSheet.html [hereafter *Fact sheet*].

95 *Id.*

96 McClurg, *supra* note 24.

EWA water can also be used to increase flows in certain streams during critical times for anadromous fish by augmenting releases from up-stream dam facilities. The water can help to provide adequate conditions in tributaries for successful spawning and egg incubation.[97] EWA water can also facilitate the outflow of juvenile salmon by maintaining natural Delta flow and current patterns. Much of these needs are theoretically met by tier 1 baseline conditions, including CVPIA water, but the EWA is designed to add to these flows when and where needed.

Finally, EWA water can be used to affect Delta flow patterns with the goal of minimizing misdirection of fish as they navigate the Delta.[98] Because the pumps can alter net flow patterns in the Delta, fish can literally get sucked towards the pumps. EWA, in concert with tier 1 water, can help to reduce these ecologically adverse occurrences.

The EWA acquires its water assets in a variety of ways. First and foremost, EWA water comes from direct purchase agreements with willing buyers.[99] CALFED projected that the EWA will need to purchase approximately 185,000 of the 380,000 acre-feet of water every year.[100] Second, the EWA will acquire "variable assets" by using various managerial strategies, including increased SWP/CVP pumping activities during ecologically non-critical times in order to store water for future use.[101] This second method can involve the temporary relaxation of water quality standards within the Delta.[102] Third, the EWA can borrow water using stored EWA water as collateral.[103] Some of the debts may be forgiven during especially wet years.[104]

In addition, CALFED agencies specifically intended to endow the EWA account with a one-time allocation of 200,000 acre-feet of water before the first year of operations.[105] This water is meant to provide EWA managers a backdrop source of water for repaying water loans accrued during the water year and for other EWA activities, including emergency allocations.[106] This water was not signed over to the EWA before the first year of operations.[107]

Management and operational responsibility of the EWA is shared by state and federal agencies. Fishery agencies (U.S. Fish and Wildlife Service, National Marine Fisheries Service, and California Department of

97 Swanson, *supra* note 59, at 16.
98 *Id.* at 17.
99 *ROD*, *supra* note 5, at 58.
100 *Id.*
101 *ROD*, *supra* note 5, at 57-58.
102 Brown, *supra* note 3, at 2.
103 *Fact sheet*, supra note 94. *See also*, Swanson, *supra* note 59, at 8.
104 Swanson, *supra* note 59, at 13.
105 *ROD*, *supra* note 5, at 57.
106 *Id.*
107 Swanson, *supra* note 59, at 20.

Fish and Game), along with the stakeholder groups and the CALFED Operations Group, will be directly involved in the allocation of assets.[108] Acquisition of assets is the responsibility of the Bureau of Reclamation and the Department of Water Resources.[109]

Funding for the EWA comes from federal and state governments.[110] During the first seven years, CALFED plans to invest $200 million to set up the EWA.[111] In addition, CALFED officials say the program needs at least $90 million annually to successfully acquire needed water assets.[112] Money can be used to fund water purchases, to cover wheeling and power costs and to provide for fish studies and other incidentals.[113] In 2001, the EWA had $59 million at its disposal.[114]

When the full allocation of water is made available to the EWA at the beginning of any given water year, then guarantees are issued to the water projects and their customers.[115] These guarantees state that environmental water needs will not reduce water deliveries to South Delta contractors.[116] EWA managers are then required to use the EWA water assets to best protect all of the endangered species in the Delta for the whole year. The projects are to work with the EWA managers to facilitate the expenditure of EWA water accurately.[117] The project managers however are freed of constraints on pumping activities if fish kills at the pumps spike and EWA water is unavailable.[118] The EWA is meant to cover the endangered fisheries' needs. It is also meant to guarantee consistent deliveries to water contractors without surprise interruptions for fish preservation purposes.

IV. EWA Problems in the first year

In its first year of implementation, water year 2001, the EWA failed to live up to its high expectations of balanced protections. In fact, the guarantees issued to project contractors in reliance on EWA water allowed, even dictated, a record loss of winter-run salmon at the pumps. The water users received their water reliability, but the ecosystem suffered.

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108 *ROD*, *supra* note 5, at 55.

109 *Id.*

110 *Id.*

111 McClurg, *supra* note 24.

112 CALFED EWA Finance Plan (December, 12, 2000), *available at* http://calfed.ca.gov/adobe_pdf/rod/EWA_Finance_Plan.pdf.

113 Swanson, *supra* note 59, at 29.

114 *Id.* at 15

115 *ROD*, *supra* note 5, at 57.

116 *Id.*

117 *Fact sheet*, *supra* note 94.

118 *ROD*, *supra* note 5, at 57.

According to the U.S. Bureau of Reclamation, more than 20,000 winter-run salmon were lost in 2001[119] – 170% of what would have been allowed without the EWA guarantees.[120] This unfortunate outcome resulted from a variety of factors.

Many critics point to technical deficiencies in EWA management as the main reason for its inaugural year's insufficiencies.[121] Fish science is still highly imperfect. The record take exceedances of winter-run salmon provide the best example. Insufficient monitoring, modeling, predictions, and analysis all led to an underestimate of migrating juvenile fish populations. This underestimate caused premature use of EWA water resources marked for juvenile salmon protection.[122] The majority of EWA winter-run salmon water was spent on protecting the first group of young fish to arrive in the Delta. When juvenile fish continued to enter the Delta in increased numbers and they began to accumulate around the pump areas, the surprised EWA managers had already used up all of the water earmarked for salmon.[123]

Not being a hydro-technician or an ecologist, I cannot suggest meaningful ways to improve the science behind the decisions made by EWA managers. Instead I wish to address CALFED's underlying policy decisions in creating weak water allocation tools and suggest a means of making the EWA a solid piece of the Bay-Delta puzzle.

While the general principles underlying the program are admirable, the asset accumulation tools the EWA has to work with are insufficient.[124] While the science component may not be easily fixed, EWA managers should have enough water to cover errors when they occur. Looking again at the 2001 winter-run salmon experience, lack of sufficient water resources forced EWA managers into an unenviable corner. When the majority of the salmon finally arrived in the Delta, pumping curtailments could not be sustained because EWA account-managers agreed that

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119 UNITED STATES BUREAU OF RECLAMATION CENTRAL VALLEY OPERATIONS OFFICE FISH REPORT (September 2001), *cited in* Letter from Michael R. Sherwood, Staff Attorney, & Susan Britton, Attorney, to Donald Evans, Secretary of Commerce, et al., Notice of Violation of the Endangered Species Act and of Intent to Sue for Exceedance of Incidental Take Limits for Sacramento River Winter-Run Chinook Salmon and Delta Smelt, and Other Violations 4 (January 10, 2002) *available at* http://www.earthjustice.org/news/documents/DeltaPumps60-day.pdf [hereinafter Sherwood].

120 Sherwood, *supra* note 119.

121 *See* Swanson, *supra* note 59, at 26-27.

122 *Fact sheet*, *supra* note 94.

123 *Id.*

124 Noting that the EWA has only been functioning for one year, I realize that I may be premature with my criticisms. When the EWA comes up for a full re-evaluation in four years, however, it will be useful to have a range of alternatives fleshed out and ready for contemplation side-by-side with the relative successes and failures of the EWA in its infancy. It is for this purpose that I present my ideas.

some water had to be preserved for other actions for other fish later in the year.[125] Tier 1 baseline water could not adequately protect the fish. Tier 2 EWA water became quickly inadequate as well because the water was all used up on the first fish to enter the Delta. According to CALFED, tier 3 water should have been acquired and used.[126] CALFED agencies instead determined that tier 3 water could not be purchased at premium rates because the EWA still had some water in its accounts (this water was specifically reserved for other fish for actions later in the year).[127] From the managers' perspective, however, EWA water for winter-run salmon had been used to its fullest extent. Pumping ramped up to usual levels and the fish kill continued.[128] To avoid these types of situations in the future, EWA managers need ready access to a continuous source of water assets.

V. EWA AS A CONTRACT RIGHT HOLDER IN THE CENTRAL VALLEY PROJECT AND THE STATE WATER PROJECT

The EWA must become a solid and growing account of water rights rather than a revolving door of tentative and uncertain water allocations and purchases. By utilizing California law and by encouraging participation from all stakeholders, CALFED agencies charged with EWA management can accumulate adequate and appropriate rights that will provide a constant reserve of water for effective fishery conservation. In shifting some rights from agricultural to environmental purposes, a sustainable balance of use will emerge, creating the means to issue real, long-term guarantees to farmers.[129]

The stated purpose of the EWA is two-fold: to provide water for fish restoration so as to increase water reliability to Central Valley water users. To accomplish the first fish restoration prong, the EWA program needs to gradually accumulate water contract rights for Bay-Delta fish. Building a consistent reserve of water within the CVP/SWP will give EWA managers the ability to face critical situations with readily available resources. With this water at their disposal, these managers will be able to curtail pumping when necessary and avoid negative impacts on

125 Swanson, *supra* note 59, at 27-29.
126 *ROD*, *supra* note 5, at 58.
127 Swanson, *supra* note 59, at 30.
128 *Id.*
129 As outlined by CALFED's six solution principles mentioned above — affordability, equity, implementability, durability, reduction of conflicts in the system, and no significant redirected impacts — CALFED agencies must use a cooperative, pragmatic, and fair problem-solving approach in coming up with new programs. ROD, *supra* note 5, at 3. With this approach clearly in mind, we turn towards a rethinking of the EWA as an account that ensures a future that is beneficial for the Delta ecosystem and all the fish that live within, while shoring up long-term reliability interests for project contractors in the Central Valley.

ecosystem health and/or fish populations of the type we saw in water year 2001.

To achieve truly long-term water reliability for the Central Valley, a realistic balance of uses must take shape. Current lawsuits show the fragility of the CALFED accord and cooperative coalition.[130] If farmers really want to count on continual deliveries for generations to come, they must be willing to be a part of the solution to fish protection in the Delta. If CALFED falls into disarray, then the farmers "guarantees" will guarantee them nothing but more lawsuits and a return to years of the sporadic reductions in water deliveries to the Central Valley.

The CALFED ROD did not go far enough in providing water for EWA operations. A flat guarantee of no reductions to Central Valley interests is unrealistic and will eventually lead to another irresolvable conflict of allocations.

Many of the problems in the first year of EWA implementation stem from unreliable water assets. If water assets had been secure, then EWA managers would have been able to aggressively curtail pumping when endangered fish persisted near the pumps. With a build-up of rights in the CVP/SWP, EWA managers would have a stable "income" of water every year. With a reliable source of water, the EWA program will be able to more effectively protect Delta fish. By ensuring the continual protection of Delta fish, EWA contract rights would eventually provide Central Valley water users with real guarantees of reliable water in the form of healthy Delta fish populations.

The EWA water rights would be in the SWP/CVP system, only the water would be EWA water. Instead of not pumping the water previously used to satisfy Central Valley needs, the water would still be pumped, transported and stored. The water from the EWA contract right would be used as designated by EWA managers to compensate for pumping curtailments during critical times for fish in Delta. Under an EWA water rights system, mistaken management or science decisions will not cause record fish kills. Instead these types of mistakes would only cause reductions in overall EWA water resources.

As the EWA stands now, the tools designed to endow the program with enough water for the year will not always yield expected amounts.[131] Fish restoration managers will face difficult decisions in light of shortfalls, decisions of the type the EWA was initially designed to avoid. The EWA should not take the form of a regulatory bank account with varying deposits in and withdraws out. This system of funding the EWA is too tenuous; it relies too greatly on government's continued funding and on the natural conditions of the watershed during each particular

130 *See* Sherwood, *supra* note 119.
131 *ROD*, *supra* note 5, at 58 n4.

year. If these two sources of EWA water income fail, both the farmer's guarantees of reliable water and the ecosystem restoration objectives will suffer immeasurably.

The EWA, despite its flaws, is generally a valuable program for CALFED's restoration goals and purposes. By re-scoping the EWA, it can become a powerful program that benefits both farmers and fish in the long term.

A. Opposition, Legal Distinctions, and Section §1707

The idea of environmental water rights for fish protection purposes will meet a deluge of strident opposition. A major stumbling block in the way of establishing environmental water rights has been California's reluctance to recognize in-stream water rights, rights that reserve water for fish and simply leave the water to take its natural path. In-stream rights for fish are not fully recognized by California water law.

Case law shows that the appropriative system of water rights requires users to divert the water from its place of natural occurrence in order to perfect his/her right.[132] In a 1979 case, the California Court of Appeals made it clear that in-stream water rights are statutorily invalid.[133] The Court held, "that every application for a permit to appropriate water shall set forth, inter alia, the location of and description of the proposed headworks, ditch, canal, and other works, the proposed place of diversion, and the time within which it is proposed to begin and to complete construction."[134] The *Caltrout* decision stymied environmental groups' efforts to expand protectable flow levels in sensitive streams and rivers.

Caltrout was decided before the designation of many of California fish species as endangered or threatened. New attitudes towards water management include a higher priority for fish and the environment.[135] A carte blanche for in-stream rights for environmental uses in California, however, is still impossible. Because the establishment of in-stream, environmental rights would require no significant investment from environmental groups, all remaining unappropriated water in California could be claimed for fish, arresting growth and dramatically affecting the water market.[136]

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132 This diversion is in fact the very reason for the adoption of appropriative system in California, as miners high in the Sierra began to need water farther and farther away from streams and rivers.

133 California Trout, Inc. v. SWRCB, 153 Cal. Rptr. 672 (Ct. App. 1979).

134 *Id.* at 820.

135 *See ROD*, *supra* note 5, at 2.

136 Gregory A. Thomas, *Conserving Aquatic Biodiversity : A Critical Comparison of Legal Tools for Augmenting Streamflows in California*, 15 STAN. ENVTL L.J. 3, 21 (Jan. 1996).

Although arguments based on the *Caltrout* decision could be used to argue against EWA environmental water rights, there are three important distinctions between the *Caltrout* types of rights and the EWA rights proposed here.

First, the overall CALFED backdrop to the EWA's establishment of contract rights allows CALFED agencies to operate with wide latitude. Indeed the whole idea behind the organization of CALFED was to get away from statute and precedent driven decision-making. CALFED stands for the principle that the resolution of California's water problems lies in conflict resolution through negotiations and creative re-thinking of water management. Within this initiative lies a great amount of leeway for solutions that will benefit all parties.

Second, EWA water rights in the CVP/SWP avoid *Caltrout*-type problems because they are not in-stream rights per se. EWA rights would be contract rights, bought, paid for, and maintained by EWA agencies. These contract rights require investment and continual payments for deliveries, thus eliminating the concerns that environmentalists could freely claim all remaining water in California.

Third, California law has changed since the *Caltrout* decision. Most importantly, California enacted Water Code §1707. Section 1707 allows water rights owners to dedicate portions of their water to environmental uses.[137] The §1707-dedicated waters are then protected in their natural course and function to benefit ecosystems and fish. The §1707 concept and law could provide the legal avenue for CALFED to acquire contract rights for the EWA program.

The principle behind §1707 is to encourage environmental stewardship and conservation by farmers. Instead of facing a future of completely losing their rights to the water in the case of a major environmental catastrophe or completely losing their right to farm portions of their land as with current land retirement programs, §1707 asks farmers to participate in proactive solutions by dedicating part of their water to environmental uses. When the legislature passed §1707, many did not realize the potential results of this statute. §1707 creates the ability to transform existing water rights to in-stream environmental rights, an impossible task prior to the passage of §1707.

By encouraging §1707 dedications from CVP/SWP users specifically for use in its account, the EWA could begin to carve out a portion of reliable water for fish protection. EWA would need to accumulate its rights in a gradual, non-assertive manner to avoid massive opposition and a breakdown of cooperation between fish managers and water users. EWA would be able to encourage dedications to its fund in two ways: 1)

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[137] CAL. WATER CODE § 1707.

subsidize efficiency equipment for farmers; 2) promote awareness and ownership of environmental solutions among farm communities coupled with annual water rights drives.

Although opposition is inevitable, the background principles of the CALFED program combined with the untested nature of environmental contract water rights, and §1707 will allow the EWA to achieve the acquisition of rights within the CVP/SWP systems.

B. Efficiency Measures

By funding water use efficiency measures in the urban, agricultural and project context, CALFED hopes to reduce demands on California water. As described in the CALFED ROD, "a water use efficiency program of this magnitude is aggressive and unprecedented nationally."[138] By selectively linking parts of the water use efficiency program with the EWA through §1707 dedications, CALFED will be able to provide consistent resources for the EWA. This would ensure water for the fish in the Bay-Delta and solidify farmer's water rights in the Central Valley.

Ideally, CALFED would set aside a portion of the $1.5-2 billion[139] in the water use efficiency budget for EWA incentive programs. Using money from the efficiency program, Central Valley farmers would implement efficiency measures such as lining irrigation ditches or installing drip irrigation. The farmers then would actively dedicate the water saved to the EWA account.

While the EWA is building up solid reserves of wet water,[140] the farmers also gain. Not only do the farmers receive water conservation equipment at highly subsidized rates or for free, but the Central Valley as a whole will begin to ensure the delivery guarantees it so highly cherishes. By providing water rights to the EWA through cooperative efforts, the farmers will be helping to make CALFED and the EWA long-term successes. Achieving a workable balance of uses must be a primary goal in Bay-Delta management. This balance will create a lasting and stable program of water allocation.

In addition to these benefits, the Central Valley farmers who participate in this program should be recognized for their contributions to the overall health of the state. The Governor will deem these farms "water conservation farms." This status may be used to market products, encourage visitors, or simply give the farmers ownership of the efforts made to help resolve the conflicts over water in California.

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138 *ROD*, *supra* note 5, at 64.

139 *ROD*, *supra* note 5, at 63.

140 Wet water is actual, tangible water existing in the system as opposed to water entitlements that simply exists on paper.

EWA water existing in the CVP/SWP system on an annual basis based on rights established though cooperative efficiency improvements will help to provide the EWA managers with the resources to sustain a successful fish protection/restoration program while at the same time securing long-term assurances to the Central Valley farmers.

C. Promoting Awareness and Ownership of Environmental Solutions Among Farm Communities and Annual Water Rights Drives

The need for collaboration among all interested parties invested in the Bay-Delta watershed has led to high-level cooperation among all of the agencies involved in CALFED. While this is seen as a positive step in the right direction, the mandate of cooperative solutions must be taken to a more powerful level. It must incorporate all of the people who have a stake in the final outcome of the Bay-Delta situation. Instead of instituting all of the changes to the Bay-Delta in a top-down method, CALFED must give farmers the ability to contribute to the solution in significant and lasting ways.

By creating awareness in the Central Valley of the environmental problems facing California's water systems, CALFED may spur the interests of those whose rights are at stake and motivate them to create solutions. With access to community-based solution plans, such as the EWA accumulation of environmental water rights, farmers within the Central Valley may respond with strong contributions to the overall resolution. Ownership over the development of solutions has long been a core principle in creating sustainable changes. Here, farmers must have the means to become part of the solution to the Bay-Delta ecosystem restoration, instead of constantly being regarded as a main cause of the problem.

An annual water rights drive would serve to tie the community-based solutions together. Water rights donated during the drives would be converted to EWA rights to be used accordingly. Throughout the Central Valley, irrigation districts would compete on a per capita basis for the highest level of rights donated. The winning district would gain recognition for being an environmentally friendly community and for being among the communities that are committed to a lasting solution to the water problems.

By turning towards Central Valley farming interests for solution tactics and initiative, CALFED agencies will empower local communities with the knowledge that they are contributing to a resolution. As these communities tighten up their water budgets, they will in turn begin to reap the benefits of real guarantees – long-term guarantees that will only come when a workable balance of water uses comes to fruition.

VI. Conclusion

The EWA will not become a viable, lasting CALFED program until it is sufficiently funded with its own source of guaranteed water. The tentative nature of the EWA as it stands now neither guarantees water reliability to the Central Valley nor fish survival/recovery. By building up water rights in the EWA account, CALFED will be able to fulfill its commitments. By locking in these CVP/SWP contract rights, CALFED will help Central Valley farmers attain long-term water reliability by striking a reasonable and sustainable balance of uses and water allocations. This balance of use will also enhance fish recovery efforts by providing the Bay-Delta ecological system with readily available water to address sensitive fish species needs. The EWA as it stands now represents an inventive approach to a difficult problem. The final fish restoration solution will require adaptations to the original plan, cooperation from all of the stakeholders, and a continued commitment to proactive and lasting program within the CALFED structure. If we succeed in reaching a semblance of harmony, then all participants, including both the fish and the farmers, will win.

RETHINKING THE ENDANGERED SPECIES ACT: MOVING BEYOND CONFLICTS AND PROMOTING POSITIVE EFFORTS FOR CONSERVATION

*Jakki McDonald**

I. INTRODUCTION

Thirty years ago, Congress acted upon a growing concern for resource depletion and species extinction by drafting a species-focused Endangered Species Act (ESA). To emphasize the severity of the national problem, Congress set out to penalize those who harm certain protected species and to mandate protection at all cost. This new law was a wake up call to those involved in rampant development. To the public at large, this Act began a new era of emphasizing the environment in government decisions and private actions. The ESA has changed and expanded over time, as has the environment and public perspective. Unfortunately, the ESA and the political and physical environment have grown apart. It is time to rethink the dated law and make proactive steps towards creating a law that will resolve conflicts and promote positive efforts for conservation. A government that continues to use this worn-out law is like a parent enforcing the same childhood rules rather than helping his or her teenagers grow into adulthood.

The environmental movement of the 1970's sprouted an awareness of the country's depleting natural resources and of increased harm to wildlife. The ESA has expanded over the last three decades to have great effect on all public and private decisions. As citizens come across the ESA mandate in their daily lives, conflicts arise. Citizens directly affected by the law build up resentment and drag their feet to comply. Those not physically, but emotionally affected, respond with resentment and citizen suits. The agencies trapped in the middle, those ultimately responsible, try to avoid lawsuits in carrying out their administrative duties by reacting to complaints from both sides. Meanwhile, the law supports human intervention through regulations that prioritize certain species of natural resources and wildlife over others. The result? Conflict. Unfortunately, the ESA has become the greatest instigator of this conflict. The ESA allows ample opportunity for litigation but provides minimal solutions.

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In order to offer the reader a framework by which to understand this analysis, the discussion begins with some background information about the ESA and its effects on private individuals. The second part of this analysis seeks to unveil the primary problems with the current ESA and identify the conflicts that arise. Due to our country's depletion of its limited natural resources, these conflicts promise not to improve or dissolve, but to worsen. Such a fate is inevitable unless the conflicting sides come together and focus their efforts on resolution instead of litigation. Rather than dwell on the problems and setbacks, this analysis seeks to offer solutions. Therefore, the third part of this analysis discusses existing positive methods for promoting conservation and presents a new solution for biodiversity conservation. My primary goal is to propose a federal environmental law concerned with conserving biodiversity by facilitating conflict resolution and providing positive steps towards effective conservation. The final part of this analysis engages in a comparative analysis between the proposed solutions and the existing ESA policy.

II. Background Information

In an effort to ensure the survival of all species, the federal ESA secures special protection for plant and animal species that are vulnerable to extinction.[1] At the heart of the ESA is Section 9's prohibition against "take."[2] Section 9 makes it unlawful to "harm, harass, pursue, hunt, shoot, wound, kill, trap, capture, or collect" certain federally protected species.[3] Violating the ESA's prohibition of take can lead to criminal and civil penalties.[4]

For federal agencies, the ESA sets a higher standard. Any "action" by a federal government agency, encompassing agency actions or private actions with government involvement, must not be likely to jeopardize the continued existence of a threatened or endangered species.[5] A proposed action would trigger "jeopardy" if such action results in a decrease

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[1] *See* 16 U.S.C. § 1533 (2000) (the Secretary of the Interior shall determine "whether any species is an endangered species or a threatened species because of any of the following factors: the present or threatened destruction, modification, or curtailment of its habitat or range; overutilization for commercial, recreational, scientific, or educational purposes; disease or predation; the inadequacy of existing regulatory mechanisms; or other natural or manmade factors affecting its continued existence").

[2] *See id.* § 1538 (2000).

[3] *See id.* § 1532 (2000); *see id.* § 1538(a)(2) (ESA take prohibition applies to endangered species of animals but does not apply to endangered species of plants). *See also* 50 C.F.R. § 17.3 (2001) (extending ESA take prohibition to threatened species).

[4] *See id.* § 1540 (2000).

[5] *See id.* § 1536(a)(2) (2000) (federal agencies must "insure that all actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of or result in adverse modification of threatened and endangered species").

in the chance of the species' continued existence or in an adverse modification of the critical habitat of a threatened or endangered species.[6] To ensure against jeopardy, the acting agency must first conduct a biological assessment to determine whether its action may affect any endangered or threatened species.[7] Section 7 then requires consultation with the Fish and Wildlife Service (FWS) or National Marine Fisheries Service (NMFS), depending on the species involved.[8] The appropriate Service must address the impact in a report of its biological opinion, which must include "reasonable and prudent" alternatives to any proposed federal action expected to cause jeopardy.[9] The acting agency is ultimately responsible for ensuring compliance with Section 7, and adopts the Service's reasonable and prudent alternative before proceeding with an action that the Service believes will result in jeopardy.[10]

The two ESA provisions addressed above, prohibiting take and jeopardy, have a substantial effect on the actions of private individuals, particularly rural landowners. The take provision obviously disallows hunting and intentional harm to the protected species. However, individuals face the civil and criminal consequences of take even if such harm was done unintentionally and within the context of normal agricultural practices. The take provision can put an end to otherwise beneficial functions of private landowners. For example, it is conceivable that land management practices, focusing on the needs of all natural resources and creatures in the area, could cause some harm to one protected species in order to help others. Additionally, experimentation with ways to desalinate water could probably cause a hazard and eventual take of species by trapping a high degree of salt into one confined area through the desalinization process. In this way, the Section 9 take provision has a substantial effect on the daily activities of private individuals.

Though Section 7's prohibition of jeopardy aims to give the federal agencies a higher standard of protection for species, this provision affects private individuals as well. Often times, a government agency acts in response to a request by contract with a private individual. When a federal agency sits in the line of approval for a private action, the Section 7 provision is triggered and the private individual's action must pass the jeopardy test before approval. Additionally, when a government contracts

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6 *See id.* § 1536(a)(2).

7 *See id.* § 1536(c); *see also* 50 C.F.R. § 402.12 (2001).

8 *See* 16 U.S.C. § 1536(b).

9 *See id.*

10 *See* Holly Doremus, *Water, Population Growth, and Endangered Species in the West*, 72 U. Colo. L. Rev. 361, 384 (2001) ("The federal agency considering an action is responsible for ensuring compliance with Section 7 and may choose to reject the Services' views. As the formal view of any agency with expertise in species protection, however, a biological opinion carries considerable weight with a reviewing court. Not surprisingly, biological opinions are virtually determinative of the outcome").

with a private individual, the creation, renewal, and carrying-out of this contract are all subject to the Section 7 jeopardy test. In these two ways, Section 7 also affects the daily activities of private individuals.

The effect of the ESA on rural landowners is best exemplified by the Klamath Basin along the California-Oregon border. Klamath Basin has been a long-time home to farmers and ranchers dependent upon government contracts for water. The United States Bureau of Reclamation ("Reclamation") was authorized to collect water from the Basin's natural waterways into the "Klamath Project" to provide irrigation water to nearby farmers and ranchers.[11] Reclamation's operation of the Klamath Project allows nearby farmers and ranchers to purchase the rights to seasonal water diversions pursuant to established contracts. However, Reclamation must monitor the Klamath Project's effects on endangered and threatened species by complying with Section 7 upon enacting new operations plans. Therefore, the annual water rights of these farmers and ranchers along the California-Oregon border are subject to the Section 7 provision.

During the summer of 2001, Reclamation complied with two biological opinions that cried Section 7's magic word, "jeopardy," and in one instant brought quiet conflicts to the surface with a loud bang. The reasonable and prudent alternative set out by the United States Fish and Wildlife Service (FWS) demanded increased lake levels for the endangered suckerfish.[12] Meanwhile, the reasonable and prudent alternative of the National Marine Fisheries Service (NMFS) mandated increased instream flows for the threatened coho salmon.[13] Water disputes arose between the protected species, between protected species and non-protected species, between human stewards, and between various scientific interpretations. All parties involved had valid expectations of water under law or contract.

III. ESA Problem: Conflict over Limited and Dwindling Natural Resources

The Klamath Basin situation serves as a case study of the misfit between the present ESA and our society. According to the Oregon governor, "the current water crisis in the Klamath Basin has been 150 years in the making and serves as a reminder to us all that we are stretching our

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[11] *See* 32 Stat. 388 (1905) (authorized under the Reclamation Act, 43 U.S.C. § 372 et seq. (1902)).

[12] *See generally* National Academy of Sciences, Interim Report from the Committee on Endangered and Threatened Fishes Klamath River Basin; Scientific Evaluation of Biological Opinions on Endangered and Threatened Fishes in Klamath River Basin (2002).

[13] *See generally id.*

natural resources beyond their limits. . .. Even in a normal year, the water in the Klamath Basin cannot meet the current, and growing, demands for tribal, agricultural, industrial, municipal and fish and wildlife needs."[14] The governor's words highlight the conflict between various parties in a nation with limited natural resources.

Since Klamath Project Authorization in 1905, Reclamation has had to balance diverse, and often times competing, demands for its project water.[15] Water for the Klamath Project is stored primarily in Upper Klamath Lake, which is on the Klamath River.[16] Reclamation owns Link River Dam, which sits at the mouth of Upper Klamath Lake.[17] The dam allows the lake to be drawn below its natural level as well as to increase its storage capacity for irrigation and other purposes.[18] Therefore, the dam also regulates flows in the Lower Klamath River.[19] Since the lake and river maintain a hydrological connection, Reclamation's control of lake diversions and capacity affect a number of interests.[20] Specifically Reclamation's actions in Klamath Basin can potentially affect the threatened coho salmon that depend on the river, the endangered suckerfish that live in the lake, the wildlife dependent on nearby wildlife refuges, and the farmers and ranchers with contractual water rights.[21] The result? Conflict. The interdependent nature of these habitats depicts the limitation of the ESA—to help certain habitat means to harm other habitats.

With the backdrop of Klamath River Basin, the following discussion raises several problems with the present ESA that center around the overall limitation of "conflict." This part addresses each conflict in turn. First, it walks through the conflicts between listed species and other listed species. Second, it recognizes the conflicts among listed species and non-listed natural resources and creatures. Third, it lays out the growing tension between listed species and human stewardship of land. Finally, it

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14 *See* Governor John A. Kitzhaber, *Klamath Solution Takes Cooperation by All: There are no easy answers in this drought year or for the future* (June 1, 2001).

15 *See* Opinion and Order at 6:2-11, Kandra v. United States, (D. Or. 2001) (No. 01-6124-AA). ("Reclamation must deliver water to project irrigators in accordance with the rights held by the United States and the irrigators' individual repayment contracts, subject to the availability of water. Plaintiffs Klamath Irrigation District and Tule Lake Irrigation District have rights to receive appropriated water pursuant to their contracts with Reclamation. Two national wildlife refuges, the Lower Klamath and Tule Lake National Wildlife Refuges, depend on the project for water and receive large quantities of return irrigation flows and other project waters").

16 *See* Opinion and Order at 2:17-23, Pac. Coast Fed'n of Fisherman's Ass'ns, v. U.S. Bureau of Reclamation, (N.D. Ca 2001) (No. C 00-01955 SBA).

17 *See id.*

18 *See id.*

19 *See id.*

20 *See id.* at 3:6-17.

21 *See id.* at 3:6-17.

addresses the increasing disputes among science. This analysis will not be able to address every intricate detail of these four tensions, but will highlight the ESA's limiting reliance on litigation for solutions. Though the conflict may be inevitable, the ESA-mandated governmental reactions are not.

A. Listed Species v. Other Listed Species

The situation at Klamath Basin involves four species listed under the ESA: coho salmon, two species of suckerfish, and bald eagles.[22] Two biological opinions triggered Reclamation's water allocation changes. FWS warned of jeopardy for the suckerfish, while NMFS cried jeopardy for the coho salmon. The drought, in conjunction with the need to provide for the species, resulted in an availability of only 70,000 acre-feet of water for irrigation from Reclamation's Klamath Project, versus the usual 500,000 acre-feet.[23] In addition, the area's wildlife refuges did not receive the lake water and agricultural runoff depended on by hundreds of bald eagles.[24]

The biological opinions demanded more water in both Klamath Lake and the river below the lake. FWS stated that in order to avoid jeopardy Reclamation must follow the reasonable and prudent alternative of maintaining minimal lake elevations, which would require 200,000 acre feet of water.[25] NMFS also required minimum river flows for salmon.[26] However, due to the interconnected nature of the lake and river, asking for an increase in both the lake and river created an impossible demand for water in the region.[27] Since the coho salmon depend on river flows and suckerfish depend on lake water, giving more to one species directly conflicts with allocating water to the other.[28] Additionally,

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[22] *See* Department of Interior, 53 Fed. Reg. 27130, 27131-32 (July 18, 1988). *See also* Department of Interior, 62 Fed. Reg. 24588, 24592 (May 6, 1997).

[23] *See* Governor John A. Kitzhaber, *Klamath Solution Takes Cooperation by All: There are no easy answers in this drought year or for the future* (June 1, 2001).

[24] *Id. See also* Bob McLandress, *Agriculture and Wildlife in the Klamath Basin,* CALIFORNIA WATERFOWL 16, 19 (Aug./Sept. 2001) (explaining that all the rampant wildlife is "contingent upon water that irrigates crops and sustains habitat for wildlife. This water comes from precipitation, run-off and most importantly, reserves in Upper Klamath and Clear Lakes. Later in summer, precipitation is scarce, and most water for refuge wetlands must be supplied by agricultural runoff and outflows from Upper Klamath and Clear lakes).

[25] Professor Virginia Cahill, University of California, Davis, Water Law Lecture (2001).

[26] *See* NATIONAL MARINE FISHERIES SERVICE, BIOLOGICAL OPINION – ONGOING KLAMATH PROJECT OPERATIONS, EXECUTIVE SUMMARY (April 6, 2001).

[27] *See* Opinion and Order at 6:2-11, Kandra v. United States, (D. Or. 2001) (No. 01-6124-AA).

[28] *See* Opinion and Order at 10: 6-8, Kandra v. United States, (D. Or. 2001) (No. 01-6124-AA). ("Upon review of the draft BiOps, Reclamation informed FWS and

by allocating more water to the lake level and river flows, water was not given to the farmers or to the wildlife refuges.[29] Bald eagles are dependent upon the moist wildlife refuge for habitat and on the croplands to attract their prey. Therefore, though the water allocation may be favorable to fish it is definitely adverse to the bald eagles. Even without the presence of humans, the Services would have had to choose between species because the drought left the region with so little water.[30]

At first glance, the ESA's species-by-species approach to avoiding extinction may seem to have an obvious benefit to biodiversity.[31] However, efforts to protect a single species can have adverse effects on other species or ecosystems, as shown by the conflicts among the four species at Klamath.[32] Therefore, the net biodiversity effect of ESA conservation measures may not always be positive, which evidences the need for a better way to address conflicts among species.[33]

Another conflict among species arises over the Department of Interior's ("Department") money and resources. Time and finances exhausted on litigation over already listed species prevent the Department from listing other species, which creates a conflict between listed species and "proposed" listed species. The administrative handling of species listings evidences this conflict. In November 2000, the Clinton administration announced that it would be unable to consider any new species for listing, except for emergencies, saying all of its time and money were being sapped by compliance with legal actions.[34] The Bush administration followed along the lines of the Clinton moratorium by limiting new listings.[35] By exhausting all agency money and time on litigation over some species, the Services exacerbate the conflict among species because

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NMFS that the forecasted water supplies for 2001 were not adequate to meet the needs of both RPAs").

29 *See* McLandress, *supra* note 24, at 19.

30 *See* Opinion and Order at 6:2-11, Kandra v. United States, (D. Or. 2001) (No. 01-6124-AA).

31 *See* Bradley C. Karkkainen, *Biodiversity and Land,* 83 CORNELL L. REV. 1, 19 (1997).

32 *Id.*

33 *Id.*

34 Testimony of Steven P. Quarles, *Subcommittee on Fish, Wildlife and Water Environment and Public Works Committee*, United States Senate (May 9, 2001) ("Controversy over and attention to the species' listing process are now at hand, however — triggered by recent actions of both the Clinton and Bush Administrations. On November 17, 2000, FWS Director Jamie Clark announced that the agency lacks sufficient funds to conduct any species' listings, including responding to any listing petitions, in fiscal year 2001 beyond those mandated by court order").

35 *Id.* ("This Clinton listings moratorium was followed by a legislative proposal in President Bush's budget to waive for fiscal year 2002 the ESA's statutory deadline for species listings (and designations of critical habitat) and to limit use of the available funding to implementing already issued court orders and those listings (and designations) the Secretary of the Interior in her discretion determines to be important").

the Services are unable to tend to the listing needs of other species. If the goal of the ESA is to promote abundant biodiversity, then to meet that goal the Department must balance its resource needs and not disproportionately favor one vulnerable species over others.

B. Listed Species v. Non-Listed Natural Resources and Creatures

Klamath Basin also presents a tension between federally protected listed species and other non-listed natural resources and creatures. Over 430 species of wildlife thrive in the Klamath Basin, which depend on Klamath Basin water for support throughout the year.[36] According to Bob McLandress, research scientist and current California Waterfowl president, the withholding of water from the Klamath Basin's farms and wetlands affects the vegetation of the whole region, including wetlands, grasslands, farms, and ranches.[37] Specifically, Reclamation affected migratory birds in denying water to the wildlife refuges of Klamath Basin. The wildlife refuges serve as a major waterfowl stopover on the Pacific Flyway.[38] Without water, the refuge does not offer habitat for the migrating birds. Therefore, Reclamation's actions created a direct conflict between migratory birds and the listed species.

Though not listed under the ESA, the Klamath Basin's birds have long been threatened by disease. The wetlands of the Klamath Basin have historically been the site of severe avian botulism and cholera outbreaks, resulting in an annual loss of thousands of waterfowl and other birds.[39] The drought of summer 2001, combined with Reclamation's reallocation of water, has increased the potential for explosive die-offs. Reduced water in the Klamath Basin wetlands causes overcrowding, which may exacerbate the spread of these avian diseases.[40] The effects of such impacts do not necessarily surface immediately. Avian botulism, for example, is most severe when wetlands are re-flooded after a dry-period, as the Klamath Basin wetlands will be in Summer 2002.[41] Therefore, Reclamation's actions to protect listed fish species are directly adverse to other at-risk wildlife.

Reclamation's denial of water to Klamath Basin farmers also had a huge impact on a major part of the area's ecosystem, crops. The loss of

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[36] Bob McLandress, *Klamath in Jeopardy,* CALIFORNIA WATERFOWL 10, 12 (Aug./Sept. 2001).

[37] *Id.*

[38] *See* Kitzhaber, *supra* note 14.

[39] Bob McLandress, *Disease Threatens Klamath Basin Waterfowl,* CALIFORNIA WATERFOWL, 13 (Aug./Sept. 2001).

[40] *See id.*

[41] *See id.*

water to the farmland affected not just the farmers,[42] but also the wildlife dependent on their irrigated fields.[43] Nearly twenty-seven percent of Klamath Basin's crop acreage is used to produce alfalfa.[44] Wildlife benefit from the significant habitat that alfalfa production provides in nesting cover, abundant species, a perennial growth pattern, and feeding opportunities.[45] Alfalfa has unique characteristics that make it particularly good habitat. The perennial nature of the crop provides a stable, relatively undisturbed home for wildlife.[46] The palatable nature of alfalfa, shown by its purpose as dairy feed, extends a high feeding value to other herbivores such as insects, rodents, and grazing animals.[47] Hidden beneath the ample ground cover is diversity, such as herbivore and predator insects.[48]

The cyclical nature of alfalfa farming allows wildlife to react to events and adapt their actions for survival, similar to the adjustments wildlife make in anticipation of seasonal weather changes. The frequent irrigation cycles for alfalfa crops serve an important role in flushing insects and rodents to the surface, which are food sources for birds, snakes, eagles, and hawks.[49] Some alfalfa growers enhance the already beneficial open space for raptor hunting by planting trees, providing raptor poles, or building owl boxes.[50] Additional measures are available to counteract any potential harm caused by farming practices. For example, farmers can alert wildlife with bells before harvests, and plan such harvests for

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42 Opinion and Order at 14:25-15:10, Kandra v. United States, (D. Or. 2001) (Civ. No. 01-6124-AA) ("There is no question that farmers who rely on irrigation water and their communities will suffer severe economic hardship if the 2001 Plan is implemented. The declarations of Steven Kandra and David Cacka, Klamath Basin farmers, describe the hardships they will suffer if their land receive no irrigation water, including loss of income, inability to pay debts, potential loss of land and equipment, and immeasurable harm to their way of living. . ..Local governmental entities in the Klamath River Basin anticipate agricultural losses in the millions of dollars, loss in revenues, and additional burdens on social services").

43 *See* United States Department of the Interior Bureau of Reclamation, Final Biological Assessment, Effects of Proposed Actions Related to Klamath Project Operations (April 1, 2002 – March 31, 2002) on Federally Listed Threatened and Endangered Species at 84 (February 25, 2002) (reduction of agricultural water supplies affects the wildlife species preyed upon by bald eagles).

44 KLAMATH EXPERIMENT STATION, OREGON STATE UNIVERSITY AGRICULTURAL RESEARCH, ANNUAL REPORT, *Klamath Basin Crop Trends* 4 (2000) (51,312 crop acreage in alfalfa, 190,866 total crop acreage).

45 California Alfalfa and Forage Association, *Wildlife and Alfalfa. . .A Natural Partnership,* ALFALFA, WILDLIFE AND THE ENVIRONMENT 11, 12 (2001) (available at California Department of Food and Agriculture).

46 *Id.*

47 *Id.*

48 *Id.*

49 *Id.*

50 *Id.*

less-intensive wildlife seasons, if feasible.[51] Due to the conservation value of cropland, the loss of water to crops exacerbated a tension between the conservation of listed species and other wildlife.

In addition to the direct physical effects the ESA has on non-listed natural resources and wildlife, Services' implementation of the ESA creates indirect effects on these non-listed species. Services' reactionary response to threats of "jeopardy" conflict with Congressional mandate that federal agencies make environmentally-informed decisions to not substantially affect natural resources and wildlife. In 2001, the implementation of the ESA in the Klamath Basin conflicted with the goals of the National Environmental Policy Act (NEPA). NEPA requires federal agencies to prepare a detailed Environmental Impact Statement (EIS) "for every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment."[52] However, Reclamation did not complete an EIS for the 2001 plan for the Klamath Project.[53]

The District Court judge in *Kandra v. United States* upheld Reclamation's decision to rely on the less detailed review of an Environmental Assessment (EA). However, NEPA does not support such a position. The 2001 Plan represents a complete abandonment of the authorized purpose of the Project and a major change in historical operations, constituting a "major federal action."[54] The District Court judge did not see reason to support requiring an EIS because of the time required to complete that environmental review.[55] However, the spirit of NEPA demands complex thought processes for federal decision-making. Though courts have held an EA to be adequate for "continuing operations," Reclamation's actions at the Klamath Project did not continue but rather ceased operations.[56] Uninformed decisions like this exacerbate the conflict between species protection and conservation of natural resources and creatures in the aggregate.

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[51] Interview with Gerry Miller, Senior Environmental Planner, California Department of Food and Agriculture (Feb. 2002).

[52] 42 U.S.C. § 4332(c).

[53] *See* Opinion and Order at 20:2-12, Kandra v. United States, (D. Or. 2001) (Civ. No. 01-6124-AA). ("Reclamation did not prepare an EIS, it prepared an EA for the 2001 Plan. The EA examined potential environmental effects of proposed operations in 2001 under a critical dry forecast. . .. Reclamation's EA did not conclude with a [Finding of No Significant Impact]. In light of the extreme drought conditions and the proposed RPAs, Reclamation found that the plan could significantly affect the environment. However, the EA did not specifically find that an EIS was required for the 2001 plan").

[54] Plaintiff's Reply in Support of Motion for Preliminary Injunction, Kandra v. United States, (D. Or. 2001) (No. 01-6124-TC).

[55] *See* Opinion and Order at 24:6-7, Kandra v. United States, (D. Or. 2001) (No. 01-6124-AA).

[56] County of Trinity v. Andrus, 438 F. Supp. 1368, 1388 (E.D. Cal. 1977).

C. Listed Species v. Human Stewardship of Land

The current ESA does not offer private landowners and privately run conservation groups positive incentives to conserve biodiversity. Though the ESA has been amended to offer private individuals some relief from its strict prohibitions, the ESA still limits incentives to promises of no further regulation. Rewarding proactive efforts with promises for less regulation does not offer a great enough incentive to take large conservation steps. Rather, this policy encourages caution and continual searching for ways to avoid regulation.

Without some exception to the ESA's Section 9 "take" provision, non-federal landowners undertaking otherwise lawful activities likely to take listed species risk civil and criminal penalties for violating of the ESA.[57] Therefore, Section 10 provides an exception through an incidental take permit, which allows a non-federal landowner to legally proceed with an activity that would otherwise result in the illegal take of a listed species.[58] Former President Clinton supported the Section 10 exception by encouraging agency actions with habitat conservation plans (HCPs) and the No-Surprises Policy.

Under Section 10(a)(1)(B) of the Endangered Species Act, the Services are authorized to issue to non-federal entities a permit for the "incidental take" of endangered and threatened wildlife species.[59] This permit allows a non-federal landowner to proceed with an activity that is legal in all other respects, but that results in the "incidental" taking of a listed species.[60] The ESA defines incidental take as take that is "incidental to, and not the purpose of, the carrying out of an otherwise lawful activity."[61] The HCP must accompany an application for an incidental take permit. The purpose of the HCP is to ensure that the effects of the permitted action on listed species are adequately minimized and mitigated.

Under the HCP Program, the federal government will allow incidental take in exchange for a conservation plan showing adequate mitigation to counter the wrongs of its "take."[62] Mitigation serves as a tool to counter environmental harm with other acts favorable to the environment. The federal government will attach a "No Surprises" policy to this device. The No Surprises policy allows a landowner the security of knowing that he or she will not be responsible for any expense or liability due to additional species on the property. Private landowners are assured that if "unforeseen circumstances" arise, the Services will not require the

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57 *See* 16 U.S.C. § 1538.
58 16 U.S.C. § 1539.
59 *Id.*
60 *Id.*
61 *Id.*
62 *Id.*

commitment of additional land, water or financial compensation or additional restrictions on the use of land, water, or other natural resources beyond the level otherwise agreed to in the HCP without the consent of the landowner.[63] As long as the landowner implements the HCP in good faith, the government will honor these assurances.

Under the Safe Harbor Program, any private landowner who voluntarily creates, restores, or improves endangered species habitat on his or her land is guaranteed freedom from additional obligations under ESA if new species are attracted to improved habitat.[64] Rather than trying to limit take, the Safe Harbor Program seeks to encourage positive actions. The Safe Harbor Agreements are supposed to maintain habitat that would otherwise be destroyed by farmers fearing that occupation by a species would deny them use of the land. The Safe Harbor Program came into existence because the federal government recognized that "much of the nation's current and potential habitat" for protected species exists on private land.[65]

Though the incentives provided for landowners through the Safe Harbor Program do focus on positive land improvements, landowners are only encouraged to use positive acts to offset the desired "bad" act or relieve future legal obligations. Landowners' proactive conservation efforts merely result in no further restrictions on land-use activities. Though this system may lessen the speed of wildlife and natural resource loss, the policies do not carry enough incentives to produce an overall improvement in wildlife habitat. The main purpose behind the existing programs is to reduce disincentives, the fear of regulatory restrictions, rather than to increase incentives for the creation of more habitat.[66]

Despite the federal government's attempts to make the ESA landowner-friendly, the continual fear of expensive litigation, penalties, and cumbersome processes create many negative incentives. The negative incentives indirectly caused by the ESA are exemplified in the United States Department of Interior's Environmental Assessment for the Mendota Pool 2002 water-exchange agreement.[67] The Department created an Environmental Assessment (EA) describing the groundwater conveyance project, proposed by a group of California farmers with groundwater wells in western Fresno County.[68] The group, namely the "Mendota Pool Group," proposes to pump groundwater from their wells into the Mendota Pool and exchange it with water from Reclamation's

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63 *Id.*

64 Department of Interior, 64 Fed. Reg. 32707 (June 17,1999).

65 *Id.*

66 *See* Habitat Conservation Plan Handbook at 3-38.

67 U.S. Department of Interior, Bureau of Reclamation, EA Number 01-83, *Mendota Pool 2002 Exchange Agreements Draft* at 3-16 (Jan 28, 2002).

68 *Id.* at 1-1.

Central Valley Project.[69] The Department of Interior's EA discussed the difference between idle and fallow agricultural lands.[70] Idled agricultural lands are areas removed from production for extended periods and generally remain unmanaged.[71] The document goes on to describe how "idle lands near known special-status populations have a higher probability of being recolonized with endangered species than fallow lands that are a part of normal farm operations."[72] On the other hand, fallow lands are temporarily removed from production and are a normal part of agricultural processes in the San Joaquin Valley.[73]

The EA asserted that due to fear of the ESA, many farmers continued to rotate fallow lands rather than to let them go idle to avoid attracting endangered species. Therefore, the harsh penalties of the ESA actually discourage farmers from idling lands for species because of the risk of increased regulation, loss of land, and cost of losing crop production. Landowner actions that purposely avoid allowing endangered or threatened species to flourish represent an unintended consequence of the ESA. Fear of ESA's penalties and citizen suits instigates conflicts between species protection and private landowners' stewardship of the land. The California Farm Bureau echoes this disincentive. "In most cases farmers and ranchers are cautious about giving information concerning endangered species on their property, fearing that if too much information goes out, they risk the possibility of having their right to farm or otherwise manage their land taken away."[74] It seems some farmers would rather eliminate habitat on their property altogether than have their right to manage their land taken away. This tension undermines the stewardship potential of private landowners.

However, the Mendota Pool water exchange agreement also showed an example of agriculture's important stewardship role. The EA laid out a substantial list of species dependent on agriculture in the area.[75] The tricolored blackbird feeds on insects, seeds, and cultivated grain. The western pond turtle, giant garter snake, and northwestern pond turtle all inhabit irrigation ditches. The long billed curlew and Aleutian Canadian goose inhabit croplands and pastures. The Swainson's hawk hunts in alfalfa and grain fields. A common conservation practice used to promote Swainson hawks among farms is the strategic placement of large poles

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69 *Id.*

70 *Id.* at 3-16.

71 *Id.*

72 *Id.*

73 *Id.*

74 CALIFORNIA FARM BUREAU FEDERATION, FARMERS AND RANCHERS COMMITMENT TO CONSERVATION: A REPORT ON VOLUNTARY ACTIONS CALIFORNIA FARMERS AND RANCHERS ARE TAKING TO ENHANCE WILDLIFE 33 (2002), *available at* www.cfbf.com/issues/conserv.

75 *See id.* at Table 3-6.

suitable for nesting. The white tailed kite is "rarely found away from agricultural areas."[76]

This case study in agricultural-based wildlife habitat proves yet another possible tension in the Klamath Basin. Loss of water to agriculture equates to loss of stewardship of and habitat for other wildlife, including endangered or threatened species. For example, approximately 200 million pounds of food resources are available to wildlife in California rice fields each year.[77] A study by the United States Department of Interior showed that 80% or more of wildlife in the continental United States is dependent on private land for food, water and shelter.[78] Rice fields provide habitat for about 60% of the waterfowl on the Pacific Flyway during the winter months.[79]

Agricultural stewardship of the land is also prevalent along the Oregon-California Border. Herb Jasper's hay and cattle ranch is located south of the Oregon Border in Modoc County.[80] Mr. Jasper makes management decisions that will benefit and improve all aspects of his ranch, including wildlife. Mr. Jasper's conservation philosophy is "total resource management."[81] His ranch houses populations of mule deer, antelope, elk, geese, ducks, pheasants, quail, and at least eight species of fish.[82] Mr. Jasper's practices also support predators, including mountain lions and coyotes.[83] He works closely with California Department of Fish and Game to establish vegetation along the banks of the creeks that cross his land, and he is using rock wings to control erosion and provide pools for the trout.[84] He was involved in successful efforts to protect the red band trout, a species previously proposed for listing under the ESA. "The trout populations have bounced back so dramatically, they decided not to list it."[85]

Additionally, a third generation Oregon farming family received the American Farmland Trust 2002 Steward of the Land Award. The mission of the American Farmland Trust is to stop the loss of productive farmland and promote farming practices that lead to a healthy environment.[86] The winning Stewards farm 1,400 acres of fruit trees and harvest more

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76 *Id.*

77 CALIFORNIA FARM BUREAU FEDERATION, HABITAT HEROES (2002) *available at* www.cfbf.com/issues/earthwise/hab/htm.

78 *Id.*

79 *Id.*

80 CALIFORNIA FARM BUREAU FEDERATION, *supra* note 74.

81 *Id.*

82 *Id.*

83 *Id.*

84 *Id.*

85 *Id.* at 13.

86 American Farmland Trust, *Steward of the Land Award; The Bailey Family—2002 Steward of the Land* (2002) *available at* www.farmland.org/steward/bailey.htm.

than 3,200 tons of sweet cherries every year, using Integrated Fruit Production practices.[87] Integrated Fruit Production practices include "more efficient and responsible pest management, irrigation practices and control of weeds without residual herbicides."[88] The family has used its experience to teach other growers how to implement the Integrated Fruit Production program.

Evident at Klamath and elsewhere is the growing loss of agricultural land. Farmers and ranchers faced with expensive regulatory compliance and the added expense of contract water are selling their land and halting production. Though farmers and ranchers receive discounted government water, agriculture's slim profit margins make even these prices hard to afford.[89] Additionally, the water actually received according to the government water contract rarely renders the full contract amount.[90] The expense and uncertainty leads to an increasing loss of rural landowners in farming and ranching. Government acquisitions have come in to rescue "willing sellers" who cannot afford to maintain their land any longer.[91] This proves to be one of the most unrecognized biodiversity problems. Though agriculture has not always been known for its environmental benefits, a new generation of farmers and ranchers has emerged who are putting their hands into the conservation movement.[92] Therefore, rampant loss of resources to agriculture, as in Klamath Basin, could very well create an "endangered" species out of these rural landowners.

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87 *Id.*

88 *Id.*

89 *See* Agricultural Conservation Innovation Center, *Is Conservation Risky* (2002) (available online at www.agconserv.com/risk.html) ("As a business, agriculture historically has had a very low return on capital, the national average being 3% per year").

90 *See* Tulare Lake Basin v. United States, 49 Fed. Cl. 313, 315 (2001) ("the water projects are required to be financially self-sustaining, with the costs of construction and maintenance to be paid entirely by those who ultimately receive the water. The water contractors are thus obligated to pay to maintain the operation of the system regardless of the amount of water actually received. Because the amount of water available to water users in a particular year is largely a function of natural causes, however, the permits explicitly provide that the state will not be held liable for shortages due to drought or other causes beyond its control"). *See also* Tom Birmingham, General Counsel, Westlands Water District, presentation at 16th Annual Environmental Law Conference, University of California, Davis (March 8,2002).

91 *See* 16 U.S.C. § 1534 (2000) (Secretaries of United States Departments of Interior and Agriculture are "authorized to acquire by purchase, donation, or otherwise, land, waters, or interests therein, and such authority shall be in addition to any other land acquisition authority vested in him").

92 *Id.* at 8 (stating "while many wildlife restoration projects take place on state and federal lands, the majority of our country's wildlife populations spend some or all of their time on private property. This fact puts our nation's farmers and ranchers in a unique position. Many have chosen to take action in order to see native habitat and wildlife populations flourish on their operations").

The conflict between the current law's species protection practices and human stewardship is also shown in the resulting uncertainty landowners face when the government lists species. For example, recent salmon, steelhead, and bull trout listings affect nearly every watershed in the Pacific Northwest from tidewater areas to the headwater streams in Montana.[93] A new ESA listing effectively places a "cloud of uncertainty" over the economic and social activities where the species may occur.[94] This uncertainty is caused by Section 9's legal consequences for private action and Section 7's potential to frustrate existing contractual water rights.[95] For that reason, the Governor of Oregon believes that "the dynamics of present ESA impacts stifle cooperative agreements and innovative ways to restore healthy populations."[96] Ninety percent of endangered and threatened species have some habitat on nonfederal land.[97] Therefore, it is detrimental to biodiversity conservation that the ESA lacks the tools and incentives to encourage private landowners organizations to work with government agencies in undertaking conservation measures before a crisis exists. By creating this uncertainty and not promoting positive efforts for conservation, the ESA deepens an existing conflict between human stewards and the protection of species.

Losing the stewardship of farmers and ranchers is a setback to biodiversity because development or federal ownership typically supercede the rural land managers, who already know and love the land. Some people may view the superceding development as superior to agriculture if done in an environmentally friendly manner. Though development can leave considerable green space, farms and ranches have the potential to put the entire open-space area to use for conservation practices. For example, 10 acres of agriculture has substantially more habitat potential than 9 acres of development with 1 acre left as open space. Therefore, losing farmers and ranchers to development does decrease the conservation opportunities for that particular land.

Others may support the federal government acquiring the land from agriculture. Such rampant acquisition will not produce favorable results for several reasons. First, federal ownership of the distinct refuges, national parks and forests, and other natural wonders allows the government to focus its efforts and financial resources on environmental

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93 WESTERN GOVERNORS' ASSOCIATION, A WORKABLE, MORE EFFECTIVE ENDANGERED SPECIES ACT (Dec. 2000).

94 *Id.*

95 *See infra* Part I.

96 WESTERN GOVERNORS' ASSOCIATION, A WORKABLE, MORE EFFECTIVE ENDANGERED SPECIES ACT (Dec. 2000).

97 UNITED STATES GENERAL ACCOUNTING OFFICE, REPORT TO CONGRESSIONAL REQUESTERS, ENDANGERED SPECIES INFORMATION ON SPECIES PROTECTION ON NONFEDERAL LANDS, GAO/RCED-95-16 (Dec. 1994).

treasures. The services responsible for public lands already maintain that the congressional budget does not appropriate enough funding for the proper maintenance of their existing public lands.[98] Rather than spread the federal government thin by pushing all open space and rural lands into federal ownership, time and federal tax dollars would be better spent improving and maintaining the already vast federal land holdings.

Second, agriculture has been a part of our nation's ecosystems for so long that the farmers and ranchers have developed land management expertise. Many farms and ranches have been passed on through the generations and so families know every aspect of the land, including the actions and reactions of plants and wildlife. Whether managing the land by hand or machine, farmers and ranchers know the soils and the grasses and closely monitor their land. Furthermore, individual commodity groups and coalitions have acquired extensive information specific to the environment surrounding production of their commodity. To replace these rural land managers would be to embark upon a whole new learning curve rather than maximize the knowledge of experts on the land.

Third, the money exhausted for federal buyouts could be used more effectively to educate and compensate private landowners and conservation groups for biodiversity protection practices. Though the agriculturists and other private individuals may know and love the land, some may lack expertise in beneficial conservation practices. However, commodity groups, private organizations, and individual farmers have been seeking out more information and experimenting with better ways to conserve biodiversity on their land. The federal government should also supplement private landowners and conservation groups' existing knowledge of the land by educating them about effective biodiversity conservation measures.

D. Science v. Science

The fourth conflict instigated by the present ESA arises among differing interpretations of scientific evidence. This conflict is also evident in the Klamath Basin controversy. The Section 7 jeopardy decision of Reclamation was a reaction to the two biological opinions created by NMFS and FWS. However, the biological assessments were inconsistent with other scientific reports available to Reclamation at the time of its 2001 water allocation decision. For example, Klamath Water Users, com-

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[98] *See* UNITED STATES GENERAL ACCOUNTING OFFICE, PERFORMANCE AND ACCOUNTABILITY SERIES, MAJOR MANAGEMENT CHALLENGES AND PROGRAM RISKS, DEPARTMENT OF THE INTERIOR, GAO/OCG-99-9 (Jan. 1999) (demonstrating the public land managers' need for a basic reexamination of the organization and function of land management agencies, lack of information to properly protect preserve and maintain resources, and need for improved guidance, oversight, and accountability).

prising the irrigation districts of the Klamath Basin, submitted a scientific report to Reclamation before the shut off. This submission, "*Protecting the Beneficial Uses of Waters of Upper Klamath Lake: A Plan to Accelerate Recovery of the Lost River and Shortnose Suckers,*" comprises the analysis and recommendations of a respected professor at University of California, Berkeley.[99] The plan suggests that more water in the lake actually harms the suckerfish because of oxygenation.[100] Therefore, Reclamation's decision was based on science that was contrary to the conflicting opinion of other existing scientific knowledge.

However, the courts are not authorized to disagree with an agency's expertise, despite the existence of such conflicting science. Section 706 of the Administrative Procedure Act controls judicial review of agency action under the ESA.[101] The United States Supreme Court, applying the Administrative Procedure Act, maintains that as long as agencies do not act arbitrary or capriciously in using their expertise to carry out their delegated authority, the agencies decisions must be upheld.[102] Under this "arbitrary and capricious" standard, an agency decision must be upheld unless it is "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law."[103] "When specialists express conflicting views, an agency must have discretion to rely on the reasonable opinions of its own qualified experts even if, as an original matter, a court might find contrary views more persuasive."[104] Therefore, the court is not empowered to substitute its judgment about contested science for that of the agency.[105]

For that reason, it was not until after the Klamath crisis of Summer 2001, that the Department of Interior began to reconsider the science used in determining Reclamation's water allocation. The Department asked a committee appointed by the National Research Council to review the science underlying the Klamath basin biological opinions. In February 2002, the committee put out a preliminary report which stated that there was "no substantial scientific basis for" the demand for increased lake levels for the suckerfish or increased streamflows for the

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[99] Testimony of Alex Horne, Professor, Department of Civil and Environmental Engineering, University of California, Berkeley, Subcommittee on Water and Power Hearing (Mar. 21, 2001) (testimony of the author of *Protecting the Beneficial Uses of Waters of Upper Klamath Lake: A Plan to Accelerate Recovery of the Lost River and Shortnose Suckers*).

[100] *See* Opinion and Order at 3:24-27, Kandra v. United States, (D. Or. 2001) (No. 01-6124-AA) (proposed measure to restore and enhance wildlife and fishing habitats throughout Upper Klamath Basin).

[101] *See* 5 U.S.C. § 706 (2000).

[102] Marsh v. Oregon Natural Res. Council, 490 U.S. 360, 373-74 (1989).

[103] 5 U.S.C. § 706(2) (2000).

[104] Marsh, 490 U.S. at 378.

[105] Citizens to Preserve Overton Park, Inc. v. Volpe, 401 U.S. 402, 416, (1971).

coho salmon.[106] The Committee went on to suggest that the "best available science" suggests that it would be sufficient for Reclamation to maintain streamflows and lake levels consistent with operations over the last ten years.[107] The committee's disagreement with the biological opinions epitomizes the scientific tension created by the existing ESA. The ESA demands that the "best available science" be used for ESA decisions, yet eliminates all means to test the science in practice by way of the "arbitrary and capricious" review of agency decisions.

IV. Proposed Solution: A Balanced Approach to Enhancing Biodiversity

A remedy for the above limitations of the current ESA lies in a balanced approach to enhancing biodiversity. Such an approach does not equate to the traditional balancing of "economic" and "environmental" interests surrounding environmental policy making. Rather, the legal structure must balance the solutions presented from the various perspectives, which actually possess more common ground than presently recognized. This common ground has become more apparent over the years, and many groups are embracing collaboration to find solutions. A federal district court judge recognized this movement in describing the environment of a timber project. "Everyone was concerned about the environment, the wildlife, and the health of the trees. In short there are no 'bad guys' in this case, just dedicated professionals who happen to disagree on how to handle the complicated ecosystem."[108] Therefore, the solution lies in shifting the negative presumption about certain groups, and viewing those with conflicting opinions as dedicated professionals with different answers to the same problem.

This balanced approach demands several changes to the existing ESA. Whether it requires a revamping of the current law or merely a regulatory and policy shift depends upon the particular problem addressed. Some "quick fixes" exist within the present law, but in other areas the current law is the biggest obstacle to enhancing biodiversity. Complete implementation of the following proposed solution may require a new federal environmental law specifically concerned with biodiversity conservation.. The first step is to define a clear national goal pertaining to biodiversity conservation. Second, we should utilize various human interest and efforts in serving that clearly defined purpose.

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106 *See* National Academy of Sciences, Interim Report from the Committee on Endangered and Threatened Fishes in Klamath River Basin—Scientific Evaluation Biological Opinions on Endangered and Threatened Fishes in Klamath River Basin, Executive Summary (Feb. 6, 2002).

107 *Id.*

108 Greater Gila Biodiversity Project v. U.S. Forest Serv., 926 F. Supp. 914, 919 (D. Az. 1994).

Third, we should promote collaboration among the differing perspectives. Fourth, we should establish incentives for private landowners interested in enhancing biodiversity. Finally, we should change the existing decision-making process by including accountability and positive outcomes. The following discussion addresses these recommended changes and proposes strategies to include each in a federal law.

A. Defining the Purpose

Before devising any solutions, the goal must be clear. Despite the common belief that ambiguity best serves law enforcement, clarity of purpose is essential to meet any societal goal.[109] A law without a clear purpose can never achieve its goal, because no one will know exactly what success means. In order to explain the appropriateness of ambiguity, goals must be distinguished from objectives. For a runner, the goal is the finish line. An objective is the desired split times for each mile of the race. That is, the goal determines where he or she wants to end up, and the objectives set out how he or she intends to get to that place, and at what pace. For conservation, conflict should be directed towards objectives, not towards the goal. An ambiguous goal may create a system of discontentment that promotes ongoing efforts under the law, but it lacks accountability. Alternatively, conflicting objectives may serve one clear goal, and still remain within the desired outcome of the law. In this manner, the effectiveness of controversial objectives can be held accountable against the goal. An effective biodiversity solution must define a clear national purpose at the outset. Therefore, any political battle over what goal to pursue must take place at the outset so that the nation can move forward within the framework of that policy decision.

In *Tennessee Valley Authority v. Hill*, the United States Supreme Court ruled that the plain intent of Congress in enacting this statute was to halt and reverse the trend toward species extinction, whatever the cost.[110] This keystone ESA case overturned the lower court decision that looked to the positive measures taken by Tennessee Valley Authority to help the species.[111] The Supreme Court did not agree with the lower

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[109] *See* Joseph Sax, *Symposium on Law in the Twentieth Century: Environmental Law at the Turn of the Century: A Reportorial Fragment of Contemporary History*, 88 CAL. L. REV. 2375, 2384 (2000) (supporting the statement that the common belief supports ambiguity by quoting Former Interior Department Solicitor John Leshy's observations of ambiguity in law enforcement).

[110] Gina Guy, U.S. Department of Interior, Office of the Solicitor, *The Infamous Snail Darter Case,* STEWARDSHIP AND THE LAW at 8. Note: Congress later amended the ESA to allow for the "God Squad" authority to consider economic costs in extraordinary circumstances.

[111] *Id. citing* Tennessee Valley Auth. v. Hill, 419 F. Supp. 753 (E.D. Tenn. 1976) ("using what are called equitable principles, or balancing of interests and costs, the

court's balancing of interests and costs.[112] *Tennessee Valley Authority v. Hill* now stands for the "Noah's-ark" mandate read into the ESA, which asks for at least two of each species and avoiding extinction at all costs. Theoretically, this concept seems to further the ESA. However, in its application, such a theory faces failure when narrowly-focused decisions help some species to the detriment of wildlife and natural resources as a whole. Since the federal government's monitoring efforts focus on the endangered and threatened species, cumulative effects on other non-protected natural resources and wildlife may go unnoticed until it is too late. This is exemplified by the Klamath situation, where onlookers predict many future harms are in store for the Klamath Basin's migratory birds.[113] The quandary at Klamath leads us to ask whether biodiversity conservation is the goal of ESA. If so, does biodiversity conservation equate to species-by-species conservation through micro-management? Alternatively, does biodiversity conservation equate to a broader focused attempt to conserve ecosystems?

The question of "what is biodiversity" has perplexed many, but a universal answer is yet to be established. According to a member of the Environmental Protection Agency, "biodiversity means different things to different people."[114] The creation of a solution begins with a universally accepted definition of biodiversity. California often leads policy in the United States; environmental law and policy is no exception to that general rule. California currently faces a severe conservation challenge as one of the most biodiversity-rich states, the fastest growing states, and the most productive agricultural state. For that reason, the California Biodiversity Council lays out its understanding of the meaning of biodiversity.

The Council defines biodiversity as "diversity, or variety, of plants and animals and other living things in a particular area or region."[115] Under this definition, endangered or threatened plants and animals should be included. However, the definition also states "other living things," which suggests that the ESA's scope is too narrow. The interdependency of modern day ecosystems involves not only plants and animals, but also involves humans themselves. Under the Council's definition, biodiversity conservation should look at all the factors within an ecosystem. In expressing the importance of biodiversity, the Council

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(trial) court found that the TVA had acted reasonably in trying to protect the fish, most notably by trying to relocate it").

112 *Id.*

113 *See* McLandress, *supra* note 36, at 10.

114 Reed F. Noss, *Indicators for Monitoring Biodiversity: A Hierarchical Approach,* 4 CONSERVATION BIOLOGY 4 (1980).

115 California Biodiversity Council, State of California, *An Applied Definition of Biodiversity (2000) available at* www.ca.gov.

states that "everything that lives in an ecosystem is part of the web of life, including humans."[116] This perspective acknowledges that each has a place on earth and plays a vital role in the circle of life.

Federal lawmakers have also tried to define a national definition of biodiversity. In 1987, the United States Congressional Office of Technology Assessment sought to provide a definite answer to the biodiversity question.[117] In a report on biodiversity, the Office defined biological diversity as "the variety and variability among living organisms and the ecological complexes in which they occur."[118] Diversity can be defined as the number of different items and their relative frequency.[119] For biological diversity, these items are organized at many levels, ranging from complete ecosystems to the basic chemical structures.[120] Thus, the term encompasses the diversity of ecosystems, species, and genes.[121]

In 1998, the United States Biodiversity Act followed the same biodiversity definition as provided by the Office of Technology Assessment."[122] The bill, which was proposed but not enacted, also addressed the three specific classifications of biodiversity through a discussion of ecosystem diversity, species diversity, and genetic diversity.[123] Ecosystem diversity encompasses the variety of habitats that occur within a region.[124] Species diversity focuses on the variety and abundance of different types of organisms that inhabit an area.[125] Genetic diversity is the combination of different genes found within a single population and within different populations of the same species.[126]

The present ESA emphasizes genetic diversity at the expense of ecosystem and species diversity, by micro-managing conservation at a species by species level. This micro-managing system serves the principle of Aldo Leopold, who once said the first rule of intelligent tinkering is to keep all the pieces.[127] The notion of "keeping" or preserving one of each species may not be the best approach in promoting species or ecosystem diversity. Species diversity focuses on the "variety" and "abundance" of different types of species, not on the mere existence of different types. Leopold's puzzle pieces concept suggests a constant natural state in

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116 *Id.*

117 U.S. CONGRESS, OFFICE OF TECHNOLOGY ASSESSMENT, TECHNOLOGIES TO MAINTAIN BIOLOGICAL DIVERSITY at 9 (OTA-F-330) (March 1987).

118 *Id.*

119 *Id.*

120 *Id.*

121 *See id.*

122 *See* United States Biodiversity Act, H.R. 1268 (1990).

123 *Id.*

124 *Id.*

125 *Id.*

126 *Id.*

127 *See* W. Wayst Gibbs, *Why Biodiversity Doesn't Yet Pay,* SCIENTIFIC AMERICAN 10 (2001).

which pieces fit. However, the processes of life evidence not stagnancy but change. Therefore, incompatible pieces that thrived fifty years ago may no longer fit the puzzle that exists today. To ensure species diversity the law should focus on a specific area to determine which inhabited organisms should be helped in order to promote the abundance of all the organisms in the area. Furthermore, ecosystem diversity covers the variety of habitats within a region, not just critical habitat of a prioritized species. A law that favors one habitat over the other may quickly find itself damaging all of the habitats within the region.

Such region-wide damage is evident in the Klamath Basin situation. There, the federal government attempted to prioritize the habitat of the coho salmon and suckerfish but found themselves harming farmers dependent on the land, wildlife dependent on the crops, and bald eagles. Additionally, the Basin did not even hold enough water to meet FWS and NMFS' original requests for the coho salmon and suckerfish.[128] By mandating water in the lake and the river, Reclamation did not allocate water to the nearby wildlife refuge habitat for bald eagles. Therefore, the regulatory "tinkering" did not keep all the pieces, but rather harmed the whole region.[129]

This misallocation of resources based on a species focus can be solved within the existing statute or with the development of a multi-species approach. The existing ESA may not actually mandate the present emphasis on listing each individual threatened or endangered species. In fact, one of the stated purposes of the ESA is to conserve the "ecosystems upon which the endangered and threatened species depend."[130] Therefore, the ESA does not necessarily "require federal land managers to adopt such narrow, single species management strategies."[131] Rather, the text of the ESA should be interpreted to encourage the promotion and enhancement of entire ecosystems. The ESA regulations should emphasize the protection of "indicator species," which are those species that are so closely tied to its environment that fluctuations in its population directly effect environmental changes that impact other species as well.[132] Particularly in a country with limited and dwindling resources, prioritizing species based on their value to the ecosystem as a whole could reap awesome benefits to biodiversity conservation. For that reason, in the event that the present ESA law does not allow for

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128 *See* Opinion and Order at 10:6-8, Kandra v. United States, (D. Or. 2001) (No. 01-6124-AA).

129 McLandress, *supra* note 24, at 20.

130 16 U.S.C. §1531(b).

131 Karkkainen, *supra* note 31 at 19 (*quoting* 80 IOWA L. REV. 297, 301 (1995)).

132 Greg Corbin, *United States Forest Service Response to Biodiversity Science,* 29 ENVTL. LAW 229, 277 (1999).

such an ecosystem focus, an alternative law should be devised to broaden the focus of national biodiversity conservation.

B. Maximizing Use of Human Interest and Efforts

United States citizens are working independently and jointly to conserve natural resources throughout our nation. An effective federal law directed at biodiversity conservation must aim to maximize these interests and efforts. Effective conservation measures and creative solutions devised by non-profit organizations and conservation-minded individuals should be tapped into for biodiversity conservation. For example, groups such as the Nature Conservancy, the American Farmland Trust, and other smaller land trusts, put time and money into securing open space and habitat through conservation easements. These legal devices effectively transfer the development rights of rural acreage to trusts, who are mandated to hold these rights in perpetuity without future development on the property. The federal government does filter substantial funding to the purchase of the development rights, but not in conjunction with the existing ESA. A new or revised ESA should place greater emphasis on creative measures such as conservation easements when trying to secure critical habitat for threatened or endangered species.

The departments of agriculture from New Mexico, Florida, Arizona, California, and Texas have formed a coalition (NFACT) to provide an important opportunity for the agricultural, environmental, and academic communities to have a unified voice in crafting recommendations surrounding agriculture.[133] Among the recommendations, NFACT stresses that voluntary incentive-based programs that enhance agriculture's positive contribution to the environment are the most efficient approach to conservation.[134] NFACT stresses the success of the United States Department of Agriculture ("USDA") and encourages an increase in federal government appropriations for the USDA's incentive programs.[135] Notably, market-based economic returns from farming and ranching do not reflect the full range of benefits provided by these lands to the environment and public, including wildlife habitat, water supply, open space and rural economic activity.[136] NFACT asks for recognition of the unique agricultural and environmental diversity of its participant states and need for special flexibility in conservation programs.[137] One of NFACT's recommended solutions is the Agricultural Stewardship Program, proposed

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133 NFACT, *Framework for the Future of Agriculture* at 4 (July 2001).

134 *See id.* at 9.

135 *See id. See also supra*, Part IV.C. (for discussion of USDA's conservation incentive programs).

136 *See* NFACT, *Framework for the Future of Agriculture* at 9. *See also supra*, Part IV.C (for discussion of benefits from farming and ranching).

137 *See* NFACT, *Framework for the Future of Agriculture* at 9.

by the National Association of States Departments of Agriculture. The proposal uses a block grant approach to give state and local governments greater flexibility, innovative tools, and resources to implement agricultural conservation practices.[138]

The ESA crafted powerful citizen suit provisions to allow citizen participation in biodiversity protection. However, this avenue for participation leads only to the courtroom, not to any positive, proactive conservation measures. Lawsuits are retroactive in that they challenge past decisions or actions, rather than taking proactive steps for biodiversity conservation. If the quest to save species was like that of establishing a hospital for injured people, what would be the most effective way to use all of the volunteers for help? Under the existing ESA, the apparent answer is to have the various environmental activists, interested landowners, and other concerned citizens sue others to do more work on the hospital. An alternative answer under the existing ESA is to sue the agency for every wrong turn taken during the course of the hospital generation. Even suits directed at agencies stigmatize private individuals who rely on the agency's challenged determination. However, under new ESA policy, the answer would be to collect ideas from the onset, show volunteers how to build the hospital, teach citizens the needs of the patients, and encourage all interested parties to stay until the project's completion.

Therefore, in order to maximize the potential of all the interested citizens, the citizen suit provisions of the ESA must be changed. The existing provisions place too much liability on landowners who try to do positive things.[139] The provisions exhaust private conservation funding and efforts on litigation rather than land acquisitions, conservation easements, monitoring, and conservation practices. The provisions also exhaust agency efforts and financial resources on litigation and reacting to political pressures rather than on listing species, educating the public on conservation practices, compensating private conservationists, and monitoring. Though the provisions may have some merit, the ESA must not give them so much power as the sole citizen participation measure. The federal law needs to incorporate positive, proactive avenues for citizen participation.

C. Collaboration

Various parties, particularly conservation opponents but also affected landowners, have initiated litigation in response to the conflicts in the Klamath Basin. However, in recognizing the devastating conflicts

138 *See id.* at 10.

139 Interview with Steve Shaffer, Director of Agriculture and Environmental Policy Office, California Department of Food and Agriculture, Interview (Feb. 2002).

over water, the Oregon governor looks to collaboration, not litigation, to identify a workable remedy. "All of these efforts, however, will not solve the underlying problem in the Klamath Basin: A demand for water that exceeds the supply of water. No court can solve this problem; no one person can solve this problem. It will take all the parties coming to the mediation table—leaving their positions at the door—ready to roll up their sleeves and design a long-term solution that will sustain the Klamath Basin for the benefit of communities, the economy and the environment."[140] The main obstacle to collaboration has been the polarized interests of potential conservationists. This obstacle must be torn down through continued attempts to focus, not on ideological differences, but on the problems that need to be solved. The question surfaces whether agriculturists, government agencies, foresters, and environmentalists all care more about their land or their political position and ideological stance.

Throughout the past decade, a northern California coalition has attempted to move beyond conflict to find positive forest-management solutions. The Quincy Library Group (QLG) has approached the interdependent goals of forest health and community stability from the different angles of foresters, government agencies, and environmental activists.[141] In 1993, QLG adopted its Community Stability Proposal, which recommended improvements for management of the Lassen National Forest, the Plumas National Forest, and the Sierraville Ranger District of the Tahoe National Forest. The unlikely partnership of QLG members formed as a reaction to three years of intense conflict between environmentalists, timber groups, and Forest Service.[142] The parties realized that even if solutions were eventually found for spotted owl and other forest problems, the solution might not surface until there was no longer a local forest management infrastructure in place capable of implementing the solutions.[143]

The important lesson for Klamath in QLG's attempts at collaboration is the potential for finding common ground among historical opponents. "Some people in each camp began to recognize, but not yet clearly articulate, that our forests, our communities and the Forest Service had an unbreakable relationship of mutual inter-dependence."[144] The parties realized that goals for stable and healthy communities cannot be achieved without assuring long-term health of the surrounding forests,

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140 Kitzhaber, supra note 14.

141 *See* Quincy Library Group, *Quincy Library Group Background* (2002) *at* www.qlg.org/pub/contents/overview.htm.

142 George Terhune, *QLG Case Study* (2002) *at* www.qlg.org/pub/contents/overview.htm.

143 *See id.*

144 *Id.*

as demanded by environmentalists.[145] Nor can the long-term health of our forests be restored without the large-scale participation of an industrial infrastructure largely dependent on a profitable timber base.[146] Finally, neither of those goals can be achieved unless the Forest Service can implement greatly improved forest management.[147] Former President Clinton also saw the potential for collaborative groups such as QLG by maintaining his motto of "out of courtroom and into meeting rooms."[148]

This cooperation between various parties needs to take place, not only among the various interested private actors, but also between state and federal agencies. Discussions between federal and state agencies would be effective because state governments have land use authority along with their state endangered species laws that protect a greater number of species. State measures to motivate private individuals to initiate proactive conservation efforts can be undermined when litigation is still available under the federal ESA. Therefore, working together would allow federal and state agencies to devise solutions that minimize litigation and maximize the government efforts made.

California, for example, passed Senate Bill 231 to provide an exemption to the California Endangered Species Act for "routine and ongoing agricultural practices."[149] A unique coalition of agriculturists and environmentalists produced a bill to create an incidental take permit for agriculturists. The bill does not take effect until the California Department of Fish and Game adopts regulations for implementation of the voluntary program. Various discussions and compromises are occurring between environmentalists, Agriculture Commissioners, California Department of Fish and Game, and Farm Bureau regarding the implementation of Senate Bill 231.[150] The proposed regulations specifically set out a process for preparation of the voluntary local program. Under the regulations, a group or individual farmers or rancher can undertake a local program.[151] The proposed process allows and encourages groups of farmers and ranchers or individual ranchers to work together in conjunction with the County Agriculture Commissioner's office in obtaining incidental take authority. The proposed requirements include management practices that will, to the maximum extent practicable, avoid and minimize take of candidate, endangered, and threatened species while encouraging the en-

145 *Id.*
146 *See id.*
147 *See id.*
148 President Bill Clinton, Address at the Forest Summit (1993).
149 Letter from Tess Dunham, California Farm Bureau Federation, Director of Water Resources, to Michael Valentine, General Counsel, California Department of Food and Agriculture (Mar. 13, 2002) (comments on proposed regulations for incidental take).
150 *Id.*
151 *Id.*

hancement of habitat.[152] The proposed regulations encourage measures that will protect species while maintaining economically viable agricultural operations.[153] Additionally, decisions under the Incidental Take Permit process must be supported by best available scientific information for both agricultural and conservation practices.[154]

Senate Bill 231's incidental take program offers assurances and guarantees to landowners while encouraging private parties to take risks in order to promote biodiversity. Unfortunately, all of these efforts to offer some flexibility to agriculturists do nothing to prevent litigation under the Federal ESA. If the federal government decided to embark on such an idea, then the discussions would begin anew, this time towards a federal law. However, with increased cooperation between federal and state governments, these political challenges and negotiations could be done to make positive changes under both laws at the same time.

D. Positive Incentives

The Safe Harbor Program sets a baseline level by which to gauge whether or not to offer individual landowners freedom from ESA obligations.[155] This serves as a constructive measure that only allows regulatory relief to landowners who prove that their actions attract new species. To put the Safe Harbor baseline to use in a more effective strategy, the ESA should create a financial incentive program that uses the baseline to measure compensation for conservation efforts. Private individuals or groups that attract new species would receive dollar allotments or tax breaks based on the maintenance of or improvements on the existing baseline. This incentive program should be progressive, meaning compensation directly parallels the success an individual or group has towards biodiversity conservation.

In response to the Klamath Basin situation, California Waterfowl president, Bob McLandress, has identified positive incentive programs that could most effectively conserve natural resources and allow wildlife to survive on private land.[156] First, programs may pay farmers to remove land from production and provide uplands and small wetlands for wildlife.[157] Additionally, small wetlands could be designed to function as tailwater return ponds by recycling agricultural irrigation waters and sediments captured before releasing waters downstream to the wildlife ref-

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152 *Id.*

153 California Dept. of Fish and Game, Prop. Reg. 786.1 (a).

154 California Dept. of Fish and Game, Prop. Reg. 786.2(d)(5).

155 NATIONAL WILDLIFE FEDERATION, SAFE HARBOR AGREEMENTS AND THE ENDANGERED SPECIES ACT: IMPROVING CONSERVATION ON PRIVATE LANDS (1997).

156 *See* McLandress, *supra* note 36 at 12-13.

157 *See id.*

uges.[158] In drought years, some pastures and alfalfa fields need to be assured water, and cereal grains need to be grown just to sustain waterfowl and other wildlife that thrive on agricultural foods.[159] In order to discourage farming practices that are insensitive to biodiversity conservation, farmers must be compensated for sacrifices made for conservation purposes. A new federal biodiversity policy amendment would embrace solutions such as those presented by Mr. McLandress in order to advance efforts towards biodiversity conservation.

The concept of paying landowners for helping the environment is not new. The United States government has already caught on to the positive outcome of providing incentives to private land stewards. In fact, the 1996 Farm Bill created a conservation program for flood risk reduction.[160] The Natural Resource Conservation Service (NRCS) of the United States Department of Agriculture (USDA) may enter into contracts with producers who allow a certain amount of acreage to be flooded. NRCS "compensates" the positive conservation measures through what amounts to a cost-share program. An individual landowner's expenses are paid in part by USDA because the federal government's goals are furthered through the positive actions carried out with that expense.[161] Therefore, the flood risk reduction incentives serve as federal government recognition of private parties rendering beneficial services with their land and resources. Analogously, a private individual or group could be given incentives to maintain their land in such a way as to promote wildlife conservation.

The USDA also provides financial incentives through the Wildlife Habitat Incentives Program (WHIP).[162] The 1996 Farm Bill authorized fifty million dollars in funding through the year 2002 for WHIP to make cost share payments to landowners for the implementation of wildlife habitat improvement activities.[163] To receive payments, the landowner must submit a wildlife habitat development plan.[164] In return, WHIP also provides education regarding wildlife needs, technical assistance to land-

158 *See id.*

159 *See id.*

160 NATIONAL ASSOCIATION OF STATE DEPARTMENTS OF AGRICULTURE RESEARCH FOUNDATION, NATIONAL CENTER FOR AGRICULTURAL LAW RESEARCH AND INFORMATION, NATURAL RESOURCES CONSERVATION SERVICE, U.S. ENVIRONMENTAL PROTECTION AGENCY, ENVIRONMENTAL LAWS AFFECTING CALIFORNIA AGRICULTURE at CA-43. (Completed 1999, updated 2002).

161 *Id.* (Specifically, NRCS funds 95% of participant's market transition contract payments, and may receive 95% of their projected crop insurance payments.)

162 *See* 7 C.F.R. § 636 (2002).

163 NATIONAL ASSOCIATION OF STATE DEPARTMENTS, *supra* note 160 at CA-43.

164 *See* 7 C.F.R. § 636.6, § 636.7.

owners, and fosters a positive public attitude regarding wildlife, wildlife habitat, and land stewardship.[165]

The USDA has also created the Conservation Reserve Program (CRP). CRP essentially pays volunteer agricultural landowners not to farm certain lands and instead set those lands aside as a conservation reserve in order to enhance the environment.[166] CRP provides annual rental payments based on the agricultural rental value of the land.[167] Additionally, CRP provides cost-share assistance for up to fifty percent of the participant's costs in establishing approved conservation practices.[168] One such example is providing cover on eligible croplands.[169] CRP encourages planting long-term resource-conserving covers to improve soil, water, and wildlife resources.[170]

Under CRP, USDA cooperates with states through a Conservation Reserve Enhancement Program (CREP), which is a joint state and federal land retirement conservation program targeted to address state and nationally significant agriculture-related environmental effects.[171] CREP uses financial incentives to encourage farmers and ranchers to enroll in contracts to remove their land from production for ten to fifteen years in duration.[172] CREP's two primary objectives are to coordinate federal and non-federal resources to address specific conservation objectives in a cost-effective manner, and to improve water quality, erosion control, and wildlife habitat in specific areas.[173] Since USDA's Farm Service Agency administers CREP, landowners have been very cooperative in inviting additional federal government involvement onto their land.[174]

An effective federal policy directed at biodiversity conservation would embrace the tactics of the USDA in offering positive incentives to private landowners and groups. Three important facets of USDA's conservation incentives programs should be emphasized. First, the programs offer cooperative and non-intimidating government involvement with

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165 *See* 7 C.F.R. § 610.

166 *See* 7 C.F.R. § 1410 (2002). *See also* Farm Service Agency, Conservation Reserve Program, (available online at www.fsa.usda.gov/dafp/cepd/crp.htm).

167 *Id. See also* 7 C.F.R. § 636.21 (rental rates, set by Community Credit Corporation, are based on the relative productivity of soils within each county, and an average of the past 3 years of local dry land cash rent or equivalent).

168 *See* 7 C.F.R. § 636.23.

169 *See id.*

170 Farm Service Agency, Conservation Reserve Program, *available at* www.fsa.usda.gov/dafp/cepd/crp.htm.

171 *See* § 1410.50. *See also* Farm Service Agency, *Conservation Reserve Enhancement Program, Questions and Answers* (2000) *available at* www.fsa.usda.gov/dafp/cepd/crepqnas.htm.

172 Farm Service Agency, *Conservation Reserve Enhancement Program, Questions and Answers.*

173 *Id.*

174 *Id.*

federal land.[175] Second, the programs facilitate cooperation between federal and state governments by allowing state implementation of federally mandated programs. Third, the programs recognize agriculturists' need for financial assistance in order to take proactive measures for conservation. Such a program would recognize the importance of California agriculturists who are "environmental stewards" with an important role in the culture, food, and economy of California.[176] Positive incentives for biodiversity conservation should be centered on the above principles, in order to maximize the stewardship role and positive efforts of farmers and ranchers.

Unfortunately, the present ESA does not do enough in terms of positive incentives. The ESA should be changed to provide fewer disincentives and more incentives to private landowners to protect endangered species. Not only would incentives benefit landowners, non-profit conservation organizations, and biodiversity, such a change would eliminate one of the growing problems with the ESA. Since protection of species can require total denial of resource use to rightful owners, individuals will increasingly demand compensation for the "take" of property rights. Unlike government acquisition for schools or roads and other government actions, with the ESA a landowner loses the use of land and is not compensated for his loss by the government.[177] There has been one successful case against this alleged "take", and in that case the U.S. Court of Federal Claims held that a loss of water to farmers and ranchers because of endangered fish constituted a taking deserving compensation.[178] The victorious attorney in that case visited the Klamath Basin farmers during July 2001 and ensured them that "the loss of irrigation water and property values amounts to a 'taking' of personal property" under the U.S. Constitution.[179] Rather than face the retroactive litigation and tension over unexpected loss of resources to landowners, the federal government

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175 *See generally* 7 C.F.R. § 700 et seq. (2002) (USDA, Farm Service Agency regulations); *See generally* 7 C.F.R. § 600 et seq. (2002) (USDA, Natural Resource Conservation Service regulations).

176 Michael S. Reid, Professor, Department of Environmental Horticulture, University of California, Davis Presentation at 16th Annual Environmental Law Conference (March 8, 2002).

177 American Farm Bureau, *107th Congress Backgrounder: Endangered Species Act Reform,* VOICE OF AGRICULTURE (2002) *available at* www.fb.com/issues/background/esa10.html.

178 Tulare Lake Basin v. United States, 49 Fed. Cl. 313 (2001) (holding that the right to divert water according to contract and in conformance to the state's decision and unmodified by state authority, deserves compensation).

179 *Lawyer: Water Loss is a "Taking' Worth $1 Billion,* HERALD AND NEWS (Klamath Falls), July 12, 2001 (quoting presentation by Roger Marzulla, Endangered Species Act law specialist, assistant attorney general for former President Ronald Reagan).

should create proactive measures to compensate landowners for using their resources for the sake of biodiversity conservation.

Such a program should incorporate an environmental baseline whereby compensation can be allocated according to improved or maintained habitat. The positive incentives would focus on positive uses of property rights rather than requiring a "take" of the property right itself. This policy would result in the federal government paying landowners and groups who "grow" habitat and manage biodiversity. Under the current ESA, developers seek out farmers and ranchers to conserve land in exchange for money. Biodiversity incentives would essentially result in the federal government participating in the already existing "mitigation" market. However, if the federal government stepped into the market, conservation practices could take place without the accompanying development. Stand-alone positive benefits to the environment will produce biodiversity conservation progress, rather than simply offsetting the environmental cost of development.

E. Proactive and Accountable Decisions

Finally, decisions made in the name of biodiversity must be accountable to a uniform national biodiversity goal. Therefore, the policy objective of this proposed solution is to eliminate the presently reactive system where one biological opinion, whether solid science or not, can trigger major ecosystem intervention. The situation in Klamath stirred up numerous interpretations of what the "best available science" requires for the water allocation of the Basin. However, rather than improve the final decision, the difference of opinion brought only political heat. The present system of reactionary decisions needs to be changed into an alternative approach that allows for peer review and thorough consideration of alternative science before decisions are made.

The court system is no place to test the science of agency decisions because judges' authority is so limited. The courts can only measure agency decisions against the "arbitrary and capricious standard." In response to the Klamath Basin conflicts, the judicial system produced a complete denial of water to the farmers and ranchers in reliance on the agency's decision.[180] Since the merits of the science are not raised in the courts, and discussion is limited to whether the agency reasonably relied on that particular scientific opinion, the court fails to produce an adequate check on science. Therefore, a new system must be established to hold agencies accountable to the science of their decisions. This review must come before the government intervenes with the physical environ-

[180] Pac. Coast Fed'n of Fisherman's Ass'n v. United States Bureau of Reclamation, 138 F.Supp.2d 1228 (N.D. Ca. 2001).

ment of an area, whether done willingly by the agency or in compliance with a court mandate.

To meet this desired end, policy makers have offered the idea of a peer review board to test the science of biological opinions.[181] Such peer review could come in the form of an ESA Science Board made up of scientists from diverse backgrounds who review biological opinions to ensure that the science used is acceptable before federal actions are taken. The ESA Science Board would produce positive change in biodiversity conservation because it would take the peer review role away from the courts. Requiring peer approval by the ESA Science Board before agency action takes place would cut back on reactive decisions influenced more by political pressures than true science.

In recent years, the federal government and California have incorporated peer review into efforts to use accountable science in government involvement in California conservation. A combination of federal and state government agencies are working together through the CALFED Bay-Delta program ("CALFED").[182] The agencies have established the CALFED Science Board to provide guidance to CALFED decision-makers.[183] The Board comprises nationally renowned scientists of varying disciplines. Two relevant aspects of the CALFED Science Program are transparent decisions and staggered terms with a rotating national body of scientists.[184]

The CALFED Science Program "will bring world-class science to all elements of the program. . . Performance measures and indicators for each program element will track progress."[185] The purpose of the CALFED Science Program is to provide a comprehensive framework to develop new information and scientific interpretations necessary to implement, monitor, and evaluate the success of the CALFED Program.[186] The program goals are to establish a body of knowledge that is unbiased, relevant, authoritative and integrated, and communicate that knowledge to the scientific community, agency managers, stakeholders and the public. CALFED aims to incorporate independent peer review into all Program activities.[187] Therefore, the Program seeks to develop science-based performance measures for each CALFED Program.[188]

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181 Interview with Steve Shaffer, Director of Agriculture and Environmental Policy Office, California Department of Food and Agriculture (Feb. 2002).

182 *See* CALFED Bay Delta Program, Programmatic Record of Decision, Vol. 1, 74 (Aug. 28, 2000).

183 *Id.*

184 *See id.*

185 *See id.*

186 *See id.*

187 *See id.*

188 CALFED Bay-Delta Program Briefing Book, *CALFED Science Program,* 39 (Sept. 2001).

The federal government has required such peer review in other agency decisions. For example, Section 25(d) of the Federal Insecticide, Fungicide, and Rodenticide Act ("FIFRA") mandated that the Environmental Protection Agency's (EPA) pesticide regulations and rulemaking be submitted to a "Science Advisory Panel" prior to being made public.[189] The Science Advisory Panel must have an opportunity to comment on the health and environmental impact of EPA's actions.[190] The Science Advisory Panel also makes comments, evaluations, and recommendations for operating guidelines to improve the effectiveness and quality of analyses made by EPA scientists. Additionally, Section 104 of the Food Quality Protection Act of 1996 offered the Science Advisory Panel assistance with their reviews through the establishment of a Science Review Board.[191] The sixty or more scientists on the Science Review Board are available to the Science Advisory Panel on an ad hoc basis.[192] This scientific peer review effectively brings in the best available science by allowing temporary sub-panels to help with specific projects to expedite preparing evaluations, comments, and recommendations.[193]

An ESA Science Board that embraces the positive aspects of the CALFED and EPA peer review programs would eliminate the problem of agencies merely "reacting" to biological "opinions" and facing later criticism of the science used. The ESA Science Board would facilitate by assuring dependable science. Incorporating the review of decisions by an independent science panel would ensure that the best investments are being made and results are being achieved. Additionally, the ESA Science Board would play a strategic role in reducing scientific uncertainties. Since the ESA Science Board would not be directly involved in making regulatory decisions, the scientists would be able to ensure that agencies incorporate the best available science into its decisions. The ESA Science Board would be respected as the "supreme court" of biodiversity science by establishing a panel with credible expertise, and to whom agency scientists would be held accountable.

A new ESA policy would also provide for accountability among private landowners and conservation groups involved in federally compensated conservation practices. In order to ensure that these private actors are accountable for their actions, compensation would be based on evidenced maintenance or improvement of the biodiversity on their lands. Under an ESA positive incentives program, compensation for biodiversity conservation, based on progress or at least maintenance of "baseline, " should be given in accordance with the requisite monitoring. Non-

189 *See* 7 U.S.C. § 136w(d) (2000).
190 *See id.*
191 *See* Publ. L. 104-170 (1996).
192 *See id.*
193 *See id.*

threatening government officials who enter the property in the hat of a partner rather than a regulator should conduct monitoring science review. The federal government should also provide these officials as a reference source for landowners and conservation groups involved in biodiversity conservation practices. For example, the USDA uses the Natural Resource Conservation Service to give guidance and monitor progress for its existing programs. Private actors appreciate the non-regulatory, consulting role these officials play, and the landowners welcome the government officials onto their land. The NRCS approves experimental conservation-minded farming practices for government funding. Landowners and groups should be allowed independence and autonomy to carry out periodic monitoring. However, this science must be tested by the non-regulatory government officials in order to award compensation.

V. Comparative Analysis: Proposed Solutions v. Existing ESA Policy

The proposed solution laid out above incorporates a clearly defined goal, maximization of human interests and efforts, positive incentives, collaboration, and accountable, proactive decisions. The following analysis compares the alternative approach with the existing ESA policy. This comparison identifies three distinguishing tensions between the proposed solution and the existing ESA policy. First, the two policies produce different effects on natural resources, creatures and listed species—empowerment v. intervention. Second, the two policies affect human actors involved in biodiversity conservation, whether they be agency employees, landowners, or conservation group members—empowerment v. adversity. Finally, the policies maintain different paths of biodiversity conservation progress on private lands—moving forward v. starting over. The following analysis explains these differences to distinguish the proposed versus the existing solutions for biodiversity conservation.

A. Empowerment v. Intervention

Federal biodiversity policy inevitably affects listed species and natural resources. If federal action and decisions did not cause an effect on the environment, the ESA would be meaningless. However, a difference in national biodiversity policy can have different effects on the environment itself. The above-proposed solution focuses on empowerment through the creation of an atmosphere where species can thrive naturally. The current ESA centers on intervention, whereby the federal government directs resources to protected species, sometimes at the expense of other species.

The intervention policy of the current ESA results in the federal government controlling nature in order to meet the values humans have placed on species through the "Noah's Ark" principle. Such intervention encourages federal agencies to direct resources to protected species at the expense of the ecosystem as a whole. The current ESA centers on intervention in reacting to emergencies by making reactionary decisions to counteract the unexpected threats of extinction. This was evidenced at Klamath where the fear of "jeopardy" to sucker fish and coho salmon inspired human intervention that harmed the other wildlife and listed species that depended on the usual allocation of water from the Klamath Project. Rather than focus on the possible ramifications to the entire area, the federal government followed its reactionary intervention policy and upset expectations of water delivery in order to prioritize the needs of the listed coho salmon and sucker fish.

The empowerment focus aims to give all species survival power through the creation of habitat and enhancement of resources. A law focused on positive support to help nature thrive would produce positive effects on natural resources and creatures as a whole. This ecosystem focus would lead to a biodiversity policy that identifies the needs of all the species in an area and seeks to distribute human assistance and respect equally among the species of an area. The ultimate goal of the empowerment policy is to create a "positive net biodiversity effect", which means that in the aggregate all species are better off because of human management of the land.

By seeking a positive net biodiversity effect, the empowerment policy would allow the loss of a species if that loss would produce positive results for the ecosystem as a whole. The empowerment policy would also focus its efforts on those species that are critical to the survival of many other species in an ecosystem. This priority does not effectively control the success of one species over the others, but the opposite, it empowers one particular species to help the entire ecosystem thrive. Most relevantly to the Klamath Basin situation, the empowerment policy recognizes that "critically dry" years are harmful to all species. Water is a unique limited resource because of year-to-year fluctuations in natural waterfall. Therefore, the empowerment policy would take special consideration for the entire ecosystem to guide decisions over uniquely limited water resources. Therefore, the distinction between empowerment and intervention highlights the two distinct resulting effects on the environment itself.

B. Empowerment v. Adversity

Biodiversity policy has a tremendous effect on the human actors involved in its implementation and compliance. The proposed solution fo-

cuses on empowerment of all individuals involved in carrying out the national policy for biodiversity conservation. Conversely, the existing ESA policy provides solutions through courtroom accusations and continual disagreement. The repetitious nature of these disagreements has been evidenced in the Klamath Basin, where the citizen group that brought about the 2001 injunction denying allocation of irrigation water sought another stop to water allocation to farmers and ranchers in 2002.[194]

The current ESA's adversity emphasis only offers solutions through courtrooms and continual disagreements among parties. Even the constructive measures used to establish certainty with ecosystem-based conservation fail as lawsuits can still revoke the supposed guarantees of landowners' Habitat Conservation Plans.[195] At the root of the current ESA's adversity emphasis is an assumption of "hostility" among the varying perspectives of private actors. The adversity and hostility result in the unnecessary polarization of interested parties.

The empowerment policy provides a law that allows positive incentives for human stewardship. By benefiting from incentives beyond mere regulatory relief, private landowners and groups are empowered to use their own innovation and resources to conserve wildlife and habitat. By providing positive incentives for private individuals and groups, the government can foster creative conservation solutions without the cost of acquiring property or devising the systems. These incentives are coupled with education rather than government acquisition or Constitutional takings litigation. The proposed solution would not take land and water resources from individuals, nor would economic incentives be lost. Rather, private individuals and groups would be encouraged to use their land and water to benefit the environment. The government would then compensate these individuals and groups, not for their loss, but for their environmental stewardship. Taxpayers would be paying for the biodiversity conservation they receive benefits from and value. The "teach them to fish rather than giving them fish" philosophy is applied to encourage the government to show private landowners how to conserve rather than ac-

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[194] *See* Plaintiff's Complaint for Declaratory and Injunctive Relief, *Pac. Coast Fed'n of Fisherman's Ass'n v. United States Bureau of Reclamation* (N.D. Ca. 2002) (No. C 022006 SBA).

[195] National Wildlife Fed'n v. Babbitt, 128 F. Supp. 2d 1274 (2000). Plaintiffs challenged the United States Fish and Wildlife Service's issuance of an incidental take permit to allow development in the Natomas Basin, a 53,000 acre tract of largely undeveloped land stretching to the North of the City of Sacramento. The Natomas Basin contained habitat of the Giant Garter Snake, a threatened species under the federal Endangered Species Act (ESA), and the Swainson's hawk, a threatened species under the California Endangered Species Act. The court concluded that the Fish and Wildlife Service's determination that no Environmental Impact Statement was required was arbitrary and capricious.

quiring land to conserve for them. The empowerment policy maintains a firm belief in education with the underlying assumption of the "capability" of private actors.

The proposed and existing ESA policies require significantly different practices from humans both from employees of government agencies and private actors. Under the existing ESA, good stewards are actually disfavored because by enhancing biodiversity they exhaust their own financial and natural resources, and open themselves up to litigation by inviting species onto the property. Conversely, those landowners who do not choose to be stewards of biodiversity simply have to refrain from obvious killing of species and can carry on without additional expense. At Klamath, most nearby landowners lost the value in their land and their pre-purchased contract water. Under the current ESA, good biodiversity stewards are given no assistance to fend off additional risks or expenses. Furthermore, government agency scientists are not held accountable for their actions until after a significant exhaustion of government resources has taken place.

Under the empowerment policy, agencies would be held accountable for their decisions concerning biological opinions prior to their implementation through the scientific peer review. Furthermore, the proposed solution calls for the accountability of private landowners through reviewing the science used in monitoring. This accountability controls not only public perspective of the land steward, but also controls funding of the incentives. Therefore, if the private actor is not maintaining or improving the overall biodiversity baseline, then no compensation would be given. The combined force of accountability and incentives creates an income stream for the environmentally friendly landowners and groups, allowing those positive actors to remain rather than be forced to sell their land. However, the landowners and groups who are not managing the land would not get money and would likely sell or be driven out by bad market conditions. In this way, the empowerment policy seeks to encourage and promote good stewardship rather than only encourage tough conservation advocacy.

C. Moving Forward v. Starting Over

The details and characteristics of a national biodiversity policy also affect the progress of biodiversity conservation itself. Under the existing ESA policy, the federal government acquires land or water at a price and then starts over with a new learning curve to obtain knowledge of the land for biodiversity conservation. This process results in government expenditures for the land or water, for the initial surveying of the conservation needs, for continuing monitoring, and for conservation devices on the land.

However, the proposed solution derives more positive effects from less government money. The proposed solution offers tactics to move forward with biodiversity conservation by keeping land and water resources in the control of the "expert" landowner or conservation group. The forward-moving policy encourages these experts to use their land and water to benefit biodiversity. Therefore, the two policies have drastically different effects on the progress of biodiversity conservation on private lands.

VI. Conclusion

After thirty years under the ESA, public awareness of the need for biodiversity conservation has risen. Acting upon its concern, our nation's people have devised many innovative and creative practices to produce positive results for the environment. However, the current ESA does not allow private individuals and groups the incentives they need to participate in the process. Rather, the law allows only for litigation and instigation of further conflict. Furthermore, the law authorizes government agency actions without accountability. Under the present ESA policy, accountability would be meaningless since there is no clearly defined national biodiversity goal. Therefore, the proposed solution of this analysis comes at a transitional time in our nation's conservation progress. The proposed solution offers a positive, empowering message for private actors by setting out a system that would allow participation, collaboration, and progress.

Applying this new solution to a fictional repeat of the Klamath Basin situation demonstrates the effects of moving beyond conflicts and promoting positive efforts for conservation. If the events of Summer 2001 were to be repeated with this new ESA policy in place, a more positive outcome would result. First, the ESA Science Board would review the NMFS and FWS biological opinions before any action is taken. This would eliminate the need for subsequent questioning of the science after the fact, and provide for the true "best available science" to prevail. Through collaboration, conflicting perspectives would be heard through more out-of-court discussions to counteract the threat to species before an "emergency" situation arises. Reclamation's decision would be based on the needs of all natural resources and creatures in light of the "critically dry" year. In the event that water needed to be kept in the lake and streams to produce a "net biodiversity effect" in the region, then farmers and ranchers could voluntarily "lease" their contracted water for the species. These and other financial incentives would encourage private actors to use innovation and accept risk in the quest for creative solutions. Additionally, the government would provide education to private actors to help them manage lands and water in a manner most beneficial for the

national goal of enhancing ecosystem biodiversity. For these reasons, the solution proposed raises the key ingredients for positive changes in our existing biodiversity conservation policy.